89177 JUL 31 1978

Decision No.

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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of Western LNG Terminal Associates, a general partnership, and of a Joint Application of Western LNG Terminal Associates, Pacific Gas and Electric Company and Pacific Lighting Service Company, California corporations, for a permit authorizing the construction and operation of an LNG terminal pursuant to Section 5550 et seq. of the Public Utilities Code.

In the Matter of the Application of PACIFIC GAS and ELECTRIC COMPANY, AND PACIFIC LIGHTING SERVICE COMPANY, California corporations, for a Certificate that Public Convenience and Necessity require the construction, operation, and maintenance of a 34" Pipeline from the Point Conception area, Santa Barbara County, California to Gosford, Kern County, California, and related facilities.

Investigation on the Commission's own motion into the matter of the adoption of regulations governing the safety and construction of a liquefied natural gas terminal in the State of California.

Investigation on the Commission's own motion into the impact of the decline in natural gas available to California from traditional sources and the need for and timing of deliveries from supplemental supply projects.

ORIGINAL

Application No. 57626 (Filed October 14, 1977)

Application No. 57792 (Filed January 9, 1978)

OII No. 1 (Filed October 18, 1977)

Case No. 10342 (Filed June 1, 1977; amended August 23, 1977)

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At the lychgate we may all pass our own conduct and our own judgments under a searching review. It is not given to human beings, happily for them, for otherwise life would be intolerable, to foresee or to predict to any large extent the unfolding course of events. In one phase men seem to have been right, in another they seem to have been wrong. Then again, a few years later, when the perspective of time has lengthened, all stands in a different setting. There is a new proportion. There is another scale of values. History with its flickering lamp stumbles along the trail of the past, trying to reconstruct its scenes, to revive its echoes, and kindle with pale gleams the passion of former days. What is the worth of all this? The only guide to a man is his conscience; the only shield to his memory is the rectitude and sincerity of his actions. It is very imprudent to walk through life without this shield, because we are so often mocked by the failure of our hopes and the upsetting of our calculations; but with this shield, however the Fates may play, we march always in the ranks of honour.

> Winston Churchill to the House of Commons November 12, 1940 on the occasion of the death of Neville Chamberlain

(See Appendix A for appearances.)

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OPINION IN APPLICATIONS NOS. 57626 AND 57792, CASE NO. 10342 AND OII 1

I. LNG TERMINAL ACT OF 1977

On September 16, 1977 the Liquefied Natural Gas Terminal Act of 1977 (SB 1081) was signed by the Governor. The Act grants to this Commission the exclusive power to issue a permit authorizing the construction and operation of a liquefied natural gas (LNG) terminal pursuant to a prescribed procedure. The Act makes appropriate modifications to the Public Resources Code and adds Chapter 10 to the Public Utilities Code. The Act became effective immediately upon enactment on September 16, 1977 as an urgency statute within the meaning of Article IV of the Constitution.

In Section 5551, the Legislature finds as follows:

- "(a) That an adequate supply of natural gas is essential to the economy of California and to the health and welfare of its residents.
- "(b) That the importation of liquefied natural gas from south Alaska and Indonesia into California may be a significant means of assuring that adequate and reliable supplies of natural gas are obtained in sufficient quantities to meet the state's needs and to prevent natural gas shortages which would disrupt the state's economy, increase air pollution, and impose personal and financial hardships on all of the state's residents.
- "(c) That an initial liquefied natural gas terminal may currently be needed in order to permit the importation of sufficient natural gas to prevent shortages which have been predicted to occur in the early 1980's.

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"(d) That, in order to expedite the siting, construction, and operation of such liquefied natural gas terminal so that serious shortages of natural gas do not occur, it is necessary to vest exclusively in one state agency the authority to issue a single permit authorizing the location, construction, and operation of such terminal, and to establish specific time limits for a decision on applications for such permit." */

In order to implement the policy stated in Subdivision (d) above, the Act provides that the issuance of a permit by the Commission shall be in lieu of any other permit, license, certificate, or other entitlement for use required by any agency of state or local government for the construction or operation of an LNG terminal, to the extent permitted by federal statute or regulation or any federalstate agreement relating to water discharge permits. The Act further provides that, to the extent permitted by federal statute or regulation, the permit shall also be in lieu of any other permit, license, certificate, or other entitlement for use issued by any agency, department, or instrumentality of the federal government.

In Section 5552, the Legislature further finds and declares, in part, "... that current uncertainties about the safety of liquefied natural gas require that the single terminal authorized by this chapter be located at a site remote from human population in order to provide the maximum possible protection to the public against the possibility of accident."

Section 5582 provides that the following population criteria apply to the terminal:

The Act requires that "... on or before July 31, 1978, the commission shall issue a decision on an application for a permit to construct and operate an LNG terminal". (Section 5580; emphasis added.) All references are to the California Public Utilities Code, unless otherwise noted.

- "(1) Population density shall be not greater than an average of 10 persons per square mile for a distance of one mile outside the perimeter of the site on which the offloading, regasification, and storage facilities for LNG will be located.
- "(2) Population density shall be not greater than an average of 60 persons per square mile for a distance of four miles outside the perimeter of the site on which the offloading, regasification, and storage facilities for LNG will be located.
- "(3) The terminal shall be located so that no marine vessel transporting LNG would be required or permitted in the normal course of marine operations, according to the plan of operations filed by the applicant pursuant to subdivision (b) of Section 5601, to pass closer to areas of population density than the distances specified in paragraphs (1) and (2)."

Section 5584 requires that the storage and regasification facilities be located onshore. Section 5585 requires that the gas delivered to the terminal must be gas produced in Indonesia and south Alaska. It also requires that the "terminal's average daily input capacity shall not exceed the gaseous equivalent of 1.3 billion cubic feet." Further, Section 5600 requires that any party seeking a permit to operate and construct a terminal had to file an application within 30 days after the effective date of the legislation. Western LNG Terminal Associates (Western Terminal), the only applicant under the Act, filed Application No. 57626 on October 14, 1977, for a permit to construct and operate an LNG terminal in Santa Barbara County near Point Conception. Under the Act the Commission is required to submit a copy of the application to the California Coastal Commission (CCC) (Section 5610). This was done on October 14, 1977.

The CCC is required by the Act to undertake a study to identify and evaluate potential onshore sites for an LNG terminal. Not

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later than May 31, 1978, the CCC was required to complete and transmit to this Commission its final report evaluating and ranking such sites, together with recommended terms and conditions of construction and operation of a terminal at each site. (Sections 5611, 5612.)

The Act provides that this Commission shall not issue a permit for construction and operation of a terminal at any site not evaluated and ranked by the CCC. In issuing a permit, this Commission is required to issue it for the site ranked highest by the CCC. "However, the Commission may select a lower ranked site if it has determined with respect to each higher ranked site that it is not feasible to complete construction and commence operations of the terminal at such higher ranked site in sufficient time to prevent significant curtailment of high priority requirements for natural gas and that approval of the lower ranked site will significantly reduce such curtailment." (Section 5631.) Section 5559 defines "feasible" as "... capable of being accomplished in a successful manner within a reasonable period of time, taking into account: (a) economic, environmental, social, technological, safety, and reliability factors, (b) gas supply contracts, (c) gas supply and demand forecasts, (d) federal regulatory requirements, and (e) alternative sources of natural gas."

Under the Act this Commission cannot issue a permit for construction and operation at any site unless it finds to do so would be consistent with public health, safety, and welfare, and it may impose such conditions on the issuance of a permit as may be necessary or appropriate to ensure the public health, safety, and welfare. (Section 5632.)

If this Commission issues a permit for construction and operation, the Act requires it to impose, as a condition of such permit, each term and condition recommended by the CCC for the selected site, unless this Commission finds with respect to each term or condition any of the following:

A. 57626 et al. IM*

- (a) Imposition of the term or condition will cause delays in commencement of terminal operations that will result in significant curtailment of high priority natural gas requirements and that deletion or modification of the term or condition will avoid or significantly reduce such curtailment.
- (b) The report of the CCC recommending the term or condition was not based on substantial evidence, considering the record as a whole.

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(c) Imposition of the term or condition will adversely affect public health or safety. (Section 5633.)

The Commission may also impose its own terms and conditions. These terms and conditions may also include those recommended by the local city or county within whose jurisdiction the terminal is proposed to be located. (Section 5636(d).)

Section 5601 requires the permit application to contain the following information:

- (a) Information, including maps and pictorial and written descriptions of present and proposed development for the site and relevant geological, archaeological, aesthetic, ecological, seismic, marine transport, and population data. The maps shall designate the location of the perimeter of the LNG offloading, regasification, and storage site from which the population density criteria specified in Section 5582 shall be measured.
- (b) A detailed description of the proposed engineering design features, proposed methods of construction, and proposed operating procedures for the terminal and a proposed plan for marine operations, including shipping routes and control procedures.
- (c) An analysis of accident possibilities, consequences, and risks for the terminal.
- (d) Information regarding safety and public protection features, including fire protection measures, marine navigational systems, emergency systems for shutting down the terminal, and other contingency plans for accidents.
- (e) Information regarding the cost of the terminal, fuel consumption in operating terminal equipment, service life of the terminal, and capacity of the terminal.
- (f) Information regarding the source of liquefied natural gas, including the contractual terms for the delivery of such gas supplies.

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- (g) A description of any proposed or existing natural gas transmission lines related to the proposed terminal, including a map, in suitable scale, of the routing that shows details of the right-of-way in the vicinity of populated or developed areas, parks, and recreational areas; the justification for the route; and a preliminary statement of the effect of any proposed natural gas transmission line on the environment.
- (h) A description of contingency plans for equivalent volumes of natural gas in the event of both shortand long-term interruptions of the LNG supply system for the proposed terminal.
- (1) A description of the proposed method of financing the terminal and analysis of the rate impact thereof on natural gas consumers in this state.
- (j) The applicant's legal opinion regarding the rights this state has, or can assert, under federal law (1) that will assure the allocation of adequate supplies of natural gas to consumers in this state from sources other than the terminal to be permitted pursuant to this chapter and (2) that will assure consumers in this state full and fair compensation for any losses of supplies of natural gas costing less than gas converted from LNG that may result from federal allocation policies.
- (%) Any other information which the applicant deems necessary or desirable to support its application and better inform the commission and the public. */

This Commission is designated by the Act to be the lead agency for purposes of the California Environmental Quality Act (CEQA). (Section 5635.) The Act requires this Commission to adopt regulations

^{*/} As discussed <u>infra</u>. the proceeding in Application No. 57626 basically addresses issues relating to Subsections (a), (e). (g). (1), and (k) of Section 5601. The issues relating to the other subsections are addressed, as appropriate, in OII 1 and Case No. 10342.

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- (1) To ensure that any terminal authorized is constructed and operated in compliance with all applicable regulations adopted and the terms and conditions established pursuant to the Act, and
- (2) To monitor the costs incurred in the construction, or in the preparation for construction, of such terminal in order to determine if the costs are in the best interests of the ratepayers. (Sections 5637, 5638.)

II. PROCEDURAL SUMMARY.

A. Entities

Western Terminal is a general partnership pursuant to the Uniform Partnership Act of the State of California. A copy of its general partnership agreement was filed as a part of Application No. 57626. Although not applicants in this proceeding, the parties to the Western Terminal partnership are: Western LNG Terminal Company, a California corporation, which is an affiliate of Pacific Lighting Corporation (PLC); and Pacific Gas LNG Terminal Company, a California corporation, which is an affiliate of Pacific Gas & Electric Company (PG&E).

PLC was a utility holding company until 1969 when it was diversified by the addition to its holdings of companies engaged in agriculture and real estate. The public utilities controlled by PLC are Pacific Lighting Service Company (PLS) and Southern California Gas Company (SoCal). both of which are California gas corporations. SoCal is the largest distributor of natural gas in southern California. PLS serves the sole purpose of buying natural Sas from various suppliers and selling it to SoCal. PLS has no employees of its own. Manpower for all PLS functions is provided by SoCal, which charges PLS for the service of its employees. A. 57626 et al. IM *

Western LNG Terminal Company, which participates as a partner in Western Terminal, is a wholly owned subsidiary of PLC.

PG&E is a public utility which is the largest supplier of gas and electric service in northern California. It controls a number of affiliates having the primary functions of developing and purchasing natural gas supplies and transporting the gas to PG&E's pipeline facilities. PG&E formed Pacific Gas LNG Terminal Company as a wholly owned subsidiary for the purpose of participating as a partner in Western Terminal.

On March 11, 1975, Western LNG Terminal Company entered into an agreement with Pacific Indonesia LNG Company (PacIndonesia)agreeing to receive, regasify, and deliver, at the instruction of PacIndonesia, specified volumes of the LNG under specified conditions. On February 26, 1975, Western LNG Terminal Company entered into a similar agreement with Pacific Alaska LNG Company (PacAlaska).-In accordance with the general partnership agreement effective January 27, 1976, the agreements are now binding upon Western Terminal.

**/ PacAlaska is a wholly owned subsidiary of PLC.

PacIndonesia is a California corporation which is a wholly owned subsidiary of PLC, but which is now jointly controlled by PLC and PG&E. PacIndonesia has contracted: (1) to purchase the specified volumes from Perusahan Pertambaugan Minyak Dan Gas Bumi (Pertamina); (2) to transport the LNG to California; and (3) to sell the regasified LNG to SoCal and PG&E.

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B. Proceedings Before Commission

1. Application No. 57626

Pursuant to Sections 5550 et seq. of the Act, Western Terminal seeks a permit authorizing it to construct and operate an LNG terminal as defined in Section 5562 of the Act. The site of the proposed terminal is in Santa Barbara County near Point Conception. At this site Western Terminal intends to construct and operate LNG unloading, storage, vaporization, and ancillary facilities for the purpose of receiving LNG imported into California from Indonesia and south Alaska.

Western Terminal alleges that the proposed project set forth in the application fully complies with the provisions of the Act and that the project is designed to receive critically needed LNG supplies in a feasible and timely manner.

PG&E and PLS ioin with Western Terminal in seeking the permit insofar as it authorizes the construction and operation of the pipeline and appurtenances necessary for the transmission of the regasified LNG from the metering station at the outlet of the vaporization facilities of the terminal to the points of interconnection with existing natural gas pipelines.

2. Application No. 57792

Pursuant to Section 1001 of the Public Utilities Code, PG&E and PLS jointly seek an order of the Commission granting to them a certificate of public convenience and necessity for the construction, maintenance, and operation of a pipeline which will be owned equally by the two California utilities. The pipeline will be approximately 112 miles long and will be 34 inches in outside diameter. It will begin at the metering station of the proposed LNG terminal site and terminate at a point of interconnection with PG&E's existing pipeline near Gosford in Kern County. There will be two interconnections along the 112-mile route, the first with SoCal's existing pipeline west of Buellton in Santa Barbara County, a and the second with PLS's existing pipeline near the North Coles Levee Field in Kern County.

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Applications Nos. 57626 and 57792 were consolidated for hearing.

3. Case No. 10342

On June 1, 1977 the Commission instituted an investigation, Case No. 10342, into the impact of the decline in natural gas available to California from traditional sources and the need for and timing of deliveries from supplemental supply projects. Specifically the investigation included the following:

- (1) A forecast of gas requirements by end-use priority.
- A forecast of gas supplies from traditional sources, and the projected cost of these supplies. (2)
- (3) An evaluation of the potential supplies available from new sources, and the projected cost of these sources.
- (4) The estimated date of curtailment of each end-use priority with traditional sources and the economic, social (with emphasis on loss of jobs). and environmental costs of converting these customers to alternate fuels.
- (5) The potential price and supply impacts of federal allocation and pricing policies on California's new gas supplies.
- (6) The facilities needed for and the economic, social, and environmental costs of diverting gas from northern to southern California.

SoCal, PG&E, and San Diego Gas & Electric Company (SDG&E) were made respondents in this case.

Order Instituting Investigation No. 1

On October 18, 1977 the Commission instituted OII 1 to discharge its statutory mandate under Section 5637 of the Act, which requires the Commission to adopt regulations governing the safety and construction of the LNG terminal. OII 1 constitutes the vehicle by which the Commission intends to develop comprehensive safety standards.

The standards adopted by the Commission in OII 1 will prescribe that level of safety which operators of a proposed LNG terminal must legally meet in connection with the design, construction, testing, operation, and maintenance of facilities required in the transfer, storage, and vaporization of LNG.

For purposes of developing appropriate safety standards, OII 1 encompasses all current state-of-the-art safety information relative to the handling of LNG. Present national, state, local, industrial, and professional codes, standards, practices and regulations covering design, construction, operation, inspection, maintenance, and safety of LNG terminal facilities are to be analyzed to determine their adequacy with respect to the Commission's responsibility for developing comprehensive safety standards. Respondents and the applicant for a proposed LNG terminal within the State are required to furnish to the Commission proposals for standards necessary to provide for the safe construction, operation, and maintenance of a proposed LNG facility.

The ultimate LNG safety standards promulgated by the Commission in OII 1 are to be incorporated as Part III of the Commission's General Order No. 112-C, which presently contains rules governing design, construction, testing, maintenance, and operation of utility gas gathering, transmission and distribution piping systems.

SoCal, PG&E, SDG&E, and Western Terminal were named respondents in OII 1.

5. Trifurcated Public Hearings

At the prehearing conference held on October 28, 1977 on Application No. 57626, staff recommended that for the purpose of expediting the hearing process, so as to allow a decision to be issued by July 31, 1978 on the permit, three separate and concurrent sets of hearings should be held and the three records consolidated. One set of hearings was recommended to be held in Application No. 57626, another set in Case No. 10342, and the third in OII 1. The three assigned Administrative Law Judges (ALJ) approved this recommendation, requiring that, in general, evidence relating to natural gas supplies and requirements be presented in Case No. 10342, A. 57626 et al. _ IM

safety related evidence be presented in OII 1, and evidence on the remaining issues be presented in the application. Subsequently, on January 3, 1978, Application No. 57792 for a certificate of public convenience and necessity for the gas transmission pipeline was filed, and it was consolidated for hearing with Application No. 57626.

An appearance in any one of the proceedings was deemed to constitute an appearance in all of them. The hearings were conducted to avoid, insofar as practicable, the duplication of evidence, while undertaking to compile a composite record that would be adequate in every aspect necessary for the Commission to make all required determinations within the time limit specified in the Act. References to the transcript, exhibits, and items in each hearing were preceded by a letter designating the applicable record: Case No. 10342 by a "C", Applications Nos. 57626 and 57792 by an "A" and OII 1 by an "O".

6. Hearings in Applications Nos. 57626 and 57792

The hearings in the applications were held in two series. The first series of hearings began with Western Terminal's basic showing and were concluded on February 17, 1978. Following Western Terminal, the Commission staff presented evidence relating to the cost of the proposed LNG terminal, financial issues relating to the construction and operation of the proposed terminal, and a plan to monitor the construction costs of the proposed LNG receiving terminal. Although provided the opportunity, no other parties presented evidence relating to this phase of the Application No. 57626 proceedings. At the conclusion of the first series of hearings in the applications, the presiding ALJ invited all parties to file concurrent interim briefs by March 7, 1978 on those issues in which presentation of evidence had been completed.

At the second series of hearings, beginning on March 14, 1978, the staff presented expert witnesses and exhibits relating to the various environmental impacts associated with constructing an LNG

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receiving terminal at Point Conception. These exhibits are technical reports which support and set forth the detailed facts and conclusions which are presented in the Draft Environmental Impact Report (DEIR) on the proposed project. Testimony and technical reports were offered on socio-economic and land use impacts, meteorology and air quality impacts, geology and seismicity impacts, and terrestrial biology impacts. The staff also presented witnesses who supported technical reports dealing with energy use, the proposed seawater system, utilities and effluents, and an assessment of cryo-utilization of the "cold power" generated by an LNG receiving terminal. In addition, technical reports addressing the relative environmental impacts of constructing and operating an LNG facility at alternative sites were introduced and received in evidence.

The staff also presented a technical report (Exhibit A-90) that sets forth the impacts of the proposed access road and electrical power transmission line required to serve the plant. Exhibit A-90 also assesses the impacts of alternative routes for a gas transmission pipeline, power line, and road. Finally, the staff presented testimony and Exhibits A-115 and A-116, which analyze on a comparative basis, the feasibility, costs and timing of constructing an LNG receiving terminal at each of the five sites proposed by the CCC in its preliminary report.

- These expert witnesses were consultants hired by the Commission to prepare an Environmental Impact Report (EIR) on the proposed project.
- **/ Exhibit A-66, the staff's Technical Report No. 23 supporting the DEIR. is a study comparing the impacts at Point Conception, Oxnard, Camp Pendleton, Tajiguas, and Guadalupe Dunes. Exhibit A-103, Technical Report No. 23A, is a supplement to Exhibit A-66, which presents an analysis of the Rattlesnake Canyon site and the Las Varas site. The Final EIR includes a detailed analysis of the Deer Canyon site in response to several comments on the DEIR.

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Western Terminal also presented additional testimony and exhibits during the second phase of the Application No. 57626 proceedings. _This presentation related to those mitigating measures recommended in the DEIR which Western Terminal was adopting. These mitigating measures included moving the site to avoid archaeological resources; using the existing Hollister Ranch Road as an access route and improving this road to a 25 mph standard rather than a 40 mph standard; busing laborers to the site from a staging area near Gaviota; alternative electric power arrangements; and taking certain measures that will mitigate air quality impacts. Western Terminal also presented a study concerning the design of the seawater system, and an exhibit setting forth the capital cost for constructing the terminal at Point Conception, revised to reflect these mitigating measures.

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In the applications, 48 days of public hearing were held before ALJ James F. Haley in Los Angeles, San Francisco, San Diego, San Luis Obispo, Santa Barbara, Oxnard, and Oceanside. The applications were taken under submission on May 12, 1978 subject to receipt of the following:

- By May 15, 1978 recommendations of cities and counties in which a terminal is proposed to be located, as to safety, protection of the environment and land use.
- 2. By May 30, 1978 concurrent briefs by the parties to the proceedings.
- 3. By May 31, 1978 the final report of the CCC evaluating and ranking the potential onshore sites pursuant to Section 5611 of the Act, with comments thereon to be filed by the parties not later than June 9, 1978.
- 4. By July 7, 1978 the Final EIR prepared by the Commission staff.

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5. Additional evidence in OII 1 concerning the extent of faulting at the proposed Point Conception site.

The record in Applications Nos. 57626 and 57792 consists of 4,154 pages of transcript, 120 exhibits, and 26 items.

7. Hearings in Case No. 10342

Scheduled hearings in Case No. 10342 commenced before ALJ Charles E. Mattson on November 1, 1977. Hearings were concluded May 4, 1978. The record includes 56 volumes of transcript (5,894 pages), 90 exhibits, and Items A through N. Concurrent briefs were filed on May 30, 1978, and Case No. 10342 is under submission.

A number of parties presented evidence on estimated natural cas supplies, customers' requirements, and potential economic and environmental impacts associated with declining gas supplies. Gas supplies estimates and requirements were provided by the staff of the Energy Resources Conservation and Development Commission (ERCDC), PG&E. SoCal, Resource Planning Associates, Inc. (RPA), Applied Decision Analysis (ADA), and the California Public Utilities Commission staff (staff). The respondent utilities presented estimates of gas supplies and requirements for their service areas. RPA provided a report on California Natural Gas Supply and Demand, 1977-1990 (Exhibit C-61). and ADA supplied a report titled "Decision Analysis of California LNG" (Exhibit C-66) in support of the DEIR in these consolidated matters. General Motors Corporation (GM). Union Carbide Corporation (UC), and SDG&E participated and presented direct evidence. The California Citizens Action Group (CCAG) actively participated in various portions of the proceedings through cross-examination.

8. <u>Hearings in OII 1</u>

By direction of the Presiding Administrative Law Judge and with the concurrence of the interested parties, OII 1 was divided into two phases. Phase I of the proceeding, which concluded on July 14, 1978, was devoted to examination of site-specific safety and reliability issues generated by Western Terminal's request in Application No. 57626 to construct and operate an LNG terminal at Point Conception. Phase II of OII 1, with hearings commencing in August, 1978, will serve as the forum for the ultimate development zand adoption by the Commission of comprehensive regulations and a

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monitoring system pursuant to the mandate of Section 5637, governing the safety and construction of LNG facilities within California.

In Phase I of OII 1, 43 days of duly-noticed public hearings in the matter of LNG safety were held before ALJ John J. Doran in San Francisco, Los Angeles, San Diego, and Santa Barbara between February 7, 1978 and July 14, 1978. The record includes 42 volumes of transcripts (4001 pages) and 138 exhibits. Witnesses were offered by Western Terminal and cross-examined by the parties on the site-specific subjects of geology, engineering, seismology, structural design, sea-state and weather conditions, marine operations, LNG risk assessment, fire protection, operating procedure, project reliability, and liability. The Commission staff presented evidence on the issues of geology, seismic design, missile hazards, vessel traffic, sabotage and security, berth availability, project reliability, safety and construction monitoring program, and overall safety of the proposed LNG facility. Intervenors sponsored testimony on the subjects of geology, seismology, wind and wave conditions at Point Conception, and indemnification. Respondent SDG&E testified about the nature of its operation at the LNG peak-shaving facility in Chula Vista, California.

Phase I of OII 1 was submitted in three parts: (1) on May 4, 1978, all Phase I matters, except those relating to seismicity; (2) on June 22, 1978, all seismic matters, except evidence relating to additional on-site geological and technical investigations and related ongoing studies; and (3) July 14, 1978, all Phase I matters were concluded, with final addendum briefs filed on July 19, 1978.

In late April the geological consultant employed by Hollister Ranch indicated his professional belief that a fault existed on the site. Consequently the Commission determined to sever the seismic issue from Phase I and require additional studies. The staff, by letter of May 2, 1978, requested Western Terminal to undertake specific seismic investigations in response to the contention concerning a fault on the site. Parties to the proceedings

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were advised during the May 4, 1978 hearing that additional seismic investigations would be required and were invited to participate. Further, a staff letter was sent to the parties in confirmation of that decision. The 32nd and last day of hearing on the Phase I issues, save seismicity, was May 4, 1978, with submission of concurrent briefs on May 30, 1978.

After nine days of additional hearings, from June 12 to June 22, the seismic issue, except for the additional trenching requested during the June 16 hearing, was submitted with concurrent briefs on June 30, 1978. Exhibits proposing changes in the seismic design criteria were identified during the June 22 hearing, but the matter was deferred to Phase II of this proceeding.

Exhibits respecting the requested June 16 trenching and related ongoing studies were scheduled to be filed by July 12. A one-day hearing was scheduled for July 14 in San Francisco, and addendumtype briefs were filed July 19. Phase I of OII 1 stood submitted.

Hearings on the proposed changes in the seismic design criteria, the proposed general order on LNG safety standards, and the construction and safety monitoring program are scheduled following the decision on the permit applications and constitute Phase II of this proceeding. All issues except Phase II are the subject matter of this opinion. Phase II will be the subject of a later opinion following additional hearings.

C. California Coastal Commission Proceedings

Following enactment of SB 1081, the CCC in October 1977 directed its staff to identify and evaluate possible mainland onshore LNG terminal sites. The staff sent letters to interested parties inviting site nominations for preliminary evaluation. By the December 1, 1977 deadline imposed in the invitation, 18 such sites had been nominated. The CCC staff itself nominated an additional 64 sites.

To determine which nominations should be legally retained as feasible for site ranking, the CCC staff evaluated the 82 locations[¬] according to the following criteria: population density, land and water characteristics, maritime conditions, seismic safety, and

coastal resources. Many of the 82 sites failed to meet the population density requirements of the Act. Others were eliminated because they were too near earthquake faults, or soil conditions were not suitable, or because adverse wind and wave conditions would prevent regular berthing of LNG tankers.

After receiving public comments and holding a staff workshop on the evaluation criteria, the CCC held a public hearing and voted, on January 31, 1978, to retain the following five sites (listed from north to south) for further study and ranking: Rattlesnake Canyon in San Luis Obispo County, Point Conception (Little Cojo) and Las Varas in Santa Barbara County, Deer Canyon in Ventura County, and Camp Pendleton in San Diego County. These five sites were those included in the CCC's preliminary report submitted to this Commission pursuant to Subsection 5612(b) of the Act.

Consultants retained by the CCC then evaluated these five sites in detail to determine whether engineering and maritime factors were suitable. Additional information and opinions on the sites were submitted by interested parties, including local, state, and federal agencies, affected property owners, and Western Terminal. As required by Section 5615 of the Act, the CCC held public hearings in April 1978 in each county in which a potential LNG site is located. These hearings were held in San Luis Obispo, Santa Barbara, the city of Port Hueneme, and Oceanside following public workshops conducted in each of the four counties by the CCC staff.

On May 5, 1978 the CCC staff issued its report to the CCC on site ranking and terms and conditions. The summary contained in the staff report reads, in part, as follows:

"Staff recommends that the Commission rank the potential LNG terminal sites in the following order:

- "1. HORNO CANYON on Camp Pendleton in San Diego County where a terminal would have the least adverse impacts on coastal resources.
- "2. RATTLESNAKE CANYON in San Luis Obispo County.
- "3. LITTLE COJO near Point Conception in Santa Barbara County.

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"4. DEER CANYON in Ventura County where a terminal would have the most overall adverse impact on coastal resources.

"Staff is recommending elimination of a fifth site at LAS VARAS in Santa Barbara County (Figure 1), due to the recently confirmed presence of a small active earthquake fault passing through the site. A similar fault has been identified at the LITTLE COJO site, which is nevertheless retained in the ranking because the LNG Terminal Act of 1977 requires that the Commission rank the site selected by Western LNG Terminal Associates in its application to the Public Utilities Commission (PUC)."

On May 24, 1978 the CCC met to vote on its final evaluation and ranking of the sites for the purpose of making its final report to this Commission as required by Subsection 5612(a) of the Act. Under date of May 31, 1978 the CCC transmitted its final report to this Commission. The CCC voted to rank the above four potential sites in the same order that had been recommended by its staff. The letter transmitting the report contained the following paragraph qualifying the CCC's ranking:

"The Commission's ranking is based on the thirty-one conditions which it adopted and which are contained in the final report. The Commission report also includes two resolutions, one urging consideration of offshore LNG terminal sites if it is not possible to approve an onshore site by July 31, 1978, and another urging that a vessel control system be developed for any approved site."

The CCC final report elaborates as to how its conditions affect Point Conception's ranking on page 27:

"With-conditions 23 through 28 which prohibit a seawater intake system and electric transmission lines at the site, require partial ingrounding of storage tanks, and provide for public access to the area, the overall adverse impacts of a terminal at this site would be moderately more severe than at the higher ranked Rattlesnake Canyon site, but slightly less severe than the lower ranked Deer Canyon site. If the PUC does not impose the specific conditions recommended for a terminal at Little Cojo, Little Cojo would be ranked fourth, with moderately more adverse impacts on Coastal Act objectives than Deer Canyon, which would then be ranked third."

In addition to its final report, the CCC transmitted the full public record of its study containing 2,098 entries. This Commission has incorporated the full CCC record into its own record in Application No. 57626. (See Section 5612.)

The following portions of the CCC "Final Report Evaluating and Ranking LNG Sites" have been extracted and attached to this opinion and order as Appendix D: "Summary"; Section II, "Terminal Site Ranking and Findings"; Section III, "Terms and Conditions"; and Section IV, "Commission Resolutions". Not included in Appendix D are the following parts of the CCC report: Section I, "Background"; Section V, "Staff Notes"; and Section VI, a list of "Substantive File Documents". A. 57626 et al. IM *

Section 5650 of the Act provides as follows:

"Not later than 12 months after the effective date of this chapter, the coastal commission shall complete a final study of potential offshore sites and types of terminals for such sites. Such study shall indicate the most appropriate offshore terminal site or sites, in the coastal commission's judgment, together with the most appropriate type or types of terminals for each such site.

The results of such study shall be transmitted to the commission, to the energy commission, to the Governor, and to each house of the Legislature."

On July 14, 1978 the CCC <u>staff</u> issued a <u>draft</u> report relating to the siting of an LNG facility at an offshore location. The <u>draft</u> report by the CCC staff concludes that "a floating-type LNG terminal at southeast Ventura Flats in the eastern Santa Barbara Channel (9-12 miles offshore from the cities of Ventura and Carpinteria) would be the most appropriate of all the alternatives evaluated."

Section 5584 of the Act precludes this Commission from issuing a permit for an LNG terminal whose storage and regasification facilities would be located offshore. Section 5564 of the Act defines "offshore" as "any location seaward of the mean high tide line of mainland California, including all islands." Therefore, an amendment to the Act would be required before this Commission could issue a permit for an LNG terminal at a site like Ventura Flats. D. Santa Barbara County Proceedings

Pursuant to Section 5636(c,d) of the Act, the County of Santa Barbara (County) submitted its recommendations to the Commission following more than 25 hours of public hearings before the County Planning Commission and an additional seven hours of public hearings before the County Board of Supervisors.

The County recommended that the Commission take the following actions:

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- "1. Accept and ultimately adopt as part of your Commission's action, if you approve the pending application for an LNG facility at Point Conception (A-57626), the terms and conditions developed by the County of Santa Barbara (attached, 29 pages), plus the <u>Addendum</u> to said document (attached, one page).
- "2. In the event that Las Varas remains as a proposed site in the LNG ranking recommendations approved by the Coastal Commission, that your Commission strongly consider the findings contained in this Board's letter, dated May 8, 1978 (attached, five pages), to the Coastal Commission requesting that Las Varas be deleted from further LNG ranking consideration.
- "3. That your Commission choose no sites this year under authority granted by the LNG Terminal Act of 1977, based upon the findings contained in this Board's Resolution No. 78-163, dated April 10, 1978 (attached), and this Board's letter to Assemblyman Gary Hart in support of AB 3098, dated April 11, 1978 (attached, seven pages).
- "4. That your Commission establish a Geotechnical Review Committee to review geo-seismic reports and field data on the Point Conception LNG Terminal site. The committee to consist of six persons experienced in geology, earthquake engineering, seismology, foundation engineering, or other related fields, three representatives from consulting firms, a member from the California Division of Mines and Geology, a member from the United States Geological Survey, and Mr. Wendell L. Nichols, Supervising Engineering Geologist, of the Santa Barbara County Public Works Department."

Included in the County's submittal was a comprehensive list of 142 terms and conditions which the County urged the Commission to make a part of any permit issued for an LNG terminal at Point Conception. These recommendations are attached to this decision as Appendix E.

E. Related Federal Proceedings - PacIndonesia

PacIndonesia filed with the Federal Power Commission (FPC) on November 30, 1973, in Docket No. CP74-160, pursuant to Section 3 of the Natural Gas Act, an application for authority to import from Indonesia into the United States an average daily quantity of
619.71 billion British thermal units (Btu) of LNG to be purchased pursuant to a contract with Pertamina.

On February 15, 1974 PacIndonesia filed another application with the FPC, in Docket No. CP74-207, pursuant to Section 7 of the Natural Gas Act, for authority: (1) to construct, own, and operate facilities for receiving, storing, and vaporizing the LNG; and (2) to sell the regasified LNG to SoCal. Subsequently PLC formed Western LNG Terminal Company to provide terminal facilities in place of PacIndonesia. Accordingly, on September 17, 1974 Western LNG Terminal Company filed with the FPC, in Docket No. CP75-83, to have the LNG terminal facilities at Los Angeles, Oxnard, and Point Conception. Western LNG Terminal Company filed a supplemental application on March 31, 1975, in Docket No. CP75-83-3, to locate at Oxnard the facilities required to provide terminal service to PacIndonesia.

A memorandum of understanding was signed by PLC and PG&E on January 27, 1976 under the terms of which (1) PLC and PG&E would participate equally in the management and operations of PacIndonesia and Western Terminal and (2) SoCal and PG&E would each receive half of the sales volume of regasified LNG.

On July 22, 1977 presiding Administrative Law Judge Gordon of the FPC rendered his Initial Decision in the PacIndonesia proceedings. In his decision ALJ Gordon granted PacIndonesia's application and approved Oxnard as the site for the LNG terminal. Subsequent to the enactment of SB 1081 and the filing of Application No. 57626 with this Commission, Western Terminal filed an amendment to its application to the FPC proposing Point Conception as an alternate site for an LNG terminal.

As a result of the Department of Energy Organization Act, the FPC was abolished and many of its functions transferred to the Federal Energy Regulatory Commission (FERC). However, import authorization was transferred to the Department of Energy (DOE), and the secretary of the DOE gave the administrator of the Economic Regulatory Administration (ERA) the authority to render a final

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decision in the PacIndonesia proceedings. On December 30, 1977 the ERA issued its Opinion Number One which conditionally authorizes (1) PacIndonesia to import LNG equivalent to 619.71 billion Btu per day over a 20-year period for sale to SoCal and PG&E and (2) Western Terminal to construct, own, and operate an LNG receiving terminal near Oxnard.

Findings and conclusions to the following effect were among those contained in the opinion:

The DOE determined that the PacIndonesia project involves a reliable and relatively secure source of gas which would help diversify our resources of LNG.

Due to limited flexibility in the California market to switch to other energy types because of its unique air quality problems, the DOE found that the delivered price of Indonesian LNG may be roughly equivalent to, or even lower than the incremental cost of true alternate sources for residential space heating purposes, such as synthetic natural gas (SNG) from imported naphtha or, perhaps, electricity available within the time frame of the PacIndonesia project.

Based upon projected future curtailments of existing and potential gas supplies for California, the DOE found that applicants have demonstrated the need for this supply.

The DOE found that an all-events, cost-of-service tariff as requested by applicants is not in the public interest. The DOE instead adopted a volumetric fixed tariff and minimum bill, with any rate changes subject to a filing pursuant to Section 4 of the Natural Gas Act. The DOE specifically disapproved automatic flow through of the price escalations under the PacIndonesia-Pertamina contract which are tied to changes in the price of Indonesia crude oil and changes in the Bureau of Labor Statistics (BLS) wholesale price index for fuels and related products. The DOE also rejected automatic flow through of escalations under the currency adjustment provision in the Pertamina contract. However, the DOE stated that it was disapproving only the specific escalators in the Pertamina contract. The DOE acknowledged that approval of flow through of costs associated with an escalator may be necessary to project financing and stated that it would be inclined to flow through costs under an escalator linked to an index that reflects world or domestic economic conditions.

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The DOE expressed general support for the concept of incremental pricing, but it recognized the difficulties of implementing that concept. In this connection, the DOE noted that under the principles implemented by this Commission, retail prices of gas consumed in California are designed to encourage conservation of scarce resources, which accomplishes a principal goal of incremental pricing.

Because it was the only location justified on the basis of the record, the DOE accepted conditionally the Oxnard terminal site originally proposed by applicants as acceptable, subject to certain safety and environmental requirements. The DOE stated, however, that it did not conclude that Oxnard is the only acceptable site. The DOE concluded that further proceedings would be necessary to evaluate applicants' proposed Point Conception site.

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On January 30, 1978 Western Terminal filed a petition for rehearing and clarification of ERA Opinion Number One. In its petition Western Terminal voiced the following specific areas of concern with the ERA decision:

- "(1) The position taken on the Pertamina contract escalation provision, coming without any warning, being in conflict with the Administrative Law Judge's approval, and departing from the precedent of the <u>Trunkline</u> decision, required that additional time be allowed through an Order on Rehearing to provide an opportunity for further discussions with Pertamina.
- "(2) The decision's rejection of the Pertamina contract currency adjustment provision indicates a misunderstanding of its operation. The currency adjustor operates upward and downward and contains both a ceiling and a floor. Therefore, the provision does afford 'equitable distribution of currency fluctuation risk between buyer and seller' and should be approved.
- "(3) The Administrator's approach to the siting issue requires the establishment of a reasonably concurrent siting procedure for an appropriate terminal site which will ensure a federal decision immediately following California's decision. This is imperative to avoid risking loss of the project.

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- "(4) The imposition of an extraordinary burden of proof on the recovery of equity lost as a result of operation at less than 90% of capacity is unreasonably harsh. At the very least, Applicants should be allowed to recover such lost equity (which is the normal recovery through depreciation of the cost of facilities dedicated to public service) by successfully meeting the traditional burden of 'justness and reasonableness' of the Natural Gas Act.
- "(5) Prohibiting the automatic flow through in rates of all costs as provided in the shipping contracts, including return of investment in the event of premature project abandonment, jeopardizes shipowners in this project.
- "(6) Rejection of Applicants' proposed cost-of-service tariff in favor of volumetric fixed rate requiring Section 4-type proceedings necessitates a permanent one-day suspension condition. Such a permanent condition will mitigate the loss of vitally needed and fully justified revenue to the Applicants and would accord more than adequate protection to the ratepayers.
- "(7) The imposition of the volumetric fixed rate requires that attention be focused on the economic impact on the Applicants during the start-up period when the volumes received are building to full capacity. It is imperative for the financial integrity of the Applicants that any costs incurred above amounts collected under the volumetric fixed rate or minimum bill during such start-up period be capitalized and amortized over the balance of the life of the project.
- "(8) Any procedure adopted relative to review of the construction process must not endanger the project's financeability by limiting the ability of the project to commence operations after completion of construction.
- "(9) The decision's requirement for obtaining various state and local approvals is not appropriate due to the enactment by the California Liquefied Natural Gas Terminal Act of 1977 which places the state and local permitting jurisdiction solely with the California Public Utilities Commission."

By order dated February 28, 1978, ERA granted rehearing in the * PacIndonesia proceeding for the purpose of further consideration of its order of December 30, 1977. This Commission has filed responses

to Western Terminal's petition for rehearing. To date ERA has not issued an order on rehearing.

F. Related Federal Proceedings - PacAlaska

On November 11, 1974 PacAlaska filed an application with the FPC for a certificate of public convenience and necessity under Section 7 of the Natural Gas Act. PacAlaska's application contemplated the transportation of LNG from south Alaska to an LNG terminal facility on Terminal Island in the Los Angeles Harbor. The PacAlaska project consists of two phases each having an annual average equivalent of 200 million cubic feet per day (MMcfd) of natural gas. As of the present time, PacAlaska has entered into gas purchase agreements in varying amounts with the following producers: Atlantic Richfield Company, Chevron U.S.A. Inc., Shell Oil Company, Pacific Lighting Gas Development Company, Cities Service Company, and Pacific-Simpco Partnership.

Formal hearings before the FPC commenced on June 21, 1976. Those hearings have continued up until the time of the filing of Application No. 57626 with this Commission. Thus far more than 50 days of hearings have been held on PacAlaska's application. On November 15, 1977 PacAlaska amended its federal filing to substitute Point Conception in place of the Los Angeles Harbor as the site of the proposed LNG terminal facility. The presiding ALJ has accepted as evidence in the PacAlaska proceeding, the PacIndonesia filings with the ERA and FERC on the Point Conception site. The PacAlaska matter is currently pending in this posture before the FERC.

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III. ESTIMATED BASE CASE SUPPLY

Exhibit C-68 sets forth the staff's estimated base case supply levels. The base case supply levels are identified as including gas estimated to be available from traditional sources plus supplemental supplies from offshore southern California and the Rocky Mountains, and from the southwestern United States through the exploration and developments efforts of a SoCal affiliate. Deliveries from the listed supplements are estimated by the staff to be relatively assured. The staff's base case supply estimates are set forth below:

Base Case Supply

(Million Cubic Feet per Day)

Year	Northern <u>California</u>	Southern California
	Recorded	
1972 1973 1974 1975 1976	2774 2695 2352 2319 2282	2679 2566 2398 2252 2132
	Estimated	
1977 1978 1979 1980 1981 1982 1983 1984 1985 1985	2213 (2194)* 2060 1966 1876 1804 1741 1700 1663 1653 1453	2058 (2115)* 1928 1765 1636 1527 1448 1396 1337 1287 1287 1236
1988 1989 1990	1125 1076 922	1131 1088 1034

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In Exhibit C-70 the staff compared the base case supply estimates provided by the parties in this proceeding. Tables 1 and 2 on the following two pages reflect the supply comparisons contained in the staff exhibit.

The Commission staff comparison sets forth two estimates for the ERCDC since the ERCDC study submitted March 15, 1978 did not include a recommended forecast. The concurrent brief of the ERCDC filed May 30, 1978 (see ERCDC brief, page 17, Table 4, column (2)) recommends that its "Case A" estimates be used for <u>firm</u> supplies. The ERCDC's forecast of available firm supplies is set forth in its brief as a combined total for northern and southern California. Since firm supplies are identified as traditional supplies <u>only</u>, ERCDC's recommended levels are lower than its combined North-South "Case A" estimates shown in Tables 1 and 2.

In order to make a comparison of the basic supply estimates of the parties consistent with ERCDC's recommended forecast, Tables 1 and 2 must be combined to form statewide traditional and base case supply comparisons. Such comparisons follow:

COMPARISON OF STATE	EWIDE SUPPI	LY ESTIMATE	<u>s</u>
Tradition	hal Sources	5	
	1980	<u>1985</u>	1990
	(Million	Cubic Feet	per Day)
Combined PG&E-SoCal	3421	2759	1509
ERCDC (Recommended)	3367	2824	1717
RPA	3314	2562	1488
Staff	3487	2820	1803
Ba	se Case		· •
Combined PG&E-SoCal	3457	2866	1691 -
ERCDC (Case A)	3423	2999	1912
RPA	3418	2930	1884
Staff	3512	2940	1956

ERCDC also reproduces material from CPUC Staff Exhibit C-70 as set forth on pages 143 and 144 of its concurrent brief. However, ERCDC erroneously cites the source of material as Exhibit No. C-66 - the ADA submittal.

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TABLE 1

Northern California Base Case Supply Comparison of Estimates

(Ease supplies include Traditional & Rocky Mountain)

	<u>1978</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>
	(M1111	ion Cubic	Teet per	: Day)
PG&E Exhibit C-33 Table VIII	•••			5 80
California Gas	292	250	207	107
El Paso	707	597	433	370
P.G.T.	1014	1010	957	0.5
Blocks	2014	1870	1618	770
		•		
ERCOU SUEDBLY FIX. IV-7, Case R	331	296	221	9 6
	714	610	516	446
Cenedian	1020	1020	953	200
Rocky Mountain	10	- 30	100	100
Rocky modeled	0075	1056	1 700	24.2
	2075	T220	7130	042
ERCDC Summary Fig. IV-7, Case B				•
Contract Volume	331	296	221	96
El Paso, Casa B	727	648	591	533
Canadian	1020	1020	953	200
Rocky Hountain	10	30	150	170
	2088	1994	1915	999
RPA Exhibit 2.b			2	
Base Supply	1997	1758	1381	457
El Paso	18	36	- 68	91
California	17	40	100	137
Rocky Mountain	<u></u>		193	142
•	2040	.1895	1742	878
Staff Vol. V. Page 5				
Canadian	1020	1020	953	200
California	327	253	187	174
El Paso	713	603	458	473
Rocky Mountain "	Q	Ū	20	20
Solid Waste Conversion			2	
	2060	1876	1653	922

Note: California produced gas under contract to PGEE is variously referred to as "California Gas", "Contract Volume" and "California". Canadian gas delivered by Pacific Gas Transmission Company (PGT) is referred to as "P.G.T.", "Canadian" or included in "Base Supply". El Paso deliveries also included in "Base Supply" (RPA). ٦.

TABLE 2

- Southern California Base Case Supply Comparison of Estimates (Base supplies include Traditional, Yed. OCS, Pac Interstate)

• • • • • • • • • • • • • • • • • • • •	1978	1980	1985	1990
	(Million	Cubic T	eet per	Day)
Socal Exhibit C-40, Table 1	104	東京	45	25
California Producers	8	6	2	2
Receipts IION VINEL VIILLAN	1374	1188	971	622
Transvestern	405	270	124	91
Federal Offshore	7	15	79	151
Pac Interstate	<u>13</u>	20		
·	1911	1587	1248	921
ERCDC Summary Fig. IV-8, Case A	113	Ô/	47	27
California	1216	1040	879	759
El Paso, Case A	384	302	206	189
Transwestern, Case A	7	5	2	0.
Pac Toterstate	12	20	25	30
OCS (Supplemental)	1	6	50	5
	1733	1467	1209	1070
ERCDC Surpary Fig. IV-8, Case B		0/	47	27
California	1238	1103	1005	907
El Paso, Case B	399	344	290	294
Transwestern, Case D	7	5	2	0
Des Interstate	12	20	25	30
OCS (Supplemental)	1	6	50	<u></u>
	1770	1572	1419	1323
RPA Exhibit 2.c	1690	1112	761	508
Base Supply	1000	63	117	156
El Paso	47	82	114	119
Transvestern Cold forma o	Ö	16	· 21	20
Ted OCS	2	24	146	<i>*</i> 166
Pac Interstate	5	25	29	
	1766	1.523	1188	1006
Staff Vol. V. Page 5				676
El Paso	1364	1182	9/0	0/0
Transvestern ·	406	220	40 47	27
California	10	20	27	30
Pac Interstate		5	2	Ō
Yed, OCS (Traditional)	1	5	38	68.
Short-Term Conventional Das	25	Ŏ	0	
	1028	1636	1287	1034

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Beyond any insight provided by the comparisons set forth on page 31, the combined statewide supply estimates have no value for they imply that the supplies available to PG&E and SoCal are fungible. As discussed in detail <u>infra</u>, the implied fungibility does not now exist in either a physical, or a regulatory sense.

A. Differences in Traditional and Base Case Supply Estimates

An examination of the comparisons of statewide traditional and base case supply estimates set forth on page 31 discloses no substantial differences in the estimates of various parties through 1985. After 1985, utility and RPA estimates show a greater rate of decline in the gas available to California from traditional sources than either the staff or ERCDC.

In developing forecasts of supplies available from the southwestern United States, the utilities relied on projections of the interstate pipelines which acquire and transport the gas to California from this traditional source. In its estimates of the gas available from Transwestern Pipeline Company (Transwestern), SoCal assumed that no net reserves would be added to the system during the forecast period. The assumption that this major interstate pipeline will acquire no new gas from the southwestern producing basins over the next 12 year period contributes significantly to the lower estimates of the utility, and is not supported by the record.

Both the staff (see Exhibit C-1) and a Rand Corporation employee retained by ERCDC (see Exhibit C-82), made detailed evaluations of the potential for reserve additions in the southwestern producing basins serving California. The studies included projections of expected levels of overall reserve additions in each of the producing basins, and the estimated portion of such additions expected to be acquired by the pipelines serving California.

The staff estimates of levels of deliveries from traditional sources submitted in Exhibit C-1 on September 30, 1977, and the ERCDC recommended levels shown on Table 4 of its concurrent brief submitted May 30, 1978, are essentially identical, and both are better supported on the record than the estimates of other parties. Either of the estimates forms a reasonable supply base on which to consider the need for supplemental supplies. However, the staff estimates clearly present the necessary breakdown between northern and southern California and will be adopted.

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IV. ESTIMATED CUSTOMER REQUIREMENTS

A. Priority Rights for Customer Classes

Historically, the California distribution utilities under the jurisdiction of the Commission provided service to customers on a firm/interruptible basis. By Decision No. 85189, dated December 2, 1975, we eliminated the firm/interruptible distinction and established end-use service procedures. By Decision No. 86357 we made minor modifications to the procedures established in Decision No. 85189. Under the end-use procedures, customers and use are classified as follows:

1.1

<u>Priority</u>	Definitions
l	All residential use regardless of size.
	All other use with peak-day demand of 100 Mcf/d or less.
28	Where primary use is as a feedstock
	Non-residential use with peak-day demands greater than 100 Mcf/d and previously classified as firm: where alternate fuel is not feasible where alternate fule is feasible*
	Electric utilities start-up and igniter fuel.
28	Customers with LPG or other gaseous fuel stand-by facilities and peak-day demands greater than 100 Mcf/d and where an alter- nate fuel is not feasible.
3	All use not included in another priority.
4	Boiler fuel use with peak-day demand greater than 750 Mcf/d.
	All use in cement plant kilns.
5	Utility steam-electric generating plants _ and utility gas turbines

Uses classified as 2A and alternate fuel feasible were to be transferred to an appropriate lower priority by December 2, 1977. By Decision No. 87784 the Commission extended the deadline for transfer to October 1, 1978, and in Decision No. 88664 further extended the deadline to October 1, 1979.

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Under the Act high priority requirements of natural gas mean requirements that, when satisfied, will maintain employment, essential-residential consumption levels, and air quality (Section 5560). ERCDC assumes that Priority 1 (P1), Priority 2 (P2), Priority 3 (P3), and Priority 4 (P4) are within the definition of high priority requirements for natural gas (See ERCDC Concurrent Brief - Page 2), and characterizes any gas estimated to be available to Priority 5 (P5) -electric utility requirements - as surplus. There is no evidence on the record in this proceeding to support the classification of P5 deliveries as "surplus" or "low priority". In fact, the air quality evidence that is on the record tends to support the contrary (See Exhibit C-46).

It is our-ultimate desire to serve as much P5 demand as we may be capable of meeting. Such use has enormous social, financial, and health benefits for the people of this state. Mere deferral of added capital investment in new plant is one such benefit, the air quality issue, of which southern Californians should be so aware over the last two weeks when power generating plants would have been shut down, in the absence of gas for boiler fuel, causing loss of air conditioning capability in the midst of a heat wave is another. Japan is now importing high priced LNG for just such use because its leaders are well aware of the benefits to the public of a clean burning fuel for electric generation.

B. <u>Priority 1 and Priority 2A Requirements</u>

The Pl category includes residential and small commercial, institutional and industrial customers. The P2A category includes large commercial and institutional customers with gas using equipment incapable of using a non-gaseous fuel, large industrial applications requiring precise temperature controls and precise flame characteristics, and industrial feedstock requirements.

There are approximately 6.7 million customers in the Pl, P2A categories, or over 99 percent of all customers served by the utilities under Commission jurisdiction. The essential distinction between the Pl, P2A categories and the P3, P4, P5 categories is that the A. 57626 et al. ALT.-RDG-IM

Pl, P2A categories are occupied by customers with gas using equipment incapable of being technically or economically converted to a non-gaseous fuel while P3, P4, P5 users have the ability to use fule oil in the absence of natural gas.

The residential, commercial and institutional sectors within the Pl, P2A categories use a large portion of their total requirements



The staff presented a comparison of the estimated natural gas requirements of the parties (Exhibit C-70). The comparisons are expressed in annual average daily quantities for an average weather year.

Table 3 (from Exhibit C-70) sets forth northern and southern California Pl, P2A estimated requirements comparisons. Table 4 sets forth northern and southern California P2B, P3, P4 requirements comparisons.

TABLE 3

P1 & P2A NATURAL GAS REQUIREMENTS AVERAGE WEATHER YEAR COMPARISON OF ESTIMATES

Northern California

	1 <u>978</u> (Million	1980 Cubic Feet	<u>1985</u> per Day)	1990
PG&E Exhibit C-33, Table IX	1118	1148	1190	1179
ERCDC Appendix A, Table II-3 ERCDC Appendix B, Tables 1 & 2	1127 0	1131 65	1139 _129	1147 141
ERCDC Estimates with Conservation	1127	1066	1010	1005
ADA Table 3.2, Page 3-13	1167	1194	1285	1364
Staff Exhibit C-31, Page III-38	1036	1036	1096	1179

Southern California

_	1978	<u>1980 </u>	<u>1985</u>	<u>1990</u>
	(Million	Cubic	Feet per Day)	
PLS Exhibit C-43	1507	1538	1665	1819
ERCDC Appendix A, Table II-5 ERCDC Appendix B, Tables 1 & 2	1529 0	1527	1495 157	1468 170
ERCDC Estimates with Conservation	1529	1443	1338	1298
ADA Table 3.2, Page 3-13	1526	1545	1620	1716
Staff Exhibit C-31, Page III-38	1436	1445	1529	1650

TABLE 4

P2B, P3, P4 Natural Gas Requirements Average Weather Year Comparison of Estimates

Northern California

	<u>1978</u>	<u>1980</u>	<u> 1985</u>	1990
	(Million	Cubic	Feet per	Day)
PG&E Exhibit C-33, Table IX	505	487	493	505
ERCDC Appendix A, Table II-3 ERCDC Appendix B, Tables 1 & 2	465 0	450 50	440 	445 94
ERCDC Estimates with Conservation	465	400	363	351
ADA Table 3.2, Page 3-13	640	640	640	640
Staff Vol. V, Page 20	580	593	593	593
Southern Calif	ornia			;
	<u>1978</u>	<u>1980</u>	<u>1985</u>	1990
	(Million	Cubic	Feet per	Day)
PLS Exhibit C-43	582 ⁻	601	595	589
ERCDC Appendix A, Table II-5 ERCDC Appendix B, Tables 1 & 2	448 0	437 54	425 83	428
ERCDC Estimates with Conservation	448	383	342	327
ADA Table 3.2, Page 3-13	620	620	620	620
Staff Vol. V, Page 18	574	570	570	569



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In Tables 3 and 4 the Commission staff used ERCDC estimates from Appendix A (Exhibit C-78) and Appendix B (Exhibit C-79) of the ERCDC report filed March 15, 1978. <u>This ERCDC report did not set</u> forth recommended forecast. The ERCDC brief dated May 30, 1978 sets forth the ERCDC recommended base case demand (Table 4, Col. 9). The ERCDC recommended base case demand is a statewide Pl through P4 demand forecast. It does not provide a breakdown of demand between northern and southern California, or between priorities. Further, no warm or cold year estimates are provided.

Although the ERCDC recommended base case demand forecast did not provide a sectional or priority breakdown, the combined statewide Pl through P4 requirements from Appendix A (Exhibit C-78), as reflected on Tables 3 and 4, match the ERCDC recommended base case forecast and we can therefore derive comparisons as follows:

COMPARISON OF STATEWIDE DEMAND ESTIMATES

1980	1702	1990
(Million	Cubic Feet	per Day)
2686	2855	2998
2658	2634	2615
2739	2905	3080
2481	2625	2829
	<u>1980</u> (Million 2686 2658 2739 2481	1980 1985 (Million Cubic Feet 2686 2855 2658 2634 2739 2905 2481 2625

The ERCDC statewide base demand forecast of Pl, P2A requirements is identical to the Commission staff estimates by 1985, although lower in the early years. Both are significantly lower, throughout the forecast period, than the estimates of the utilities and ADA. The Commission staff estimates include warm and cold year PL, P2A requirements as well as the requirements listed in the above comparisons. The range of the staff Pl, P2A forecast is 2215-2700 MMcfd in 1980 increasing= to 2512-3088 MMcfd by 1990. (Exhibit C-31, pages III-38, 39, 40)

21, P2A Requirements

In Section V we will develop base case supply-demand relationships over_the entire range of Commission staff estimates which will encompass_the entire range reflected above.

C. Priority 2B, Priority 3, and Priority 4 Requirements

The P2B category is primarily industrial process use with applications requiring precise temperature controls and precise flame characteristics. P2B end-users could not be equipped to use fuel oil without damage to the equipment or a sacrifice of product quality. The P2B process use is identical to the process use included in P2A, and both are classified as simply P2 at the federal level. The distinction made at the state level results from the fact that certain process users had liquified petroleum gas (LPG) standby facilities and, consequently, greater flexibility - at the time the state procedures were adopted; hence the P2B distinction.

The P3 category includes industrial process users capable of using fuel oil without damage to existing gas burning equipment or a sacrifice of product quality. P3 also includes commercial, institutional, and industrial boiler fuel use with peak-day requriements between 100 and 750 Mcf.

Priority 4 includes commercial, institutional and industrial boiler fuel use with peak-day requirements in excess of 750 Mcf. P4 also includes cement plant kilns which have - subsequent to the adoption of state curtailment procedures - largely converted, or plan to convert, to the use of coal.

P5 requirements are large boiler fuel requirements for electric generation and includes electric utility gas turbine requirements. The P5 requirements are not analyzed herein, because the gas available has not been sufficient to serve the total needs of P5 for a number of years, and, since P5 is the first priority curtailed, the amount of gas available is simply the amount left over after the P1 through P4 requirements are satisfied.

Fundamental differences in the nature of Pl, P2A requirements ⁻ and requirements in the lower categories emphasize the necessity to consider such requirements separately.

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A comparison of the P2B, P3, P4 requirements estimates of various parties appears below. The data are derived from Table 4, combined to be consistent with the ERCDC final recommended base case demand forecast.

COMPARISON OF STATEWIDE DEMAND ESTIMATES

P2B, P3, P4 Requirements (Million Cubic Feet Per Day)

	1980	<u>1985</u>	1990
PG&E - SoCal	1088	1088	1094
ERCDC (Recommended)	887	865	873
ADA	1260	1260	1260
CPUC	1163	1163	1162

The ERCDC final recommended P2B, P3, P4 requirements forecast is significantly lower than all other parties although, as in the case of all other parties, its forecast remains essentially constant after 1980.

The CPUC staff did not forecast P2B, P3, P4 requirements but, instead, provided the actual 1976 calendar year requirements adjusted to eliminate the requirements of cement plants (Exhibit C-63, page 20). The CPUC staff assumes that future P2B, P3, P4 requirements will be at the 1976 level as adjusted for the elimination of cement plant requirements.

There is merit to the ERCDC contention, implicit in its forecast, that actual P2B, P3, P4 requirements will drop significantly by 1980. In fact, a significant drop has already occurred. The initiation of crude oil deliveries from Prudhoe Bay and the reduced fuel oil requirements for electric generation - resulting from favorable hydro conditions - have contributed to a residual fuel oil "glut" on the west coast. This glut, in turn, has resulted in residual = fuel oil "spot" prices significantly lower than the price of natural gas delivered to the P3 and P4 customer, as set by this Commission.

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Consequently some large customers have opted for the use of the lower cost_fuel oil, although they remain connected to the gas distribution systems.

It is clear that the policy of regulatory Commissions could make low forecasts of P3, P4 requirements for natural gas, and a consequent reliance on fuel oil, a "self-fulfilling prophecy". That policy is not our policy, and it would therefore, be a mistake to extrapolate the present dynamics into the 1980's - a period critical to this decision. The two major areas where regulatory actions will have an effect on future P3, P4 requirements are: 1) Rate Design, and 2) Curtailment procedures.

In the first area, we made our policy clear in letters dated July 12, 1978, to the Joint House/Senate Conference Committee on Natural Gas Fricing and to the Members of the California Congressional Delegation. In our letter we joined Dr. Charles J. Cicchetti, Chairman of the Wisconsin Public Service Commission, in opposing certain incremental pricing provisions contained in the proposed National Energy Act. We expressed a policy of pricing gas to P3, P4 customers consistent with alternate fuel costs. In doing so, we noted that to impose incremental costs solely on industry would result in industries switching to imported fuel oil rather than paying both a higher price for gas and accepting the low priority they receive, as well as the uncertainty concerning gas availability. We also noted the backlash on residential customers as a greater portion of distribution fixed costs will be necessarily ground into residential natural gas rates.

The appropriateness of continuing the moratorium on connecting new P3 and P4 customers established by Decision No., 85189, consistency of state curtailment criteria with federal curtailment criteria, and the incorporation of energy efficiency considerations into the state curtailment procedures, are matters that we must consider in the near future.

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The moratorium on connecting new P3, P4 customers was established by_Decision No. 85189 dated December 2, 1975. The reasoning behind the establishment of the moratorium included reports from Canada indicating a strong possibility of curtailment of the existing export permits. The projected curtailment of Canadian deliveries combined with the existing, and continuing, decline in gas available from domestic sources introduced the possibility of a serious decline in the gas available for the existing P3 and P4 customers. It later became apparent that the effective Canadian export permits would likely be honored - a likelihood clearly supported on the record in this proceeding. Continued deliveries of Canadian gas at contract levels and the conservation achieved by the higher priorities, combined with our order herein, will assure continued high levels of service to P3, P4 customers and we will consider, in the appropriate proceeding (Case No. 9642), a lifting of the moratorium.

The curtailment procedures adopted by Decision No. 85189 and modified by Decision No. 86357 were established as interim procedures, and are modeled on the federal procedures applicable to California's major interstate supplier, El Paso Natural Gas Company (El Paso). El Paso's curtailment procedures are also interim in nature. Although the structure of the two curtailment plans is similar, the criteria for the classification of various users and/or uses differ substantially. An example is the D. C. Circuit remand of FPC Opinions Nos. 697 and 697A - the Opinions underlying El Paso's interim procedures - wherein the court held, among other things, that electricity generating turbines must not be classified with boilers, in P4 and P5 but are entitled to a higher priority. As shown on page 35 herein, electricity generating turbines are still classified as P5 at the state level.

The necessity to maintain consistency with the federal priority criteria stems from the requirements of Section 2771 of the Public

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Utilities Code, which requires the Commission to establish priorities, and provides in pertinent part, as follows:

"The Commission shall establish no such priority after the effective date of this Chapter which will cause any reduction in the transmission of gas to California pursuant to any federal rule, order or regulation."

The allocation mechanics under the federal procedures are such that the assignment of a lower priority at the state level for a given end use can result in a reduction in California's share of El Paso's supplies. We therefore will consider changes in the state criteria in a manner consistent with the federal criteria. The reclassification of electric utility gas turbines from P5 to P3 would increase P3 requirements significantly.

By Resolutions Nos. G-2210, G-2228 and G-2231 we recently approved natural gas service for cogeneration plants with peak-day gas requirements of 32.5 MMcf in the P3 category. The approvals for service were requested as a deviation from the effective procedures. We will give consideration to modifications that will result in providing gas for future cogeneration projects under the effective procedures without the necessity to approve deviations on a case by case basis.

1. Conclusions on P2B, P3, P4 Requirements

The level of future P2B, P3, P4 requirements will largely be determined by regulatory policy and regulations in the area of rate structure and curtailment procedures. Unlike P1, P2A forecasts, mere mechanical forecasting is of little value. Since the parties to this proceeding could not have anticipated future regulatory actions, we do not have before us an acceptable estimate of future P2B, P3, P4 requirements. For purposes of the base case supplyrequirements relationships which we develop in Section V herein, we will use the P2B, P3, P4 requirements provided by the staff. We² recognize that such requirements are nothing more than recorded requirements for the year 1976 excluding cement plant kiln requirements, and, because of the present "soft" market for residual fuel-

oil, may be overstated for the short-term. The only conceivable result of <u>a</u> short-term overstatement of P2B, P3, P4 requirements is the delivery of higher than estimated quantities to other "high priority" users who would otherwise be forced to use fuel oil. D. <u>Gas Savings Attributable to Conservation Programs</u>

The staff provided estimates of the potential gas savings attributable to various state mandated and Commission/utility related conservation programs. (Exhibit C-31, Chapter 4). These estimates were used to reduce the staff's forecast of gas requirements.

The ERCDC also provided estimates of gas savings from various conservation programs and measures ("Concurrent Brief of the California Energy Commission", May 30, 1978, Table 2). Natural gas savings included in the ERCDC base case demand reflect those from state mandated standards, and water heater and swimming pool retrofits. Savings from other programs and measures, including solar savings, are not reflected in the ERCDC's base demand case.

The tabulation below summarizes the gas savings estimated by the staff and ERCDC to be achievable by 1990. Residential $\underline{Staff} = \underline{ERCDC}^{\underline{C}}$

	(Million Cub	ic Feet per Day)
State Standards Residential Bldgs. Residential Appliances	118 90	
Subtotal	208	408 *
Staff/Utility Programs		
Ceiling Retrofit Wall Retrofit Furnace Pilot Turn Off & Relight Retrofit Water Heating Programs Swimming Pool Heating Miscellaneous Space Heating Program	122 15 8 30 106 13 <u>65</u>	83 17 4 ** 58
Subtotal	346	162

Also includes water heater retrofits and swimming pool retrofits

** Included in state standards

<u>c</u>/ Table 2, "Concurrent Brief of the California Energy Commission", May 30, 1978

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Solar Water Heating Solar Thermal Applications-	69	119-161
Total Residential	623	689-731
Non-Residential		
Commercial and Industrial Programs Total	<u>105</u> 728	<u>3465</u> / 1035–1077

- Pl and P2A savings <u>a</u>/
- Pl P4 savings
- <u>२</u> २ Solar water and space heating

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V. BASE CASE SUPPLY-REQUIREMENT RELATIONSHIPS A. Average, Cold, and Warm Year Relationships

The adopted base case supply and base case requirements forecasts are used to develop the supply-requirement relationships in Tables 5, 6 and 7. The purpose of developing base case relationships is to determine the curtailment that would occur if <u>no</u> supplemental supplies are acquired and, thus, the quantity of supplements needed to avoid the derived curtailment.

The range of essential data derived from Tables 5, 6, and 7 are as follows:

Southern California

Warm Weather Conditions

- 1. P5 is totally curtailed in 1979 and P4 curtailment begins.
- 2. P2B, P3, P4 is totally curtailed by 1984 and transfers from PG&E begin.
- 3. P2A curtailment begins in 1987.

Cold Weather Conditions

- 1. P5 is totally curtailed in 1978 and P4 curtailment begins.
- 2. P2B, P3, P4 is totally curtailed by 1981 and transfers from PG&E begin.
- 3. P2A curtailment begins in 1986.

Northern California

Warm Weather Conditions

- 1. P5 is substantially curtailed in 1978.
- 2. Transfers to SoCal begin in 1984.
- 3. P5 is totally curtailed in 1986, and P4 curtailment begins.
- 4. P2B, P3, P4 is totally curtailed by 1987.

5. P2A curtailment begins in 1990.

Cold Weather Conditions

- 1. P5 is substantially curtailed in 1978.
- 2. Transfers to SoCal begin in 1981.
- 3. P5 is totally curtailed in 1982 and P4 curtailment begins.
- 4. P2B, P3, P4 is totally curtailed in 1986.

5. P2A curtailment begins in 1987.



TABLE 5

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RELATIONSHIPS

BASE CASE SUPPLY REQUIREMENT

Cold Weather Year (MMcfd)

	Requirements			Base Case	North to South *	Shortfall Pl.P4	Deliveries to pc	
Year	P14P2A	P2B&P3&P4	Total	Supplies	TIRDSIEIS	Komen		
		No	therm (alifornia		• •		
1978 1979 1980	1,115 1,125 1,119	580 599 593	1,695 1,724 1,712	2060 1966 1876	000	0 0 0	365 242 164	
1981 1982 1983 1984 1985	1,130 1,141 1,153 1,172 1,188	593 593 593 593 593 593	1,723 1,734 1,746 1,765 1,781	1804 1741 1700 1653 1653	(73) (171) (243) (321) (390)	0 164 289 423 518	8 0 0 0 0	
1986 1987 1988 1989 1990	1,204 1,221 1,239 1,254 1,279	593 593 593 593 593	1,797 1,814 1,832 1,847 1,872	1453 1140 1125 1076 922	(249) 0 0 0	593 674 707 771 950	00000	
		S	outhern	California	•			
1978 1979 1980	1,566 1,574 1,581	574 574 570	2,140 2,148 2,151	1928 1765 1636	000	212 383 515	000	
1981 1982 1983 1984 1985	1,600 1,619 1,639 1,658 1,677	570 570 570 571 570	2,170 2.189 2,209 2,229 2,247	1527 1448 1396 1337 1287	73 171 243 321 390	570 570 570 571 570	000000	
1985 1987 1988 1989	1,703 1,730 1,756 1,783 1,809	570 569 570 56 9 569	2,27 2,29 2,32 2,35 2,35	3 1236 9 1169 6 1131 2 1088 8 1034	249 0 0 0	788 1130 1295 1264 1344	0000	

Transfer necessary to satisfy Southern California Pl and P2A requirements. 4

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Note: The staff analysis assumed that P2B customers were to be protected under the mutual assistance provisions of D.85189. In the order berein the provisions for mutual assistance will be modified and clarified.



TABLE 6

BASE CASE SUPPLY REQUIREMENT RELATIONSHIPS

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Normal	Weather	Year
	(MMcid)	

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	Requirements			Base Case	North to South *	ShortIALL Pl_P4 Romts	to P5
Year	P14P2A	P2B&P3&P4	Total	Supplies	TIBUDICIA	1.4	-
		Nort	hern Calif:	ornic			
1978	1,036	580 599	1,616 1,643	2060 1966	000	000	111 323 247
1980	1,036	593	1,629	1010	v	-	-66
1981 1982 1983 1984	1,045 1,055 1,064 1,082 1,096	593 593 593 593 593 593	1,638 1,648 1,657 1,675 1,689	1804 1741 1700 1663 1653	0 (31) (99) (175) (242)	0 56 187 278	0 62 65
1986 1987 1988 1989 1989	1,111 1,126 1,142 1,155 1,179	593 593 593 593 593	1,704 1,719 1,735 1,748 1,772	1453 1140 1125 1076 922	(317) (14) 0 0	568 593 610 672 850	0000
		So	uthern Cali	fornia			
1978 1979	1,436 1,441 1,445	574 574 570	2,010 2,015 2,015	1928 1765 1636	000	82 250 379	000
1981 1982 1983 1984	1,462 1,479 1,495 1,512	570 570 570 571 571	2,032 2,049 2,065 2,083 2,099	1527 1448 1396 1337 1287	0 31 99 175 242	505 570 570 571 570	00000
1985 1986 1987 1988 1989 1989	1,529 1,553 1,577 1,602 1,626 1,650	570 569 570 569 569	2,123 2,146 2,172 2,195 2,219	1236 1169 1131 1088 1034	317 14 0 0	570 963 1041 1107 1185	00000
+ Tra	nsfers nec	essary to se	tisfy South	bern Califor	nis Pl and I	24 require	ments.

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TABLE 7

BASE SUPPLY REQUIREMENT RELATE SHIPS

Warm Weather Year (MMcfd)

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	Require		Total	Base Case Supplies	Forth to South Transfers	Shortfall Pl-P4 Rqmts	Deliveries to P5
Year	PLEPZA	Yo	rthern C	lifornia	,		
1978 1979 1980	927 932 922	580 599 593	1,507 1,531 1,515	2050 1965 1876	0 0 0	000	553 435 361
1981 1982 1983 1984 1985	929 935 942 956 968	593 593 593 593 593	1,522 1,528 1,535 1,549 1,561	1804 1741 1700 1663 1653	0 0 (10) (74)	00000	282 213 165 104 18
1986 1987 1988 1989 1989	981 994 1,008 1,019 1,041	593 593 593 593 593	1,574 1,587 1,601 1,612 1,634	1453 1140 1125 1076 922	(147) (146) (117) (57) 0	258 593 593 593 712	00000
		<u>1</u>	Southern	California	:		
1978 1979 1980	1,291 1,292 1,293	574 574 570	1,865 1,866 1,863	1928 1765 1636	000	0 101 227	63 0 0
1981 1982 1983 1984 1985	1,307 1,320 1,334 1,347 1,361	570 570 570 571 570	- 1,877 1,890 1,904 1,918 1,931	1527 1448 1396 1337 1287	0 0 10 74	350 442 508 571 570	00000
1986 1987 1988 1989 1990	1,383 1,405 1,427 1,449 1,449	570 569 570 569 569	1,953 1,974 1,997 2,014 2,014	1236 1169 1131 3 1088 0 1034	147 146 117 57 0	570 659 749 873 1005	00000

Transfers necessary to satisfy Southern California Pl and P2A requirements

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B. Impact of Curtailment

A number of parties presented testimony on the environmental and economic impact of a decline in natural gas supplies. No party suggested that residential and commercial use must not be protected. The disagreement among the parties arose over the magnitude of losses (or costs) associated with curtailment of lower priority customers (P2A(t), P3, and P4).

The disparity in the figures presented is not surprising. The evidence presented by GM was based upon the critical gas shortages of the past winter. The staff used the results of a survey of P2A(t), P3, and P4 customers of PG&E, SoCal, and SDG&E (over 70 percent replied).

A witness on behalf of GM described the short range effects of curtailment on GM operations resulting from unusually severe weather-related gas shortages during the winter of 1976-77. In the winter of 1976-77, GM faced gas curtailments in nine states (Ohio, Indiana, Wisconsin, New York, Georgia, Kansas, New Jersey, Maryland, and Alabama). At the peak of the shortage, GM had seven plants completely shut down while 22 others maintained limited production schedules. The FEA estimated employee layoffs nationally at close to 2 million in 19 states. Layoffs of GM employees peaked at about 93,000. Through mid-February 1977, GM lost 4 million man-hours in production of some 150,000 cars and trucks. The GM witness estimated that the cost to convert 85 percent of GM's gas requirements to coal-fired steam facilities, exclusive of the cost of coal and associated emission-control facilities, at \$118 million. The annualized cost spread over GM's present P2 consumption in California yields a base energy cost of \$8.45 MBtu, exclusive of the cost of emission-control hardware and fuel.

The ADA report estimated the cost of undersupply for residential and small commercial customers is an excess of \$10/Mcf based on the total cost of alternate fuels (including conversion cost and possible fuel shortages). (Exhibit C-66, page 2-7.) The need to supply gas to such customers is clear.

The staff evaluated the effect of a failure to meet P2A, P3, and P4 sustomer requirements (Exhibit C-47). The staff report was based upon a customer survey covering alternate fuel facilities, alternate fuel plans, and associated costs under full P3 and P4 curtailment. Replies were received from over 70 percent of the customer survey. The staff alleges a complete curtailment of P3 and P4 customers will result in requirement for new capital investment in alternate fuel facilities amounting to almost \$213 million, the direct loss of 91,876 jobs by affected industries, and over \$116 million in increased operations and maintenance costs statewide.

Three witnesses appeared on the air quality impacts resulting from curtailment of natural gas. A witness on behalf of the California Air Resources Board presented Exhibit C-46. Estimates were based upon the full curtailment of P3 through P5 end users, resulting in the burning of distillate and fuel oil. The ARB witness estimated that in the San Francisco Bay Area particulate would increase 9 percent and sulfur dioxide would increase 44 percent from 1976 levels. The South Coast (Los Angeles Area) increases from 1976 would be 3 percent and 20 percent for particulate and sulfur dioxide, respectively. Witnesses on behalf of PG&E and SoCal expressed general agreement with the ARB judgment. Increased emissions in the involved air basins will unfavorably affect air quality and will delay air pollution abatement programs.

A consultant appeared as a witness on behalf of SoCal and presented an evaluation of the impact of complete curtailment of P3 and P4 customers in southern California (Exhibit C-50 and C-51). The witness, Sherman H. Clark, was a former director of energy and resources economics at Stanford Research Institute (SRI), a position he had held for most of his 21 years in that firm. His analysis was essentially static, based on present conditions if there were complete curtailment of P3 and P4 customers. The witness alleged complete curtailment would have adverse economic effects on southern California in excess of \$1 billion a year

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initially and continuing at that level indefinitely. The adverse economic effects excluded environmental considerations and the loss of the gas supply available to protect Pl and P2 customers. Significant impacts included higher fuel costs to the Pl and P2 customers since fixed cost of gas service would increase by \$121 million a year as a result of the total loss of revenue from P3. and P4 customers. Based on the results of a survey of P3 and P4 customers conducted by SoCal, the witness estimated a loss of new and expanded plants amounting to \$50 million a year in manufacturing activities and plant closures amounting to an additional \$250 million a year in manufacturing activity. Manufacturing employment would be affected by the loss of 12,000 jobs in industry. In addition to the estimated \$300 million loss in manufacturing activity, the witness estimated that such manufacturing is a basic economic activity, and there would be a multiplier effect on the goods and services directly required by such manufacturer, with an additional reduction in economic activity of \$900 million annually.

1. North-South Sharing

By Decision No. 85189, we ordered PG&E and SoCal to enter into an agreement to protect Pl and P2 requirements. Our orignial OII in Case No. 10342 directed SoCal and PG&E to file preliminary estimates of facilities necessary to develop the capability of diverting gas to the SoCal system from the PG&E system at specific volumes. (Case No. 10342 dated June 1, 1977, Ordering Paragraph 2, page 4.) The ability of PG&E to transfer gas to the SoCal system is limited. In order to accomplish the transfers required by the base case, additional facilities would have to be constructed. The staff reviewed the utility data and reported on the modification of transmission facilities (Exhibit C-47, Chapter III).

The staff report states that existing interties, with minor modifications, have a transfer capacity of 280 MMcfd. By

upgrading these interties at a cost of approximately \$5 million, a total intertie capacity of 560 MMcfd can be developed. The latter figure is the volume of gas that could be transferred from PG&E to SoCal on a given day, provided that PG&E has gas to deliver at the intertie points and provided that PG&E has that volume of gas surplus to its own high-priority requirements on that day (Exhibit C-47, page III-1).

The gas that could be transferred directly to SoCal from PG&E is that received from El Paso. All other gas, except minimal local production, is delivered to PG&E in northern California. The dual transmission pipelines which run from the California-Arizona border near Needles in a westerly direction to near Bakersfield and in a northwesterly direction to the San Francisco Bay are designed to carry El Paso gas to PG&E only one way. The lines are tapered and have a MAOP (Maximum Allowable Operating Pressure) at the northern end considerably lower than in the southern portion. The lines could not be reversed without substantial reinforcement except to carry small amounts (Exhibit C-47, page III-2).

PG&E's southern service area is presently supplied almost entirely by the El Paso gas. Should El Paso supplies be cut off and transferred to SoCal, there are no existing facilities to send gas from northern California to PG&E's southern area customers. In addition to the cost of \$5 million to increase total intertie capacity, a new pipeline would be required under average temperature conditions in 1983 to protect SoCal's Pl and P2 customers. This new pipeline would be used in the absence of supplemental gas supplies being available to SoCal in the estimated time frame and would have the capacity to carry PG&E gas from northern California to SoCal. The estimated cost for such a pipeline in 1977 dollars is \$60.5 million plus \$11.8 million in compressor cost. These are order of magnitude costs and not the result of detailed engineering study.

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The staff estimate is that if there are no supplemental gas supplies available to southern California, such a pipeline would be needed under cold year conditions in 1982 to protect Pl and P2 requirements in southern California. Under the assumption of no new supplemental supplies, starting in 1985, PG&E's contracts for Canadian gas would begin running out. PG&E would need all of its available supplies for its own Pl and P2 customers. Under these "worst" case assumptions, the pipeline would have a useful life of approximately three years.

Assuming supplemental supplies come on stream in 1982 or 1983, a new pipeline might never be used. Supplemental gas supplies from Mexico, Algeria II, PacAlaska, or PacIndonesia would tie into the existing El Paso system or PG&E's southern system and would foreclose the need for a north-south pipeline. The Canadian "bubble gas" would be delivered to the SoCal system.

The record indicates that the intertie system should be upgraded as soon as possible. A new pipeline should not be constructed unless it is required to protect Pl and P2A customers. However, should a pipeline ultimately be required, any delay in construction could result in Pl and P2A curtailments. Processing of an application is time consuming. Therefore, in order that the preliminary work associated with constructing a pipeline will be completed in a timely manner, we will order PG&E and PLS to file a joint application for a certificate of public convenience and necessity for a north-south pipeline. A. 57626 et al. MEB*

VI. POTENTIAL SUPPLEMENTAL GAS SUPPLIES

A. Introduction

The parties in this proceeding identified a number of supply supplements which have the potential to reverse the continuing decline in gas available from traditional sources. The potential supplements include synthetic natural gas (SNG), base load supplemental supply projects presently awaiting approval by regulatory bodies, and short-term purchases of gas which may, from time to time, be surplus to the needs of others. The ERCDC also identified Elk Hills Naval Petroleum Reserve, and the overproduction of northern California "dry" gas as supplements.

B. Synthetic Natural Gas

Dr. D. B. Peterson, a witness on behalf of the ERCDC, presented evidence on the availability of SNG from coal, a potential supplement to California's natural gas supplies to 1990. Dr. Peterson's evidence established that there are a number of significant advantages from production of SNG from coal (Exhibit C-16, pages 12-14). However, when estimating the availability of SNG from coal in the future, we must recognize the absence of large-scale plants capable of converting coal to SNG and the present technical and financial problems facing such projects.

Dr. Peterson concluded that no SNG from coal is likely to be available to California until after 1985. He further pointed out that it is possible no SNG from coal will be available to the state by 1990, with the possibility that 80-120 MMcfd would be available by 1990 (Exhibit C-16, page 12). These estimates were apparently based upon the potential production from either El Pazo Natural Gas Company's proposed plant at Burnham, New Mexico, or completion of the WESCO project of PLC and the Texas Eastern Transmission Corporation. Both projects have been shelved. Both plants originally had an anticipated capacity of 250 MMcfd. Without = a federal loan guaranty program, it appears that these programs will not be carried forward. Moreover, it is not clear what size plants will qualify as demonstration plants for federal loan guarantees (Exhibit C-16, page 8). Dr. Peterson advised us that present second



generation gasifiers have not resulted in a significant technological breakthrough. In his judgment, a third generation technology may be appropriate. This technology would now be in a very early pilot stage. We gan only hope that SNG proponents obtain the necessary support to continue efforts in the important area of coal gasification. We cannot at this time assume that significant quantities of SNG from coal will be available to the state of California in the forecast period.

The staff evaluated the availability of SNG from petroleum feedstocks and the use of LPG/air mixtures as a substitute for natural gas (Exhibit C-10, pages 27-37). The staff concluded that FEA (now DOE) policy indicates that SNG should only be considered as a short-term solution in the absence of other supply, including LNG. Supplemental supplies of SNG from petroleum feedstocks or LPG/air mixtures require federal approval. Such approval would be based upon a need for short-term supplies to P3 and above, primarily during winter periods. It does not appear that these potential supplies should reasonably be included in an analysis of base load supplies (Exhibit C-10, page 33, page 37).

C. Base Load Supplmental Supply Projects

Base load supplemental supply projects include Canadian "bubble gas" (gas surplus to the needs of Canada), Mexican gas available from the Reforma area of southeastern Mexico, El Paso Algeria II-LNG, Indonesian-LNG, South Alaska LNG, and Alaskan North Slope gas (Prudhoe Bay). Potential gas supplies from these sources are discussed in detail below.

1. Canadian "Bubble Gas"

The staff's initial report on the Canadian supplies reviewed a Canadian National Energy Board (NEB) decision issued on July 4, 1977. At that time, the NEB concluded that supply deficiencies could occur by 1983 if export permits were continued at authorized levels. The NEB noted that deliverability could be increased from the Alberta reserves by 400 Bcf in 1977 and a similar amount in 1978 although _ the excess capacity would disappear by 1985. The NEB at that time

concluded that such deliveries of the "bubble gas" would require a guaranty that the gas would be replaced at a later date by Alaskan gas_(North Slope) dropped off in Canada or by curtailing export commitments in later years. PG&E's present gas supply from Canadian sources is dependent upon export permits which commence expiring October 31, 1985. The basic gas supply estimates for PG&E incorporate the expiration of these Canadian permits.

Later developments established that gas exploration and development in Alberta, Canada had substantially improved the potential for short-term gas exports. A gas sales contract dated March 9, 1978 (C-Item F) and a gas purchase agreement dated March 9, 1978 (C-Item E) provides for the sale of 240,000 Mcf per day of natural gas from Alberta, Canada, for delivery to the SoCal system. In addition, it appears that the parties to the gas sales contract (see C-Item F) have also provided for an additional 800,000 Mcf per day to be resold to U.S. purchasers in the eastern United States. The terms of the contract provide for a six full-year term, with a right to renew by the buyer for an additional six-year term. The total quantity of export gas appears to be slightly below 400 Bcf per year.

In order to deliver the gas under the contracts, it will be necessary to prebuild a portion of the Western Leg of the transportation system referred to as the Alaska Highway Pipeline Project (the transportation system necessary to deliver natural gas from the Alaskan North Slope). The Western Leg of the Alaska Highway Pipeline Project would be prebuilt to Stanfield, Oregon. At that point, the gas would be received by the Northwest Pipeline system and ultimately delivered to SoCal via the El Paso system. The cost of prebuilding the Western Leg is estimated at \$110 million and the modification required for the Northwest Pipeline system to accommodate the gas to El Paso is estimated at \$130 million (Exhibit C-68, page 12).

The gas sales contract is subject to necessary governmental approval, both in Canada and the United States. The Canadian government still may impose a pay-back condition for the delivery of "bubble gas" to the United States. Since the contract average

daily quantity of 240,000 Mcf per day would be delivered near Kingsgate, British Columbia, the net quantity (after fuel use) was estimated at approximately 215 MMcf when delivered to SoCal.

The contracts call for a delivery date upon or as soon as possible after September 1, 1979, Experience indicates that regulatory and construction delays may push the starting date to 1980 at the earliest.

2. Imports from Mexico

The staff report dated December 15, 1977 on potential gas imports from Mexico (Exhibit C-10, pages 9-13) presented a strong possibility of increasing volumes of natural gas from Mexico in the early 1980's. Mexico had new discoveries of oil and gas in the Reforma (Tabasco-Chiapas area) oil fields and in the offshore Gulf of Campeche leading to an accelerated program of oil and natural gas production over the next six years by Petroleos Mexicanos (Pemex), Mexico's government-controlled petroleum industry. Proved and probable gas reserves were estimated to be 9.7 TCF, with potential reserves of an additional 20.6 Tcf in reservoirs in the discovery area. During 1976 Mexican natural gas production reached 2.2 Bcfd and was projected to double by 1982 under a sixyear production program.

On April 3, 1977, a group of six United States natural gas transmission companies signed a Memorandum of Intentions with Pemex to purchase surplus natural gas from Mexico. Pemex planned construction of an 850-mile, 48-inch diameter natural gas pipeline from the Reforma area to the international boundary at the Texas-Mexican border at Reynosa, Mexico. Construction of the pipeline was expected to take approximately two years at a cost of \$1.2 billion. Initial rate of delivery of the pipeline was estimated at 1 Bofd with volumes to increase to a maximum of 2 Bofd. The initial contract provided for a six-year term plus an additional six years. The entitlements
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of two of the six American firms (Texas Eastern and El Paso) would be delivered to El Paso and Transwestern interstate pipelines and the natural-gas available for delivery to California was estimated at approximately 18 percent of the gas available before compressor fuel and line losses.

In late 1977, it appeared that the major problem would be to secure financing. Because of Mexico's high foreign debt, the International Monetary Fund (IMF) had committed the Mexican government to limit deficit spending and to limit net borrowings. In an effort to secure the funds needed to commence construction of pipeline, the U.S. Export-Import Bank tentatively approved \$590 million in loans to Pemex, including \$250 million for the purchase of equipment in the United States and \$340 million for pipeline construction. Additional transmission lines would be necessary in the United States in order to handle anticipated greater volumes and in order to connect El Paso and Transwestern Pipeline Company (a subsidiary of Texas Eastern) to the international boundary delivery point. Based on the available information in late 1977, the staff estimated increasing volumes of deliveries from this supplemental supply.

By March 15, 1978, the situation regarding the importation of natural gas from Mexico had deteriorated. The staff reported (Exhibit C-68, page 14) that the Memorandum of Intentions between the United States interstate pipelines and Pemex had been terminated due to the disagreement of Mexican and U.S. authorities on price provisions. The original agreement had provided that the gas at the Texas border would be priced at the equivalent heating value price of No. 2 fuel oil in New York Harbor. This price in December of 1977 was estimated at \$2.61/MDtu and under the federally proposed crude oil equalization tax, could escalate to \$3/MDtu, equivalent to \$3.15 Mcf at 1,050 Btu/scf. (Exhibit C-10, page 13).

After submission of Case No. 10342, the Mexican government announced its present intention not to export natural gas to the

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United States at this time. Instead, Mexico claims that it intends to use the matural gas for domestic purposes to replace current imports of-liquified petroleum gas and to substitute it for oil.

At the present time it is difficult to estimate if, and when, Mexican gas will be available to California.

3. Algeria II-LNG

The El Paso Company plans to import additional LNG from Algeria through the Algeria II Project. Under an agreement with Sonatrach (Algeria), affiliates of El Paso would import approximately one billion cubic feet per day for a period of 20 years. Gas would be delivered from a terminal near Port O'Connor on the Texas gulf coast. Sixty-five percent of the gas (at 1,148 Btu/scf) would be sold to El Paso. Based on allowances for system losses and estimated federal allocations, the Commission staff report dated December 15, 1977 estimated deliveries commencing in 1983, with full deliveries in 1984, at approximately 485 MMcfd. (Exhibit C-10, page 85.)

The contract provisions provide for escalation of the price paid to Sonatrach by adjustment for the prices paid for No. 2 fuel oil and No. 6 residual fuel oil in New York Harbor. The ERA refused to approve the price of Pemex gas when the agreement tied the price of the gas to the price of No. 2 fuel oil in New York Harbor. The best estimate of the staff was that Algeria II gas would be available, if at all, in 1984.

An initial decision by an FPC Administrative Law Judge in late 1977 approved the Algeria II project. Under existing federal legislation, the matter is now before the ERA of the Department of Energy for final approval. The ERA has not issued a decision. The contract provides that all necessary government authorizations must be received by April 30, 1977, or either party may terminate the contract. A second termination date is December 31, 1977, by which time all necessary financial arrangements must be made. These. deadlines have not been met, and the ERA still has not taken any action with respect to the approval of the Algeria II contract.

At the present time it is extremely doubtful that California will receive natural gas from Algeria by 1984.

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4. Alaskan North Slope-Prudhoe Bay

The staff's initial report on the Alaskan North Slope gas was issued December 15, 1977 (Exhibit 6-10, pages 3-6). On September 20, 1977, Canada and the United States signed an Agreement on Principles Applicable to a Northern Natural Gas Pipeline (Agreement), and on September 22, 1977 the President submitted his Decision and Report to Congress on the Alaskan Natural Gas Transportation System (Decision and Report). On November 2, 1977, both Houses of Congress approved President Carter's decision. The Agreement contemplates that the pipeline capacity would be 2.4 Bofd for Alaskan gas and 1.2 Bofd for northern Canada gas. The northern Canada gas refers to Mackenzie Delta gas which is to be delivered by a pipeline spur (Dempster Line) connecting Mackenzie Delta gas fields in the Northwest Territory to the Alcan pipeline at or near Whitehorse, Yukon. The total pipeline length of the project (excluding the Dempster Line) is 4,787 miles. A Western Leg of the pipeline would include looping of PGT's and PG&E's existing systems.

The gas pipeline system is required to recover the gas reserves in the Prudhoe Bay field, estimated as having proved salable gas reserves of 20.6 to 22.8 trillion cubic feet (Tcf) in the main pool. The three largest field operators estimate that the total salable gas reserves are between 25 and 26 Tcf. The President's <u>Decision and Report</u> estimates the gas supply from the project to be 2.0 Bcfd by 1985 and 2.4 Bcfd by 1990.

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to California totaling 600 MMcfd for 1984 through 1990. The Commission staff subsequently reported that a 1984 commencement date under-present circumstances did not appear reasonable, and the earliest date that North Slope Alaskan gas might be received would be 1985 or 1986.

Major uncertainties are involved in the Alaskan natural gas transportation system project. There is no established wellhead price for the gas on the North Slope. Financing arrangements must be made for the Alaska highway pipeline. Project construction costs set forth in the <u>Decision and Report</u> appear to be approximately \$10.3 billion (based on 1977 dollars).

5. Indonesian LNG

The supplemental gas supply available from Indonesia is a portion of the LNG supply involved in Application No. 57626 in these consolidated proceedings. Western Terminal is the applicant for a permit pursuant to the Liquefied Natural Gas Terminal Act of 1977. As stated above, PG&E and SoCal have established PacIndonesia, which has authorization from DOE/ERA for importation into the United States by PacIndonesia of LNG from Indonesia over a 20-year period. The evidence is that Pertamina, the national oil and gas company of Indonesia, has sufficient reserves to supply the contract quantity of 500 MMcfd for the 20-year term of the contract. DOE/ERA Opinion No. 1 dated December 30, 1977 authorized importation of the gas pursuant to the agreement between PacIndonesia and Pertamina (Exhibit A-20).

DOE/ERA Opinion No. 1 did not, however, approve the price escalation provisions of the contract. At this time, FacIndonesia has been conducting meetings with Pertamina in an effort to arrive at price provisions for the LNG contract which would be acceptable to Pertamina and to the ERA. The contract has a provision which allows for either party to terminate if certain conditions have [not been met by specified dates. The cut-off date for authorizations from United States authorities was passed on October 6, 1977 after three separate extensions.

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The original contracts for the PacIndonesia gas were entered into on September 6, 1973. The contracts were subsequently amended on January 9, 1975 to provide a pricing formula acceptable to the Indonesian Government and further amended on October 28, 1975 to provide a minimum pricing provision to insure the recovery by Pertamina of certain costs during the financing period. Both amendments received approval of the Indonesian Government.

Japanese purchasers have entered into an agreement to purchase Indonesian LNG. Japan began receiving Indonesian LNG in August 1977. The Japanese will purchase over 1 Bcfd at full volumes.

The facilities at Arun, Indonesia, will deliver LNG necessary for the Japanese and PacIndonesia projects. The SoCal witness responsible for the PacIndonesia gas supply contracts testified that construction of facilities at Arun are running ahead of schedule. Moreover, the construction includes more LNG storage tanks than are needed for the Japanese project.

The SoCal witness testified that the representatives of Pertamina indicated very strongly in the past that they desire to complete the project with the United States. However, in view of the delays in securing necessary approvals for terminal siting, as well as the outstanding problem of the price escalator in the contract, applicant's witness indicated that failure of this Commission to reach a decision on terminal siting by July 31, 1978 would, in his judgment, result in cancellation of the contract. Pertamina is anticipating a profit from the contract to begin sometime in the first half of 1982 and has those revenues planned.

The staff report indicates the construction of facilities in Indonesia for the PacIndonesia Project will not commence until after U.S. Government approvals are obtained and requisite financing is secured. Construction will take 34 months to start up with an additional 18 months before all facilities will be completed. PacIndonesia has entered into contracts for cyrogenic tankers to

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transport the LNG. Three are already constructed and construction of the others will begin following PacIndonesia's obtaining all governmental approvals of financing arrangements.

The initial staff report (Exhibit C-10, page 65) estimated initial volumes in 1982, building up to full volumes by 1984. The staff witness testified that a delay of one or two years would mean that the proposed Indonesia LNG would no longer be a viable project.

The evidence supports the conclusion that the representatives of Pertamina and the Indonesian Government have negotiated in good faith with representatives of PacIndonesia (and its predecessors) over an extended period of time. The condition requiring Pertamina to obtain all approvals of the Indonesian Government by September 6, 1975 was satisfied by Pertamina. The condition requiring authorizations from authorities in the United States has not been satisfied and has been extended on three separate occasions. The last extension expired October 6, 1977. The last extension by Pertamina specifically provided that "because of the increased concern of Pertamina and the Government of Indonesia about the delays in obtaining the required authorizations from the appropriate authorities in the United States, it is understood that any further extensions of the date beyond October 6, 1977, would acquire approval by governmental authorities of the Republic of Indonesia."

Since October 6, 1977, Pertamina has had the option of terminating the existing contract. There has been no further extension or termination of the contract.

6. South Alaska-LNG

The South Alaska-ING Project involves gathering natural gas in the Cook Inlet area of South Alaska, and transporting it by a cryogenic ship to a regasification terminal in California. The applicant seeks authorization for a single terminal to regasify both Indonesian ING and PacAlaska ING. The Commission staff reports that in order to support gas volumes of 200 MMcfd Phase I of the project, would require approximately 1.6 Tcf

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in reserves. Full volumes under Phase II of the project are to be 400 MMcfd and would require total reserves of approximately 3 Tcf. In its initIal report dated December 15, 1977, the staff stated ' that commitment of production from additional reserves (other than those available) were necessary in order to support the Phase I volumes at 200 MMcfd. (Exhibit C-10, page 44).

It is quite clear from the record that the staff position is correct, and that the delivery of PacAlaska gas may well be delayed because of the problem of acquiring the necessary gas reserves. The staff estimate is that Phase I volumes of PacAlaska gas may commence in 1984 with potential delivery of full volumes (Phase II) following in 1985.

The evidence supports the conclusion that there are uncommitted proven reserves in the Cook Inlet area to support both Phase I and Phase II of the PacAlaska Project. There is no assurance when sufficient reserves might be committed and when a necessary FERC decision on the PacAlaska project might be issued. Applicants are presently before the FERC requesting authorization for the project under Section 7 of the Natural Gas Act.

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D. Short-term Supplemental Supplies

1. Introduction

Volume.1 of the staff report (Exhibit C-1) identifies gas supplies available from Northwest Pipeline Corporation (Northwest), an interstate pipeline company, as a short-term supplement presently available to SoCal. After the completion of hearings in this proceeding, Pacific Interstate Transmission Company (Pac Interstate) an affiliate of SoCal contracted for short-term supplements from Michigan Consolidated Gas Company (Consolidated).

The ERCDC identifies supplies it expects to be surplus to the intrastate Texas market as a supplement available to California under short-term contracts. The ERCDC also provided estimates of the amount of gas that might be available from Elk Hills Naval Petroleum Reserve on an emergency basis, and from northern California dry gas production by over-producing the gas purchase contracts. A discussion of the various sources of short-term supplements follows:

2. Interstate Surplus

The agreement with Northwest provides for deliveries of up to 200 MMcfd, by displacement, to SoCal through October 31, 1978. There is no obligation on the part of Northwest to deliver specific volumes. Daily deliveries can be from zero to 200 MMcfd depending on Northwest's system requirements on a given day. The cost of the gas at the California border is \$2.35 per million Btu or approximately \$2.46 per Mcf.

An application for certification of an agreement with Michigan Consolidated Gas Company (Consolidated) has been filed with FERC in <u>Pacific Interstate Transmission Company</u>, Docket No. CP78-398 et al. The agreement is an exchange agreement and provides for firm deliveries to the SoCal system at the California border averaging 106 MMcfd during the period November, 1978 through March, 1979. The agreement further provides for deliveries, on a "best efforts" basis, averaging 33 MMcfd during the period



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November, 1978 through March, 1979 and 110 MMcfd for the period April, 1979 through March, 1981. The SoCal system is obligated to take 50 percent of the "best effort" offerings. The average cost of the gas at the California border is approximately \$3.00 per Mcf. The subsequent return of gas would be at the option of Consolidated, and conditioned on the availability of LNG to the SoCal system at the Western LNG terminal. If no LNG is available, there is no payback.

3. Intrastate Surplus

The ERCDC presented a number of witnesses and exhibits leading to a projection of the amount of gas expected to be surplus to the Texas <u>intrastate</u> market and the portion of such surplus gas that could be made available to California.

Consultant Report - Appendix G (Exhibit C-84) was provided by the ERCDC on March 15, 1978. Exhibit C-84 includes material prepared by a Texas energy consultant and an evaluation of the energy consultant's material prepared by an employee of A. D. Little, a consulting firm. The material, prepared by the Texas energy consultant, consists primarily of a number of illustrations depicting Texas natural gas supply-demand relationships through the period ending 1985 plus a brief text. The amount of gas projected to be surplus to the Texas intrastate market by the ERCDC consultant ranges from approximately 610 MMcfd in 1978 to approximately 3000 MMcfd by 1985. Using this total surplus, the ERCDC witness responsible for certain material in the ERCDC summary report derived the portion of Texas intrastate surplus available to southern California as 61 MMcfd in 1978 increasing to 300 MMcfd by 1985 in the low case, and 170 MMcfd in 1978 increasing to 835 MMcfd by 1985 in the high case (Exhibit C-75, page 110).

The consultant retained by the ERCDC to evaluate the projections of Texas <u>intrastate</u> surplus gas testified that, "Given the short time available to us we were unable to make a thorough analysis of the subject." (Sherff, Tr. p. 4732.)

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The development of <u>specific</u> volumes of gas available to California from supplies surplus to the needs of the Texas <u>intrastate</u> market over the period ending 1990 would require extremely detailed studies of future supply and demand within Texas. Such studies are not present in the record of this proceeding. However, sufficient evidence was presented to support an assumption that significant volumes might be available, from time to time, over the short-term. Moreover, the terms and conditions under which such gas could be obtained is a more important consideration, at this point, than specific volumes. A. 57626 et al. 🖤 IM *

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The method suggested by the ERCDC for obtaining surplus intrastate gas it included in provisions of the Natural Gas Act (NGA). Section 7(c) of the Act provides for emergency sales of gas for periods of up to 60 days for which issuance of a certificate under FERC regulations is not required. Section 2.68(a) further extends the exemption to include sales of intrastate gas to the interstate market under certain conditions without subjecting the sale to federal regulation. The purpose of Section 2.68 is to provide aid to distribution and pipeline companies in need of temporary emergency supplies by making exempt intrastate gas available for short-term sales for periods of up to 60 days. The intent of the NGA regarding emergency sales is clearly <u>not</u> to circumvent the established procedures for the sale of gas to the interstate market. As pointed out in the CPUC staff brief, the intent has been clearly defined in the courts:

"What we can say, and do say, is that the legislative history makes plain that it was never contemplated that the modest emergency proviso in Section 7 for orders without hearings would be employed to excise large-volume, long duration, widespread deliveries of gas" <u>Consumer Federation</u> of <u>America v. F.P.C.</u>, 515 F.2d 347, 355.

The FERC is currently reevaluating its policy and procedures (FERC Docket No. 78-7) on emergency purchases. However the reevaluation would become moot if provisions contained in the proposed National Energy Act are enacted. On June 13, 1978 the House and Senate Conferees completed their deliberations on issues not resolved by the compromise that was approved on May 24. The document issued on June 13 included the provisions on emergency sales which were adopted. (Copies were sent to all parties in Case No. 10342 by the CPUC staff counsel on July 20, 1978.) Under the compromise provisions sales would be limited to two years with possible extensions of not more than two years per extension. The compromise further provides that deliveries would be subject to interruption to the extent that the seller required the gas for his own customers.

The availability of short-term supplies that may, from time to _ time, be surplus to the <u>intrastate</u> market or interstate pipelines serving other area's, cannot be considered in the same context as base load supplements. It is precisely because of the failure, to date, to obtain base load supplements, that a reliance must now be placed on short-term deliveries where the quantity made available is left, each day, to the discretion of the seller.

A. 57626 et al. AMP *

4. Elk Hills Naval Petroleum Reserve

Substantial quantities of natural gas exist in the Naval Petroleum Reserve No. 1 (NPR-1) at Elk Hills. These reserves are entirely under federal control. Elk Hills production is authorized for six years ending in 1982, but three year extensions are permissable at the President's request, subject to Congressional approval. Despite the urgings of California utilities and regulatory bodies to make the gas available for sale, present plans call for reinjecting all of the gas in order to maintain pressure for maximum oil production (Exhibit C-11 and C-22). These plans are consistent with the Congressional mandate to maximize production based upon sound engineering judgment.

In their 1977 Biennial Report, the ERCDC reported that, "The quantity of gas potentially available from NPR-1, is, at 400-600 MMcfd, very significient." However, in its showing in this proceeding, ERCDC estimated that 100 MMcfd would be available to California under short-term emergency conditions (Exhibit C-25). This assumption is based upon speculation as to future federal policy. Even as a potential emergency supply, the record indicates that no determination has been made as to the terms under which any gas may be made available to anyone.

5. Over Production of California Gas

Differences arise between Commission staff estimates and other parties from the assumed levels of production of northern California gas. At the present time PG&E contracts for Californiaproduced gas at a relatively low-load factor. PG&E's contracts may obligate PG&E to take gas at an annual average-load factor of one-third. PG&E then takes such gas at high load factors during seasonal winter peak-demand period and shuts the gas wells down during the summer.

The Commission staff does not recommend increased production. ERCDC argues that future supply/demand conditions are likely to require significant transfers of gas from northern to southern California and the cost of increased production of California gas should be compared with the marginal cost of supplemental gas supplies.

A. 57626 et al. AMP*

As we understand PG&E's gas purchase policy California gas is taken up to contract obligation, and above contract obligation, to the extent practicable, if Pl and P2A customers would otherwise go unserved. Since we expect the same policy to be followed in protecting Pl and P2A service statewide, the need for a regulatory mechanism does not exist.

E. Cost of Supplemental Supplies

The staff report dated March 15, 1978 set forth estimates of the cost of gas from traditional sources and from base load supplemental supply projects. The staff material is reproduced as tables 8 and 9 herein.

The estimates are based on the best information available to the staff concerning natural gas pricing provisions contained in the proposed National Energy Act and costs of supplemental supplies contained in filings presently before regulatory bodies. The estimated cost of gas from Prudhoe Bay is from federal sources and includes <u>no</u> allowances for cost overruns.

All costs are in 1977 dollars and are increased only to reflect escalations that are expected to occur over and above the inflation rate.

TABLE 8.

<u>COST OF GAS FROM TRADITIONAL SOURCES</u> (1977 Dollars)

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Southern California Gas Company \$/Mcf

Source	<u>1977</u>	1980	<u>1986</u>	<u>1990</u>
El Paso				
Old Gas New Gas Weighted Average Other Gas Supply Expenses Transmission	\$0.80 	\$0.84 2.13 1.07 .15 .23	\$0.93 2.47 1.50 .15 .30 \$2.03	\$1.01 2.86 2.13 .15 .37 \$2.65
California Border Frice		₩ ₩ • <i>₹ \$</i>	+2.0J	+
<u>Transwestern</u> Old Gas New Gas Weighted Average Transmission California Border Price	\$0.63 <u>-63</u> <u>-61</u> \$1.24	\$0.69 2.13 1.03 .82 \$1.85 \$1.85	\$0.75 <u>2.47</u> <u>1.70</u> <u>1.10</u> \$2.00 \$2.19	\$0.76 2.86 2.19 <u>1.13</u> \$3.32 \$2.82
Weighted Border Frice Distribution Unit Cost of Service	<u></u> \$1.76	* <u>78</u> \$2.32	<u>1.00</u> \$3.19	<u>1.24</u> \$4.06
Pacific Gas and Ele \$/M	<u>ctric Gas (</u> cf	Company		
El Paso See Above Canadian Source	\$1.12 \$2.44	\$1.45 \$2.84	\$2.03 \$2.84	\$2.65 \$2.84
California Source Old Gas New Gas Weighted Average	\$1.12 \$ 1.12	\$1.12 2.13 \$1.30	\$1.12 2.47 \$1.84	\$1.12 2.86 \$2.49
Weighted Price to PG&E System Distribution	\$1.73 <u>-47</u>	\$2.06 <u>.55</u>	\$2.36 \$2.00	\$2.36 <u>1.16</u>
Unit Cost of Service (Average System Rate)	\$2.20	₹ 2.01	45100°	* <i>}•</i> ,24

•Exhibit C-68, page 27

COP OF GAS FROM SUPPLEMENT SOURCES \$/Mcf at 1050 Btu/sci

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(1977 Dollars)

Source	<u>1985</u>	<u>1990</u>
Indonesia -		
Purchased LNG	\$1.57	\$1.57
Transportation	1.11	-90
Terminalling and Vaporization	<u>53</u>	
Total Cost Out of Plant	\$3.21	\$2.82
Transportation to Existing System	-08	- 06
Unaccounted for, Franch. & Uncoll., 3%	.10	09
Unit Cost to Customer	\$3-39	\$2.97
Pacalaska		
Purchased Gas (Incl. 10% Tax)	\$1.88	\$1.88
Liquefaction	1.26	-88
Transportation	.65	-52
Terminalling and Vaporization	10	06
Total Cost Out of Plant	\$ <u>3.89</u>	\$ <u>3.34</u>
Transportation to Existing System		-
Unaccounted for, Franch. & Uncoll., 37	.12	.10
Unit Cost to Customer	\$4.01	\$3.44
17 certa		
Purchased ING	\$1.50	\$1.50
Transnortation	1.12	.92
Terminalling and Vaporization	.37	.28
Shalakare and Bolloff	.12	.12
Total Cost Out of Plant	\$3.11	\$2.82
Transmostation to Waba	_26	-24
Additional Mainline Compression. El Paso	.10	209
Received for Franch & Uncoll. 34	10	.09
Unit Cost to Customer	\$3.57	\$3.24
Mexico	\$2.75	\$2,75
Purchased Gas	-15	-15
Transportation to remutan Dasing	- 08	108
Accilional Mainline Compression, El Taso	.09	.09
Unaccounted for, Franch. & Uncolle, 5%	\$3.07	\$3.07
Unit Cost to Customer	+2-+1	+2
Prudhoe Bay	47 50	\$ 7 52
Wellhead Frice	41.7C	7 06
Transportation to Canadian Border	7.07	22
Processing	- 34	- 28
Transp. from Canadian Border to Antioch	+ 3 73	+3-14
Total	₽ <u></u> 3•1⊃	01.C¢ 01
Unaccounted for, Franch. & Uncoll., 32	+ <u>3 84</u>	+ <u>3-38</u>
Unit Cost to Customer	\$3.04	43.20
Canadian "Bubble"	An. 771	
Border Price	₽ ८ -74	
Transportation	1-22	
Total	₹3- <u>22</u>	
Unaccounted for, Franch. & Uncoll., 3%	3	
Unit Cost to Customer	\$4.12	
Frhibit C-68, page 28		

A. 57626 et al. MEB *

P. Contingency Plans on Interruption of LNG

Both SoCal and PG&E presented contingency plans in the event of both short- and long-term interruptions of LNG gas supply (Section 5601(h)). The gas supply contingency plan is to ensure continued gas supply to Pl and P2A customers during a short-term LNG service interruption even if it were to occur on an abnormal peak day - a day equivalent to the system's coldest day of record. The utilities also plan to ensure supply continuity to Pl and P2 customers, and to P3 customers on a best efforts basis during a long-term LNG service interruption, even if it should occur during the winter months.

The primary emergency measures, in order of implementation, are: (1) emergency conservation measures; (2) curtailment of interruptible customers; and (3) withdrawal from under ground storage facilities. PG&E has scheduled separate LNG peak shaving facilities to protect Pl and P2A customer demand. PG&E and SoCal have an agreement which provides for mutual assistance to the extent possible to protect their Pl and P2 customers in the event of an emergency. (Exhibits C-53, C-73.)

As the utilities stated, addition of new gas supplies in the future would ameliorate the effect of an outage or interruption of LNG service. PG&E and SoCal plan to maintain primary gas supply to support and retain interruptible lower priority customers. The extent to which they succeed in retaining P3 and P4 customers will determine the margin of protection available to P1 and P2 customers from interruptible gas customers.

G. Base Load Supply-Requirement Relationships

The base case supply and base case requirements forecasts are combined with forecasts of base load supplemental supplies to develop the supply-requirements relationships in Tables 10, 11 and 12. These Tables are developed to demonstrate the supply levels that would occur if long-term deliveries from Prudhoe Bay, Mexico, Algeria, Indonesia, South Alaska and the Canadian "bubble" were obtained in the quantities and at the times shown in Appendix B. A. 57626 et al. ME

Whether any or all of these supplemental supply projects eventually reach fruition is uncertain. As pointed out by the staff, "California"s acquisition of any supplemental gas supplies remains contingent upon a number of future events each without guarantee of occurrence." (Exhibit C-68)

While not eliminating them from consideration, recent developments concerning the Mexican and Algerian projects, as reported in various press releases and mailed to all parties in this proceeding by CPUC staff counsel on July 20, 1978, deepens the uncertainty.

The range of essential data derived from Tables 10, 11 and 12 are as follows:

Southern California

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Warm Weather Conditions

- 1. P5 is totally curtailed in 1979 and 1982 and substantially curtailed in the other years through 1983.
- 2. Large quantities of gas become available to P5 beginning in 1984.
- 3. No significant curtailment of P4 and above occurs.

Cold Weather Conditions

- 1. P5 is totally curtailed in 1978 and P3, P4 curtailments begin.
- 2. P3, P4 curtailments are eleminated in 1984 and large quantities of gas become available to P5.

Northern California

Warm Weather Conditions

1. Gas is available to P5 in all years.

Cold Weather Conditions

1. Gas is available to P5 in all years.

BASE OAD SUPPLY-REQUIRINGERS RELATIONSHIPS

(Base Case Supplies plus Total Base Load Supplements) ~

Cold Weather Year (MMcfd)

=	R	equirements		. Base Case	Shortfall Pl-P4	Deliveries to
Year [P1&P2A	P2B&P3&P4	Total	Plus Supp.,	' Routs	P5
		Northern	Californ	lia		
1978 1979 1980	1,115	580 599 593	1,695 1,724 1,712	2,060 1,967 1,887	000	365 243 175
1981 1982 1983 1984 1985	1,130 1,141 1,153 1,172 1,188	593 593 593 593 593 593	1,723 1,734 1,746 1,765 1,781	1,863 1,816 2,036 2,481 2,577	. 0 0 0 0	140 82 290 716 796
1986 1987 1988 1989 1989	1,204 1,221 1,239 1,254 1,279	593 593 593 593 593 593	1,797 1,814 1,832 1,847 1,872	2,399 2,128 2,105 2,062 1,936	00000	602 314 273 215 64
		Southe	m Califo	ornia		
1978 1979 1980	1,566 1,574 1,581	574 574 570	2,140 2,148 2,151	1,928 1,772 1,893	212 376 258	000
1981 1982 1983 1984 1985	1,600 1,619 1,639 1,658 1,677	570 570 570 571 570	2,170 2,189 2,209 2,229 2,247	1,902 1,853 2,082 2,837 2,902	268 336 127 0 0	0 0 608 655
1986 1987 1988 1989 1989	1,703 1,730 1,756 1,783 1,809	570 569 570 569 569	2,273 2,299 2,326 2,352 2,378	2,855 2,780 2,752 2,703 2,630	00000	582 481 426 351 252

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 Base case supplies plus supplies from base load supplemental supply projects as shown in Appendix B.

BASELOAD SUPPLY-REQUIREMENTS RELATIONSHIPS

(Base Case Supplies plus Total Base Load Supplements)

Normal Weather Year (MMcfd)

• _	R	equirements		Base Case	Shortfall Pl-Ph	Deliveries to
Year -	PLAP2A	P2B&P3&P4	Total	Plus Supp.	Rquts	25
-		Northern	Californ	nia		
1978	1,036 1.044	580 599	1,616 1,643	2,060 1,967	0	44 4 324
1980	1,036	593	1,629	1,887	0	258
1981 1982 1983 1984	1,045 1,055 1,064 1,082	593 593 593 593	1,638 1,648 1,657 1,675	1,863 1,816 2,036 2,481	0000	225 168 379 806
1985	1,096	593	1,689	2,577	Q	000
1986 1987 1988 1989 1990	1,111 1,126 1,142 1,155 1,179	593 593 593 593 593 593	1,704 1,719 1,735 1,748 1,772	2,399 2,128 2,105 2,062 1,936		695 409 370 314 164
		Southe	rn Califo	omie		
1978 1979 1980	1,436 1,441 1,445	574 574 570	2,010 2,015 2,015	1,928 1,772 1,893	82 243 122	000
1981 1982 1983 1984 1985	1,462 1,479 1,495 1,512 1,529	570 570 570 571 570	2,032 2,049 2,065 2,083 2,099	1,902 1,853 2,082 2,837 2,902	130 196 0 0	0 0 17 754 803
1986 1987 1988 1989 1989	1,553 1,577 1,602 1,626 1,650	570 569 570 569 569	2,123 2,146 2,172 2,172 2,195 2,219	2,855 2,780 2,752 2,703 2,630	00000	732 634 580 508 411

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Base case supplies plus supplies from base load supplemental supply projects as shown in Appendix B.

BASE MAD SUPPLY-REQUIREMENTS RELATIONSHIPS (Base Case Supplies plus Total Base Load Supplements)

Warm Weather Year (MMCTD)

• =	Requir			Base Case *	Shortfall Pl-P4	Deliveries to
Year -	PlvP2A	P2B&P3&P4	Total	Plus Supp.	Rquts	P5
		Northern	Californ	1 a		
1978 1979 1980	927 932 922	580 59 9 593	1,507 1,531 1,515	2,060 1,967 1,887	000	553 436 372
1981 1982 1983 1984 1985	929 935 942 956 968	593 593 593 593 593 593	1,522 1,528 1,535 1,549 1,561	1,863 1,816 2,036 2,481 2,577	00000	341 288 501 932 1,016
1986 1987 1988 1989 1990	981 994 1,008 1,019 1,041	593 593 593 593 593 593	1,574 1,587 1,601 1,612 1,634	2,399 2,128 2,105 2,062 1,936		825 541 504 450 302
		Southe	m Califo	proia		
1978 1979 1980	1,291 1,292 1,293	574 574 570	1,865 1,866 1,863	1,928 1,772 1,893	0 46 0	63 0 30
1981 1982 1983 1984 1985	1,307 1,320 1,334 1,347 1,361	570 570 570 571 570	1,877 1,890 1,904 1,918 1,931	1,90 2 1,853 2,082 2,837 2,902	0 37 0 0	25 0 178 919 971
1986 1987 1988 1938 1938	1,383 1,405 1,427 1,449 1,471	570 569 570 569 569	1,953 1,974 1,997 2,018 2,040	2,855 2,780 2,752 2,703 2,630	0000	902 806 755 685 590

 Base case supplies plus supplies from base load supplemental supply projects as shown in Appendix B.

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VII. POTENTIAL FOR LOSING TRADITIONAL SUPPLIES IF SUPPLEMENTAL SUPPLIES ARE ACQUIRED

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Both the Act and our Order Instituting Investigation in Case No. 10342 required a legal analysis of the potential for California losing gas-supplies from traditional sources if supplemental supplies in excess of high priority needs are acquired. Western Terminal and the staff submitted their legal opinions on the question. The bulk of existing gas supply (excluding California intrastate gas production) is subject to federal jurisdiction. The Natural Gas Act gives the FERC authority to allocate gas transported by natural gas companies between customers on their individual systems. Under existing federal law, there are no rights which California has or can assert which will assure 1) the allocation of adequate supplies of natural gas to consumers in this state from sources other than the applied for LNG terminal, or 2) that consumers in this state will receive full compensation for any losses of supplies of natural gas costing less than gas converted from LNG that may result from federal allocation policies.

Both Western Terminal and the staff agree, however, that current federal policy encourages the acquisition of supplemental gas supplies. We are aware of no state which has ever had its allocation of supplies from traditional sources reduced due to the acquisition of gas from supplemental sources. On the contrary, we believe that current federal policy as stated in FPC and FERC Opinions and Orders makes it clear that California's share of available supplies would not be reduced because of the acquisition of LNG.

The FERC exercises its authority over allocations through the administration of curtailment plans for the interstate pipeline companies. Of the three interstate pipeline companies that serve California, only El Paso's curtailment plan raises any possibility of California losing traditional source gas due to acquiring supplemental supplies. In its 1974 Opinion No. 697-A which approved that curtailment plan the FPC specifically stated:

"In our view, this curtailment plan will not act as a deterrent to the development of any new storage or peak-shaving nor to the acquisition of natural gas supplies

from other sources. Furthermore, customers who plan to develop such additional supplies will neither be penalized nor preferentially treated as a result of the operations of this curtailment plan ... therefore the extent of a customer's seasonal entitlements from El Paso is not linked to nor dependent upon any increase or decrease in the customer's alternate gas supply sources, his storage, or his peakshaving capability." El Paso Natural Gas Co., 52 FPC 1885.

A recent FERC ruling supports our belief that California will not be in jeopardy of losing traditional supplies upon receipt of LNG. In <u>Pacific Interstate Transmission Company</u>, Docket No. CP77-38 et al., the FERC approved Pacific Interstate's acquisition of a short-term supplementary supply of gas from Northwest Pipeline Corporation. In doing so the FERC exempted this gas supply from the operation of the curtailment provisions of El Paso's gas tariff and noted that this exemption was consistent with the FPC's expression in Opinion No. 697-A of the desirability of encouraging El Paso's customers to develop new gas supplies.

Although now expired, the Emergency Natural Gas Act of 1977 (ENGA) gave the President authority, among other things, to allocate gas between interstate pipeline companies. The provisions with respect to compensation to the companies supplying gas are as follows:

"The party making emergency deliveries ... (A) indicates a preference for compensation in kind, the President shall direct that compensation in kind be provided by August 1, 1977, to the maximum extent practicable, ... (B) indicates a preference for compensation, or the President determines ... that any portion thereof cannot practicably be compensated in kind, the President shall calculate the amount of compensation ..., based upon the amount required to make the interstate pipeline delivering such natural gas and its local distribution companies whole for loss of sales resulting therefrom; including the actual amount paid ... for the volumes of natural gas or higher cost gas which were needed to replace natural gas delivered ... and for transportation, storage, and other expenses. ... " (Emergency Natural Gas Act of 1977, Section 4 (f) (2).)

During the effective period of ENGA, California utilities were able 7 to provide gas to other pipeline companies and subsequently received replacement in kind (Exhibit C-1, page 24) without suffering economic loss.

A. 57626 et. al. AMP

VIII. SUMMARY AND CONCLUSIONS ON GAS SUPPLY AND REQUIREMENTS. A. Summary and Conclusions

The gas supply presently available to respondent gas distribution utilities is at a level too low to meet high priority requirements in the state of California. The level of service to P5 since 1972 appears in the tabulation below.

NATURAL GAS SERVICE TO P5 (1972-1977)

		(MMcfd)		Level of
Year	Requirements	Deliveries	Curtailments	of Service
1972 1973 1974 1975 1976 1977	769 799 556 687 1034 1245	723 700 364 460 565 643	46 99 192 227 469 602	94 x 88 x 65 x 67 x 52 x
	South	ern Californi.	<u>a</u>	
1972 1973 1974 1975 1976 1977	1416 1597 1229 1295 1325 1793	856 488 378 251 215 306	560 1109 851 1044 1110 1487	60% 31% 31% 19% 16% 17%

Northern California (MMcfd)

The estimated base case supply levels include estimated supplies available from traditional sources and relatively assured supplements from the Rocky Mountains, California offshore, and utility sponsored exploration and development projects. The estimated levels of deliveries from such sources through 1990 are set forth in Appendix B.

Base case requirement estimates are the requirements of Priority 1 through Priority 4. The estimated range of such requirements through 1990 is set forth in Appendix C.

The level of supply estimates and the range of Pl through P4 _ requirements set forth in Appendices B and C form a reasonable base - upon which to consider the need for deliveries from supplemental supply projects.

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Base case supply-requirement relationships indicate that, if <u>no</u> suppl<u>emental</u> supplies are acquired, curtailment of natural gas service <u>would</u> occur as follows:

Southern California Warm Weather Conditions

- 1. P5 is totally curtailed in 1979 and P4 curtailment begins.
- 2. P2B, P3 and P4 are, as a total, over 50% curtailed by 1981 and totally curtailed by 1984.
- 3. Transfers from PG&E to protect Pl and P2A service begin in 1984.
- 4. P2A curtailment begins in 1987.

Cold Weather Conditions

- 1. P4 curtailment begins in 1978.
- 2. P2B, P3 and P4 are totally curtailed by 1981.
- 3. Transfers from PG&E to protect Pl and P2A service begin in 1981.
- 4. P2A curtailment begins in 1986.

Northern California Warm Weather Conditions

- 1. P5 is substantially curtailed by 1980 and totally curtailed by 1986.
- 2. P2B, P3 and P4 curtailments begin in 1986 and total curtailments result in 1987.
- 3. P2A curtailment begins in 1990.

Cold Weather Conditions

- 1. P5 is totally curtailed by 1982.
- 2. P4 curtailment begins in 1982 and P2B, P3 and P4 are totally curtailed by 1986.
- 3. P2A curtailment begins in 1987.

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Six long-term base load supplemental supply projects are presently being considered to alleviate the unacceptable decline in natural gas service itemized above. These base load supply projects are:

- 1. Canadian "Bubble Gas"
- 2. Mexico

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- 3. Indonesia LNG
- 4. S. Alaska LNG
- 5. Algeria II
- 6. North Slope-Prudhoe Bay

The potential quantities and timing associated with the six projects are set forth in Appendix B. Quantities and timing are uncertain. No contracts exist for North Slope or Mexican gas and the reserves under contract for the S. Alaska project are, as yet, insufficient to support the scheduled volumes. None of the projects has final regulatory approval.

In addition to the long-term base load projects discussed above, short-term supplements may be available, from time to time in unpredictable amounts, from supplies under contract and temporarily surplus to the needs of others. An affiliate of SoCal has entered into separate agreements providing short-term deliveries from suplies temporarily surplus to the needs of two interstate pipeline companies. Additional short-term supplements may be available from the <u>intrastate</u> market, particularly if the present provisions of the proposed National Energy Act are enacted. Short-term supplements cannot be considered in the same context as long-term base load supplements but, instead, provide a backup supply until long-term supplements come "on stream", or a "last resort" if needed longterm supplements fail to materialize.

Supply-requirement relationships based on the assumption that <u>all</u> long-term base load supplemental supply projects come on stream, at the times and in the quantities listed in Appendix B, indicate that curtailment of natural gas service would occur as follows:

Southern California Warm Weather Conditions

- Insignificant quantities of gas are available for P5 until 1984.
- 2. No significant curtailment of P4 throughout the forecast period.
- 3. Large quantities of P5 gas available beginning 1984approximately 64% of average 1972-77 requirementsand declining to approximately 41% of such requirements by 1990.

Cold Weather Conditions

- 1. P5 is totally curtailed through 1983.
- 2. P3 and P4 extensively curtailed through 1983, and no curtailment thereafter through 1990.
- 3. Large quantities of P5 gas available beginning in 1984-42% of average 1972-77 requirements-and declining to approximately 17% of such requirements by 1990.

Northern California Warm Weather Conditions

1. P5 gas available in all years through 1990.

Cold Weather Conditions

1. 75 gas available in all years through 1990.

Even under the unrealistic assumption that all base load supply projects come on stream, the SoCal P3 and P4 customers still face the possibility of extensive curtailment during the period ending 1983. Delays in the Mexican and Canadian "bubble" projects would potentially extend curtailment to the P2A category. Shortterm supplements may be available in sufficient quantities to fill the supply "gap". However, the assurance of relatively continuous service to P1 through P4 customers requires that modifications be made to the PG&E-PLS intertie system and the mutual assistance agreement ordered by D. 85189. A. 57626 et al. IM

B. <u>Commission policy on Long-term Natural Gas Service</u>

The parties in Case No. 10342 have provided the Commission with forecasts of the natural gas available to California through the period ending 1990. Although the forecasts differ in detail, all agree in a fundamental area: The natural gas available to the state from <u>traditional domestic</u> sources has been declining since 1972 and will continue to decline.

The result, to date, of the decline in available natural gas has been the utilization of fuel oil to satisfy a large portion of the state's enormous fossil fuel requirements for electric generation - a portion once satisfied by natural gas. Absent supplemental gas supplies, the continued decline in natural gas from traditional sources would, in the short-term, force fuel dependent industrial facilities in California to coal or oil, and, in the long-term, force small commercial concerns and residences to petroleum products or electricity.

As a matter of policy the Commission concludes that an economy which depends largely on solar and other clean, renewable energy sources is in California's best long-term interest and should be our ultimate goal. Because of the importance of this long-term energy goal as a basis for our decision on the issues in this investigation, we have not been deterred from referring to it here by the lack of adequate evidence in this record as to the prospects for future use of such energy forms $\stackrel{\bullet}{-}$

Our commitment to a position favoring long-term dependence on solar and other clean, renewable energy sources is associated with a corollary decision as to this state's choice of a primary source of energy in the interim. We believe that California can best reach its long-term energy goal by making direct use of natural gas,

Evidence has been submitted and solar energy possibilities are being assessed by this Commission in another proceeding. See CPUC Case No. 10150, Joint Investigation by California Public Utilities Commission and California Energy Resources, Conservation and Development Commission into Availability and Potential Use of Solar Energy, filed August 3, 1976.

A. 57626 et al. IM

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including LNG and SNG rather than by turning to oil and coal. To this end, we are pursuing a policy of furthering acquisition of maximum available quantities of gas, to reduce to the lowest possible level the need for California to convert from direct use of gas to either direct or indirect (for electric generation) use of coal and oil.

We have chosen natural gas use as the interim period primary energy source for this state principally because of the adverse effects of most alternative fuels on our environment, in particular on California's air quality. However, we have also been impressed by the weight of other evidence, which in our view overwhelmingly supports the gas use option as the one which is in the best interests of both the consumer and the economy. When gas use is compared with use of the available alternate energy sources for the interim period, the unacceptability of the alternatives becomes immediately apparent:

<u>Oil</u> - Substituting increased use of oil for gas in California would adversely affect air quality, require development of improved distribution systems and worsen the U.S. balance of payments and national security problems by increasing our dependence on oil imports.

<u>Coal</u> - Turning to coal in place of gas, while it would use abundant American coal resources, would also, like oil use, result in added pollution - both by dispersion as dust while being transported and as particulate matter resulting from burning as fuel for electric generation. Movement of coal from distant locations to California would also put a strain on the national rail system, and deface some areas within California with unsightly coal stockpiles. Furthermore, coal use would require the construction of costly facilities to reduce polluting emissions and dust dispersion.

The use of natural gas as the interim fuel, on the other hand, offers significant advantages. For example, in California gas comes with an in-place, efficient gas transmission, distribution and storage system. This system serves us well. Moreover, even though LNG must be imported it has a less adverse impact on balance of trade than the importation of oil.

The economics and logistics of LNG also make it superior to

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oil in terms of security factors. LNG requires massive capital investments on the part of the producing nation. In addition, the design of liquefaction and terminal facilities and tankers are closely integrated for any given project, to minimize costs, so that diversion of LNG shipments is more difficult than diversion of crude oil and related products. The fact that the cost of providing for extended storage of LNG is prohibitive, when taken with the other factors mentioned, makes interruption in LNG supply unlikely, in contrast to chances of interruption of oil deliveries from OPEC countries.

The Commission's selection of gas as a primary fuel for California, to the extent possible, until renewable energy sources can come into play, meets the <u>specific needs</u> of this state. This choice diverges from the monolithic approach to energy use which has until recently characterized federal energy policy. We are hopeful that recent federal initiatives (as in the first of five sections of the National Energy Act relating to coal conversion), indicate a realization on the part of federal energy policy-makers that various regions of the United States can solve the energy problems related to their areas <u>only</u> when they are able to use different energy mixes. Though we acknowledge that some areas can readily and economically rely on coal or oil rather than gas, we are convinced, as we have indicated above, that other areas, such as California, are better served by continued direct use of gas to the fullest extent possible.

We regret that our evaluation of the gas supply options open to this state has been impeded by failure of the Department of Energy (DOE) and the Federal Energy Regulatory Commission (FERC) to decide many of the important issues relating to gas supplies from sources other than Indonesia and South Alaska, including Algeria and Mexico. We had hoped that many of these applications still pending before the DOE and FERC would have been decided by the time the investigation in Case No. 10342 concluded. Failure of the federal government to act expeditiously in these important cases has made our decision on Western Terminal's application much more difficult. The need for a coherent DOE LNG policy is pointed out in the recent

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U.S. Comptroller General's <u>Report to Congress</u>. After an extensive investigation, the report recommended to the U.S. Congress that it should "require the Secretary of Energy to report within a given time period the role liquefied natural gas should play in satisfying U.S. energy needs. This should be supported by a systematic analysis of the various alternative energy sources or natural gas substitutes."

The Comptroller General's report notes that in the absence of a federal policy "California, for example, recently implemented a comprehensive review process for deciding on a proposal to import LNG and legislatively established siting criteria for this LNG receiving terminal." It points out that "lack of established Federal criteria and guidance for proposals to import LNG and to construct receiving terminals has caused concern at the State and local levels and contributed to the time-consuming processing of LNG import proposals." The report comments that other countries which it examined in its LNG review "seem to be moving more quickly" than the United States to import LNG.

Although we are disappointed in regulatory delays at the federal level, we share with federal regulatory agencies the problems resulting from the delay of the U.S. Congress in passing national energy legislation.

The Commission believes that the natural gas policy expressed herein is not only rational, but achievable. For example, if California acquires all of the long-term supplemental supplies identified in Case No. 10342, by 1985-86 natural gas service to California consumers could return to 1972 levels. Then, additional LNG from Australia and Chile or other areas in the Pacific basin, and SNG from coal, could provide the time necessary to convert to renewable sources, such as solar.

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United States General Accounting Office, Report to the Congressby the Comptroller of the United States, Need to Improve Regulatory Review Process for Liquefied Natural Gas Imports. ID 78-17, July 14, 1978, p. 29.

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IX. PROPOSED POINT CONCEPTION PROJECT

A. <u>Site Description</u>

The Point Conception area is a promontory where the California coastline, which generally runs north-south, turns eastward forming the Santa Barbara Channel between the mainland and a chain of islands approximately 20 miles offshore. Point Conception and the offshore islands offer the site some protection from the open waters of the Pacific Ocean. The water offshore is deep and navigable with a 50-foot mean lower low water (MLLW) depth at approximately 4,600 feet from land. An existing buoy mooring system is located a short distance west of the property for loading crude oil from a small storage facility west of Little Cojo.

The terrain in the vicinity ascends from a rocky beach to the foothills of the Santa Ynez Mountains approximately three miles to the north. This range runs generally in an east-west direction and has a maximum elevation in this vicinity of 1,600 feet. The Santa Ynez Mountains rise steeply from the coastal terrace and generally restrict man's use of the land to a narrow strip between the ocean, the first foothills of the Santa Ynez range, and a portion of the inland Jalama Valley. Much of this land is used for pasture and cultivation. On some of the higher portions of the coastal terrace, and against the foothills, citrus crops are grown. There are a few scattered farmsteads.

For the most part, the soils of the area are relatively recent deposits derived from the underlying bedrock through the normal process of weathering and mass wasting. Because of their comparatively recent origin and mode of accumulation, the surficial deposits tend to be loose, porous, unconsolidated, or poorly consolidated. The soil or topsoil consists chiefly of clayey and sandy loams, ranging in thickness from less than one foot to greater than five feet. Terrace deposits form a thin mantle, generally less than 60 feet in thickness on the wave-cut erosional surface of the underlying Sisquoc shale bedrock. A linear depression which transects the site has recently been identified as a possible fault.

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An elevated wave-cut bench, ranging from 0 to 50 feet above sea level, is exposed in the sea cliffs. Wave action continues to erode the sea cliffs.

The proposed site is in a coastal drainage region that extends from the crest of the Santa Ynez Mountains to the Santa Barbara Channel coastline. The major drainages for the site are Canada del Cojo on the west and Barranca Honda on the east. Water beneath the land surface collects in large underground basins. It can be assumed that the water table will be near the surface during parts of the year.

The wildlife resources of the site itself are not considered expecially significant; however, because the area is remote and relatively undeveloped, it is in general, an important wildlife habitat. Terrace vegetation at the site is presently disturbed by cattle grazing. The riparian woodland in Canada del Cojo is an important regional resource and, in addition, provides habitat for mule deer, coyotes, raptors, and other large animals.

The Point Conception area is considered a sacred place to local Chumash Indians, as well as other Native American groups. Religious ceremonies continue to be conducted on, or near, the proposed site. A number of archaeological sites have been identified in the area of the site, including the historic village of Shisholop. These sites are important because they are relatively undisturbed and some are thought to contain cemeteries.

The proposed ING terminal site is situated approximately 3.5 miles east of Point Conception on the coastal terrace between two canyons, Canada del Cojo to the west and Barranca Honda to the east. The ship berthing facility, together with the seawater intake and discharge pipelines, will occupy approximately 30 acres of leased offshore sub-tidal lands. Most of the land within a five-mile radius of the site is open and undeveloped. The storage and vaporization plant will be located on a 209-acre parcel. Approximately 120 acres of this parcel will be developed. The site terrain slopes to the north with a 15 percent gradient after abruptly rising to the 40-foot level from the rocky beach. A mainline of the Southern

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Pacific Railroad crosses the property, running along the coastline just north of the sea cliff. The plant will be constructed north of the railroad track. The roadway and pipe rack to connect the dock and trestle with the onshore facilities will cross under the track.

The site is part of a 975-acre parcel of undeveloped property owned by Southern California Edison Company (Edison). This property and most of the nearby area are now being used for cattle grazing. Edison estimates that a maximum of 200 head of cattle may use its property.

Situated within the local area are oil storage facilities near Government Point and a Coast Guard Reservation at Point Conception. The Coast Guard facility, located approximately 3.1 miles from the site, is fully automated, with no permanent personnel. A small, unpaved, private airstrip marked unsafe is located approximately half a mile east of the site.

Little residential development exists in the local area. The nearest residence to the proposed plant site is located approximately 4,000 feet to the east. This appears to be a small summer cottage or "second" home, situated between the railroad right-of-way and the coastal bluffs. Other structures near the site include: (1) a small beach cabana just to the west of the mouth of Canada del Cojo and 500 feet south of the site which is occupied intermittently during warm months; (2) oil storage tanks, equipment sheds, and a caretaker's shack clustered on the coast 2,000 feet west of the site; and (3) residences, barns, and sheds at the Cojo Ranch approximately 9,000 feet northwest of the site. Most of the existing residences are located on the Hollister Ranch, north and east of the site. The Hollister Ranch Corporation controls the largest of the few large land holdings in the area.

Public access to the Hollister Ranch is rigidly controlled, and recreational use of the beaches is denied to the public by the property owners who hold title to the land to the mean high tide line.



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Scuba diving is popular in the Point Conception area because of the concentrated abalone, spiny lobster, and fish populations. Access for diving is by small boat from launching facilities at Gaviota Beach State Park situated approximately 11 miles east of the proposed site.

The offshore area immediately adjoining the proposed LNG site, Cojo Reef, has been ranked by the Western Surfing Association as "fair". Cojo Point, west of the site, is considered "classic". Lefts and Rights, east of Barranca Honda and Gato, is rated "good". These areas are used by surfers, despite the vehicle access restrictions across the Hollister Ranch, which makes it necessary for surfers to boat to local beaches.

The main portion of the proposed LNG plant site has been zoned by the County as 100-AL-0, a Limited Agricultural District. Permitted uses include normal agricultural and farming operations (but with special limitations upon certain animal raising activities) and single-family residences. The minimum lot size is 100 acres, and the height limit of structures is 35 feet. The portion of the site lying between the mean high tide line, and the base of the bluffs overlooking the ocean is zoned BD (Beach Development). The BD district is highly restrictive in the uses permitted and according to Ordinance 661 (Santa Barbara County), as amended July 16, 1973, is "designed and intended to preserve and protect a limited natural resource, ocean beaches, which are an important resource in the economy of the County for the benefit of the general public, and of beach and bluff property owners...."

The 1966 General Plan for Santa Barbara County envisages the continuation of the existing open space and grazing uses throughout the local area. The plan does allow for oil-related activities in the local area subject to conditional use permits and review by the County. However, this does not constitute automatic approval for all oil-related development.

Section 5582 of the Act establishes the criteria to be applied for determining "remoteness" from human population. The recent

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population survey made by Western Terminal, detailed in Exhibit A-8 submitted pursuant to Subsection 5601(a), shows that the Point Conception site meets these criteria. According to Western Terminal's survey there are an estimated seven people, or four persons per square mile, living within one mile of the terminal site. An estimated 84 people, or 3.3 persons per square mile live within four miles. No evidence to the contrary was presented by any party.

The terminal site is also remote in terms of transient populations. There are no public roads nearby and rail passenger operations include only two trains daily.

No current efforts are being made by local, state, or federal agencies to acquire nearby lands for public recreational purposes. The Open Space and the Recreation Elements of the Santa Barbara County Comprehensive Plan (published in November 1974 and December 1974, respectively) both recommend continued low-intensity use and continued public access restrictions for the Point Conception area.

B. Description of the Proposed Facilities

1. Design of the Terminal

The proposed terminal is designed to receive LNG transported by ship; to unload and transfer the LNG into insulated storage tanks; and to withdraw, vaporize, odorize, and deliver the regasified LNG into a gas transmission pipeline. In addition to its ultimate average daily input capacity of 1.3 billion cubic feet per day (Bcfd) of natural gas, the plant will have a vaporization peaking capacity of an additional 300 MMcfd. This base load capacity will require three 550,000-barrel storage tanks for the LNG. The capacity of the plant, as set forth in the design and the requested permit, complies with the capacity limitations set forth in the Act.

As proposed in Application No. 57626, the project would be built to an initial (and final) average input capacity of 1.3 Bofd. As developed on the record herein, however, Western Terminal in fact, intends to build the project up to that capacity

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in several construction stages, each of which would be related in magnitude and timing to the development of additional increments of gas supply In Indonesia and Alaska. As now envisioned, Western Terminal will first construct a terminal complex with an average input capacity of 500 MMcfd, the volume expected to be received at the outset from Indonesia under a 20-year contract. In the expectation that it will be able to contract for sufficient reserves in south Alaska, as well as to obtain increased deliveries from Indonesia, Western Terminal has applied to this Commission for a permit for a facility with expansion capability up to the full 1.3 Bcfd average input capacity.

As designed, the project facilities consist of the following elements: (1) marine facilities, (2) LNG transfer facilities, (3) LNG storage tanks, (4) LNG regasification system, (5) onsite terminal support systems, (6) offsite terminal support facilities, and (7) gas transmission pipeline system. Summary descriptions of these facilities are set forth below.

(1) Marine Facilities

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The marine facilities will consist of one ship berth located about 4,600 feet offshore at the seaward end of a concrete trestle supporting a roadway, utilities, and piping. The ship berth will be provided with a loading platform equipped with articulated arms, a service platform with a crane to load stores aboard ship, a control tower, gangways, berthing dolphins, walkway bridges, and mooring dolphins. Deck elevation will be 40 feet above MLLW.

Alongside the trestle a small boat dock will be situated for use by service craft. It will be equipped with boat darts to secure the line-handling boats when they are not in use. Buoys will be placed shoreward on the LNG berth, east of the trestle, to moor three tugboats, one work boat, and for small craft seeking a harbor of refuge.

The marine facilities are limited by the number of ships that _ can be offloaded. An estimated berth occupancy of 40 percent of berthing capacity is required to handle ships carrying an LNG input averaging 1.3 Bcfd.
(2) LNG Transfer Facilities

The ship berth will have five articulated unloading arms. Four of the arms will be for unloading LNG from the ship. They are to connect to a 32-inch insulated cryogenic line to carry the LNG along the trestle to the onshore storage tanks. The LNG unloading line, when not in use, is kept cold by recirculating LNG from the storage tanks. The fifth arm is to be connected to a 10-inch vapor return line. A vapor compression system is designed to handle the LNG vapors produced by displacement, heat leak, and pump energy. During ship unloading some of the vapor will be returned to the dock for use as makeup gas for the ship's cargo tanks and the remainder will be handled by absorption into the sendout LNG. (3) LNG Storage Tanks

The LNG will be stored onshore at minus 260 degrees Fahrenheit (°F) at slightly above atmospheric pressure in 550,000-barrel cryogenic tanks, each of which will be constructed within an earthen basin that will serve as secondary containment. Each tank will be protected from frost heaving by an electrically heated base. The tanks will be double-walled steel with insulation in the annular space between walls. Two tanks will be required initially, and a third tank will be required for the full 1.3 Bcfd sendout. As originally proposed, the three tanks were to have been in a quadrature configuration. Western Terminal has revised the design of the plant so that they will be in an east-west linear arrangement. Each tank will be approximately 240 feet in diameter and 145 feet high.

(4) LNG Regasification System

Regasification will be accomplished by seawater-heated vaporizers supported by gas-fired vaporizers. Transformation of the LNG into gas will be accomplished by heat exchange with seawater for base load volumes and by gas firing for load leveling up to 300 MMcfd. Nine seawater vaporizers and three gas-fired vaporizers will be provided for operation at the 900 MMcfd level. Four additional seawater vaporizers will be added later to increase the capacity of the regasification system to the ultimate base load of 1.3 Bcfd. The total fuel gas usage of the terminal will be approximately 2 MMcfd, based on an average daily input of 1.3 Bcfd.

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The LNG will be initially pumped out of the storage tanks by means of submerged primary LNG pumps which will supply secondary LNG pumps located outside the tanks. The secondary pumps will raise the LNG pressure sufficiently to achieve the required sendout pressure while also providing for the internal pressure drop within the regasification system.

The system will require the intermittent operation of a gas-fired trim heater to ensure that the gas temperature is no lower than 50°F upon delivery to the gas transmission system. The gas will also be odorized and metered prior to sendout.

Seawater will be pumped to the LNG vaporizers through a 9-foot diameter concrete pipeline extending seaward 2,500 feet from the onshore pump to an intake at an ocean depth of 30 feet below MLLW. The seawater return line will be an 8-foot diameter concrete pipeline extending 4,600 feet from shore to a depth of 50 feet below MLLW. The lines will be buried through the surf zones to points offshore where littoral sand drift is not affected.

After heating and vaporizing the LNG, the seawater effluent will be returned to the ocean in a once-through mode approximately 12°F lower in temperature as a result of being circulated through the LNG regasification system. A hypochlorite compound will be used to prevent fouling of the regasification system. The volume of water required to vaporize the ultimate base-load capacity of 1.3 Bofd will be on the order of 160,000 gallons per minute (gpm). (5) Onsite Terminal Support Systems

The onsite terminal facilities will be grouped within a 120-acre portion of the 209-acre property. The onshore elements will be enclosed by a security fence. Access will be controlled. Paving will be limited to internal roads and accessways for equipment. A system of open ditches with some underground piping and culverts will collect and discharge rainfall. Areas where hydrocarbon spills may occur will be graded for drainage to a containment area.

The terminal will be monitored by a continuously operating control system with an automatic shutdown capability. Emergency

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shutdown stations will be located throughout the terminal at strategic operating points. Critical valves will be designed to shut down in a safe position in the event of failures. Detectors to identify unusual conditions will be installed throughout the terminal.

An earthen wall containment basin will be constructed around each LNG storage tank to confine any spill. Each basin will have a containment capacity in excess of the storage volume of the related tank. Equipment will be designed and positioned to isolate outbreaks of fire and fire-resistive coating will be used on critical equipment. Foam and chemical fire extinguishing systems which can be activated manually or automatically will be positioned at critical locations. A conventional seawater fire protection system will provide protection throughout the terminal. This system will also afford fire protection to the LNG tankers while moored at the terminal. Two fire trucks will be provided, one with water and foam capability, and the other with dry chemical capability.

A night illumination system will serve the berth, trestle and work areas of the terminal.

A liquid nitrogen system will be provided for terminal use, supply to the LNG tankers, and purging and inerting the LNG unloading facilities. The liquid nitrogen will be produced onsite by an air separation unit and delivered by truck to a storage tank on the trestle.

Plant and instrument air will be supplied by three air compressors. Two will normally be operating and one will be on standby. Any two of the machines will be capable of satisfying all of the air needs of the entire terminal, excluding the marine facilities which will use nitrogen as described above. The nitrogen system will be tied in with the instrument air system to serve as an additional backup. An air drier capable of drying twice the volume of the instrument air requirement will be provided. It will be regenerated * by electric heating elements.

Diesel fuel for the tugs and other service craft, emergency equipment, and certain uses on the ING tankers will be delivered to the site via railroad tank car or coastal tanker. The diesel fuel

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will be stored onshore in a 5,000-barrel tank, which will be connected to the ship berth and small-craft service dock by a diesel fuel line.

Bunker C fuel oil for the LNG ships will be delivered to the site by railroad or coastal tanker. The Bunker C fuel will be stored onshore in a 100,000-barrel tank, which will be connected to the LNG tanker berth by pipeline.

Natural gas will be used for the gas-fired vaporizers, the trim heater, and for the Bunker C fuel storage tank. The natural gas will be taken from the terminal product stream with a backup source from the odorized stream.

The water supply system for general terminal purposes will be served from onsite wells. Water storage will be provided by a 5,000-barrel tank. Potable water requirements for the terminal and LNG ships will be met by treating the well water and storing it in a 20,000-gallon onshore tank.

Raw sewage from the terminal and LNG ships will be collected and treated in a waste treatment system. The treated effluent will be discharged into the seawater return system.

A helicopter pad will be constructed at a point near the edge of the site.

(6) Offsite Terminal Support Facilities

The offsite support facilities consist of the access road, railroad spur and rail service, and an electric power transmission line.

As finally proposed by Western Terminal, the access road route follows the existing Hollister Ranch Road and is located near the coastline in the Point Conception area. It extends approximately ll.3 miles in a generally east-west direction from Gaviota Beach State Park to the proposed ING site. A staging area adjacent to an existing commercial development along Highway 101 and about one mile east of Gaviota Pass will be developed for the LNG facilities' construction work force to park its vehicles; workers will be bused . from this area to the LNG site along the access road. The purpose of the road is to provide needed access for construction and operation of the ING facilities. The staging area will be required only during the period that the latter facilities are being constructed.

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The proposed access road involves upgrading the existing Hollister Ranch Road to accommodate an average speed of 25 mph. The road will be a two-lame black top and will be upgraded to accommodate the volumes and vehicle weights of traffic required for project construction. Western Terminal proposes to continue the limited-access character of the road by restricting traffic to the Hollister Ranch and the LNG project vehicles.

The single rail line track which serves as Southern Pacific Railroad's main coastal corridor between northern and southern California passes adjacent to the proposed site. Temporary spurs will be constructed for rail delivery of construction materials and equipment. A permanent spur will be built to serve the terminal upon completion of construction activities.

An electric transmission line to the Point Conception site is proposed as a necessary ancillary part of the LNG project to provide up to 50 megawatts (mw) of power for operation of the terminal facilities at the ultimate delivery volume of 1.3 Bcfd with 3000 MMcfd of load leveling. Gas turbine generators will be installed onsite to provide electric power to meet the full load of the terminal in the event of interruption of service over the transmission line. In the event of total power failure, a battery powered system will instantly provide power to all instrumentation, control, and emergency lighting.

Edison will construct, own, and operate the power line as part of its electric utility system. The line will operate at 66 kilovolts (kv) and will extend approximately 35 miles from Edison's existing Goleta substation to the terminal. The general route Edison favors is in the vicinity of the coastline in the area from Goleta, west of Point Conception. The route proceeds in an eastwest direction from north of Glen Annie Reservoir to about Canada del Cementerio, turns south to approximately Vista del Mar School, heads west to Gaviota Pass, turns north and parallels Highway 101 to its intersection with Highway 1, and then crosses Highway 101 and continues in an east-west and finally north-south direction to the ING site.

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As conceived by Edison, the power line will be supported on steel tower structures that may vary in height from 80 to 120 feet. The distance between structures is expected to range from 100 to 4,500 feet, depending on specific topographic characteristics along the route. Edison states the proposed power line will necessitate modifications to the existing Goleta electrical substation and the construction of a new substation near the Point Conception site. Edison has a 66-kv steel-tower structure right-of-way (50-foot width) between Goleta and Gaviota, with the exception of a gap of about two miles. If Edison's concept is followed, a rightof-way will have to be obtained from Gaviota to the intersection of Highways 101 and 1. A 500-kv steel tower structure right-ofway (500-foot width) exists from Highway 101 to the LNG site. (7) Gas Transmission Pipeline System

PG&E and PLS propose to construct, own, and operate a buried 34-inch natural gas transmission pipeline that will receive the regasified LNG from the metering station at the outlet of the LNG terminal. The proposed pipeline will transport the odorized natural gas to connections first with an existing SoCal pipeline at Buellton, then with an existing PLS 34-inch transmission line at Coles Levee through the planned Ten Section gas storage field, and finally with an existing PG&E twin 34-inch pipeline near Gosford. The line will be designed to operate at allowable pressure of 1,440 pounds per square inch gauge (psig). No compressor stations are proposed.

Only one 34-inch line will be required for the first phase of the project. When the LNG project is brought up to its ultimate planned level of 1.3 Bcfd (plus 300 MMcfd load-leveling capacity), a second 34-inch pipeline will be required beginning at a point 67 miles from the LNG terminal and continuing for the balance of the ll2-mile route to its termination at Gosford, 1.5 miles southwest of the city limits of Bakersfield.

Right-of-way will be acquired as an easement. For the first phase of the pipeline, a 100-foot right-of-way will be required for construction and a 50-foot right-of-way will be maintained as

a permanent right-of-way. When the second 34-inch parallel pipeline is constructed, a right-of-way 100 feet wide will again be required, but this can be expected to extend the original construction right-of-way by only 25 feet, the normal spacing between the two lines. The permanent right-of-way maintained for the double pipeline will thus be approximately 75 feet.

2. <u>Construction Schedule</u>

Western Terminal states that the actual onsite construction of the project will begin at Point Conception on March 1, 1979 with installation of support facilities. In August 1979 excavation will be undertaken to prepare the site for the LNG tank foundations. This step will include all necessary surveying of the site for construction. In November 1979 pouring of the foundations for the LNG tanks will begin.

According to Western Terminal's schedule the next step will commence in January 1980 with the construction of the marine facilities and the seawater system. The marine facilities will be completed by August 1981 and the seawater system will be completed by January 1982. The LNG tanks will be individually erected beginning in February 1980. The completion of the last of the three tanks will be completed by July 1, 1982, following project startup. One month after the start of construction of the first LNG tank, installation of the vaporization system, as well as construction of the utilities and offsites, will begin.

If Western Terminal is able to achieve this construction schedule, startup of the terminal will occur on, or about June 1, 1982, and the plant will become operational November 1, 1982.

3. Service Life of the Terminal

The physical service life of the terminal is estimated to be not less than 25 years. Individual components of the terminal facility may not have a 25-year life, but their periodic replacement will be a part of the normal maintenance of the terminal.

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4. Gas Supply for the Terminal

The LNG which will be received at the proposed LNG terminal will originate from natural gas liquefied in Indonesia and natural gas liquefied in south Alaska. A. 57626 et al. AMP*

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PacIndonesia has entered into a 20-year contract with Pertamina for the purchase of an average of 620 billion Btu of LNG per day in Indonesia. PacIndonesia will receive the LNG at shipside in Arun, Indonesia. The LNG will be transported to Western Terminal's facilities in southern California by LNG vessels chartered by PacIndonesia. This will result in the delivery of the equivalent of approximately 500 MMcfd of gas at Point Conception.

Construction of the liquefaction facilities in Indonesia will not commence until the necessary federal approvals are obtained by Western Terminal, and the required financing is secured by Pertamina. It is reasonable to conclude that a delay in securing a permit from this Commission to construct a receiving terminal would correspondingly delay start of construction of the liquefaction facilities in Indonesia.

The condition of the Pertamina contract requiring all necessary United States permits and authorizations to be obtained before the project may proceed has been extended on three separate occasions. The last extension expired October 6, 1977. Thus, Pertamina now has the right to cancel the contract at any time, but has not yet done so. The SoCal vice president responsible for the gas supply contract between PacIndonesia and Pertamina, addressed this matter as follows in his testimony in Case No. 10342:

"Based on discussions that we have had with them (Pertamina), not only within the last two weeks, but within the past year...I think that would cause them to cancel the contract because they know that there would be further delays there, and they're anticipating a project that begins sometime in the first half of 1982. They have those revenues planned.

"And they recognize that if the California site at Point Conception is not chosen in that time frame, it's unrealistic to expect those revenues to begin.

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"So, from the state standpoint that's the critical thing with them."

Pacific Alaska LNG Associates (Pacific Alaska)²/ has entered into contracts with several natural gas producers in the Cook Inlet area⁻of Alaska. The gas will be delivered to Pacific Alaska at a central point in the various producing fields. It will then be transported via pipeline to Pacific Alaska's proposed liquefaction facilities at Nikiski, Alaska. After liquefaction, the LNG will then be transported in LNG ships to Western Terminal's facilities by Pacific Marine Associates.⁴

Pacific Alaska has also entered into separate agreements with PG&E and SoCal agreeing to deliver and sell at the tailgate of the LNG receiving terminal to each utility one half of all quantities of gas Pacific Alaska is obligated to take and/or pay for under the terms of its gas purchase agreements less the amount of gas consumed in transporting, liquefying, shipping, and regasifying such gas. Through these gas purchase agreements, the south Alaskan gas producers have agreed to sell and deliver to Pacific Alaska and it has agreed to take or pay for an average daily quantity of gas determined by dividing the quantity of estimated proven reserves in the field by 7,300 days (20 years). This obligation commences on the date of the first deliveries, or June 1, 1981, whichever is earlier.

Both parties to these contracts have rights to terminate if the Federal Energy Regulatory Commission (FERC) approvals are not received by July 1, 1978. The buyer has six months after receipt of the FERC approval, but not later than January 1, 1979, to receive all state and local approvals or additional rights to terminate arise. Thus, the contracts for South Alaskan gas could be lost by delay beyond January 1, 1979.

Pacific Marine Associates is a partnership, the parties to which are Pacific Gas Marine Company, a wholly owned subsidiary of PG&E and Pacific Lighting Marine Company, a wholly owned subsidiary of PLS.

Pacific Alaska is a partnership consisting of PacAlaska, a PLS affiliate, and Alaskan California LNG Company, a PG&E subsidiary. Pacific Alaska will own and operate a liquefaction terminal in Alaska. It will purchase and liquefy south Alaskan natural gas and sell the regasified LNG to SoCal and PG&E.

It is Western Terminal's position that if Point Conception is not approved as the site for the LNG receiving terminal, the existing gas supply contracts will be lost. Western Terminal's president testified:

"If we don't get Point Conception in this permitting process, if the CPUC recommends another site, we have lost the gas supplies that cause our urgency in going forward."

C. <u>Construction Costs</u>

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1. Phased Construction Contemplated

As developed on the record, the Phase I of terminal construction will provide for importation and regasification of an average daily volume of 500 MMcfd gaseous equivalent of Indonesian ING. Western Terminal's exhibits show that this phase of construction will be completed by April 1982. Phase II will accommodate the PacAlaska LNG project. The first increment of the PacAlaska project will require facilities to process an additional 200 MMcfd and is scheduled for completion in November 1982. However, as stated above, it does not appear likely that PacAlaska will secure sufficient gas supplies for Phase I of its project until at least 1984. The second increment of the PacAlaska project will require terminal capacity for another 200 MMcfd. Western Terminal's showing indicates completion of Phase II in November 1983. Completion of Phase III, the final stage of construction, increasing terminal capacity of 1.3 Bofd, however, will occur only after Western Terminal is able to secure additional supplies of ING. This final phase will bring the terminal up to its ultimate capacity.

2. Construction Costs of Terminal

Western Terminal estimates terminal construction costs to process Indonesian LNG (Phase I) will be about \$334.8 million in mid-1977 dollars. It will cost an additional \$13.1 million to increase the terminal capacity to handle the first 200 MMcfd

The cost figures in this paragraph are base construction costs which do not include the following: contingencies, start-up costs, filing fees, in-house costs, spare parts, financing fees, working capital, and allowance for funds used during construction.

increment of the PacAlaska LNG project. Handling the second increment of the PacAlaska project will cost another \$4.3 million, resulting in a terminal capacity of 900 MMcfd (Phase II) costing an estimated \$352.2 million. Increasing the terminal to its ultimate capacity of 1.3 Bcfd (Phase III) will cost \$39.8 million, bringing the total construction costs to \$392.0 million.

Phasing of project construction adds approximately \$13.2 million over what it would cost to construct the ultimate 1.3 Bcfd terminal in one phase. The cost of phasing of project construction has been included in the above figures since we believe this would be the manner in which construction would actually proceed. (Exhibit A29)

3. Construction Cost of the Pipeline

In consonance with the phased construction of the terminal, PG&E and PLS plan to construct initially only a single transmission pipeline over the ll2-mile route from Point Conception to Gosford in Kern County. The single pipeline will provide sufficient capacity to transport up to 1.2 Bofd of regasified LNG - 900 MMcfd base-load and 300 MMcfd peaking. Thus, the single line will allow the two utilities to transport to their gas distribution systems the full output of the terminal through the construction of Phase II - 500 MMcfd from Indonesia and 400 MMcfd from south Alaska. When additional volumes of gas supply are obtained (Phase III), PG&E and PLS will loop 45 miles with a second pipeline. The line will then be capable of transporting (without requiring compressors) the ultimate output capacity of the terminal - 1.3 Bofd base load and 300 MMcfd peaking. Western Terminal estimates the construction cost of the looped pipeline with three metering stations to be \$107.8 million.

Western Terminal subsequently submitted Exhibit A-99 which provides costs associated with the addition of certain environmental impact mitigating measures. The mitigation measures have, a total estimated cost impact of \$4,555,000 for the 1.3 Befd terminal. This additional cost is associated with those measures planned to reduce adverse air quality impacts, reduce access road environmental impact, minimize effects of the seawater system on fish population, and minimize disturbance of archaeological deposits.

4. Staff Review of Project Costs

The Commission staff presented an analysis of the reasonableness of the cost estimates presented by Western Terminal. Staff made its review by evaluating the high cost components of the LNG terminal. The component costs reviewed by the staff included the LNG unloading system, LNG storage, the LNG regasification system, the seawater system, utilities and offsites, and the dock and trestle.

The Commission staff basically agrees with the cost estimates made by Western Terminal for the LNG unloading system, for the LNG regasification system, and for the utilities and offsites. Staff also believes that the cost estimates for the LNG storage tanks are reasonable. It noted, however, that these tanks are presently designed to a 0.4 gravity (g) seismic criterion. If these tanks were designed for a 0.6g seismic criterion as recommended by staff's environmental consultants, the costs of the tanks could increase substantially. Based upon a work paper supplied to the staff by Western Terminal, the costs for three storage tanks could increase as much as \$34 million. Ingrounding of the tanks would cause the costs to go even higher.

With respect to the seawater system cost estimate, staff found the material cost, \$14 million, to be fairly accurate. The staff noted, however, that the installation cost of the system, estimated to be \$47 million, could vary considerably. The staff pointed out that the installation cost estimate is based upon a sandy ocean floor soil condition. The staff concluded that if the soils investigation revealed a rocky ocean bottom, or if the location of the seawater system was moved, substantial cost increases could occur. The staff also noted that the fish return system was conceptual only, and its costs could be accurately estimated only when a final design was made.

As to the dock and trestle cost estimates, \$78 million, the staff believes "there exists the potential for a large cost overrun". The staff pointed out that the cost estimate for this

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In its report staff also pointed out that the exact seawater and seismic conditions to be used in the design of the trestle have not been established, nor had the soils report for the ocean bottom been completed. The staff engineer testified that soil conditions will affect the installation of the piles and their length, thus their costs. Based upon the foregoing, he made the reasonable conclusion that there was a potential for a large cost overrun on the dock and trestle.

The staff believes that Western Terminal's cost estimate is adequate for a preliminary estimate. However, the staff also believes a number of contingencies could occur before construction of the project is completed which would affect the construction costs. Such contingencies include revised seismic design criteria, revised LNG safety requirements, relocation of terminal facilities, and construction problems and delays. The staff pointed out that each of these factors presents the potential for significant cost overrun, and that only when final location, design criteria, and safety standards have been established, can reasonably accurate

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cost estimates be made. Western Terminal seems to agree. One of its witnesses testified that appropriate contingency for construction cost estimates could be as high as 15 to 16 percent.

The staff takes the position, however, that once a final site has been chosen and a final design has been made for the terminal, Western Terminal may be able to construct much of the terminal without experiencing substantial cost overruns. This conclusion is based on staff's review of the type of contract Western Terminal intends to enter into with its main contractor, Fluor Engineers and Constructors, and the manner in which Fluor Engineers and Constructors intend to carry out the actual construction of the terminal. Staff also believes that its role in monitoring construction costs will also help prevent significant cost overruns. The staff points out that the truly relevant cost test to be utilized in determining whether to issue a permit to construct and operate, is the relative unit costs of gas from an LNG project as compared to other gas supply projects.

Staff recommends that Western Terminal be required to submit updated cost estimates when authorization is sought by SoCal and PG&E to guarantee the construction loan of Western Terminal. A. 57626 et al act

D. Cost, Safety and Construction Monitoring Plans

The Act requires the Commission to "establish a monitoring system to ensure that any terminal authorized . . . is constructed and operated in compliance with all applicable regulations adopted and terms and conditions established . . ." (Section 5637) and to "monitor costs incurred in the construction . . . of any terminal . . . in order to determine if the costs are in the best interests of the ratepayers." (Section 5638)

In response to these provisions, the staff introduced the following exhibits into evidence in these proceedings. Exhibit A-46, "Report on Cost Monitoring," is a plan which would establish a staff cost monitoring team composed of auditors and other professionals assigned to the project on an ongoing basis to assure that all costs are prudently incurred in accordance with the plans and specifications approved for the project. Exhibit 0-76, "Report on the Safety and Construction Monitoring Program of Western LNG Terminal Associates' Liquefied Natural Gas Facilities at Point Conception," proposes the establishment of a staff monitoring team to ensure that the plant is designed, constructed, and operated in a safe and reliable manner.

1. Cost Monitoring Plan

The staff's cost monitoring plan would establish a cost monitoring team composed of auditors and other professionals assigned to the project on an ongoing basis to assure that all costs are prudently incurred in accordance with the plans and specifications approved for the project. Under the staff plan, the members of this team would need to be thoroughly familiar with the scope of the project and the project's budget. They would need to be made aware of changes in the scope of the project so that they could identify potential cost overruns, budget changes, or problem areas as they arise. The staff states that the intent of its plan is to work closely with Western Terminal's project management team, conferring _ on any problems as they arise, thus giving Western Terminal the A. 57626 et al. _____b.

opportunity to address the problem areas before incurring costs which could conceivably be disallowed for ratemaking purposes.

Under-its plan, the staff proposes to submit to the the Commission and other regulatory authorities, monthly progress reports which would state the percentage of project completion, percentage of time elapsed in the overall schedule, summary of work accomplished, cost overruns or potentials for cost overruns and any other facts necessary to determine whether the construction costs of the terminal were prudently expended in the ratepayers' interest.

According to the staff, Western Terminal has not considered interaction with the Commission in the preparation of its management plan. The staff recommends that, if Western Terminal is granted a permit for construction of the project, it submit a management plan to the Commission which would include the following:

- Organization charts identifying project management staffing to the project.
- A list of all contractors, subcontractors, and major equipment suppliers, accompanied by performance criteria for each company.
- Western Terminal's latest cost estimates including any necessary supporting documents.
- 4. The latest detailed construction schedules including network plans.
- 5. Provisions in all specifications for prospective bidders that the Commission reserves the right to audit their records should they be granted a contract to perform a portion of the work or supply some of the materials or equipment.
- 6. Complete documentation for each change requiring a contract change order.
- 7. Provision for weekly meetings between Western Terminal and/or its contractors with the Commission Cost Monitoring Team.

8. Provisions for onsite office space for the Commission Cost Monitoring Team.

While no party presented evidence in opposition to the staff's cost monitoring plan, Western Terminal in its Interim Brief voiced exception to the portion of the staff monitoring report which provides "the CPUC staff should be present at all meetings where changes in scope are being proposed". Even though, on cross-examination, the staff granted that its only interest at any such meetings would be to observe, Western Terminal takes the position that staff's view is entirely unacceptable, and that such an intrusion into the management of the terminal is unwarranted and totally outside the scope of the monitoring envisioned by Section 5638 of the Act. Western Terminal contends that, because it is willing to provide all the information necessary for the timely and proper functioning of the Cost Monitoring Team, there is no reasonable basis for this procedure suggested by the staff.

Staff presence at meetings where changes are being proposed is essential to its ability to form a valid judgment as to the reasonableness of the action taken and therefore to make appropriate recommendations to the Commission with respect to the proper ratemaking treatment that should be utilized. We are not indicating that staff should be any more than a silent observer at these meetings, staff members should not become involved in any way in the discussions and resultant action. Providing minutes of these meetings to staff is not an adequate alternative to attending the meetings. Minutes structured after the fact, would do nothing more than bootstrap the decision reached after verbal give and take.

We conclude that the staff's cost monitoring plan is reasonable and should be adopted.

2. Safety and Construction Monitoring Plan

During Phase I of OII-I, Western Terminal was not prepared to cross-examine or prepare direct evidence with respect to the staff's safety and construction monitoring plan. Based on applicant's request, this matter was deferred to Phase II.

The terms and conditions and the environmental mitigation measures adopted in this decision require that the impacts of the

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construction of the terminal, access road, gas transmission pipeline, and electric transmission line be monitored during construction so that procedures, locations, and/or methods employed can be modified to mitigate these impacts to the extent feasible. Based upon the record in this proceeding, it is clear the Commission must monitor the costs, safety, and environmental aspects of the project. We are, therefore, ordering that Phase II of OII-1 shall consider the extent to which staff's proposed monitoring program (safety and environmental) shall be implemented.

The record also shows that to obtain the necessary expertise for this endeavor, the Commission will have to go outside of its own staff occasionally and contract with private consultants, other state agencies, and appropriate county agencies to assist the Commission staff in reviewing the plans and specifications and to provide other services as required.

The monitoring programs will help to ensure that the ratepayer receives a reliable and safe source of gas at the minimum cost possible. The ratepayers will receive the benefits from any new gas supplies received by PG&E and SoCal and should, therefore, bear the cost of the new supplies, including the cost of establishing and implementing the programs. These monitoring programs are mandated by the Act and apply only to this specific project and, therefore, should be subject to reimbursement by the applicant (Western Terminal).

Therefore, Western Terminal will be required to reimburse the Commission for the continued costs of processing these applications and investigations, as well as the costs associated with the establishment and implementation of the cost, safety, and environmental monitoring programs ultimately adopted by the Commission.

E. Financing

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1. Capital Requirements

The instant application addresses only the construction of an -LNG terminal and its associated pipeline in California. However, the LNG terminal is merely a part of an overall project to deliver

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LNG to California from Indonesia and South Alaska. When analyzing the financial requirements of the terminal project, it is necessary to review the financing requirements of the applicant and its sponsors PG&E and PLC for all aspects of the PacIndonesia and Pac-Alaska ING projects.

Western Terminal's Exhibit A-17 shows the total investment for PacIndonesia project will be \$596 million and for the first and second phase of the PacAlaska project to be \$886 million and \$386 million, respectively (based on mid-1977 dollars). The cost of the gas transmission pipeline from the terminal has not been included in those investment requirements.

The following tabulation shows a breakdown of the various elements of these two LNG projects:

		Working				
		int	<u>Capital</u>	Total		
		(M1d-1977				
PacIndonesia Project						
Pac Indonesia Project Western Terminal	\$	564,544	\$24,000 7,556	\$	24,000 572,100	
	\$	564,544	\$31,556	\$	596,100	
PacAlaska Project						
Phase I		·				
PacAlaska LNG Associates Liquefaction Facilities Alaskan Pipeline System Pacific Marine Associates Western Terminal	\$	466,255	\$29,592	\$	663,500	
		195,720 24,250	1,471 1,250		197,191 25,500	
Total Phase I	\$	853,878	\$32,313	\$	886,191	
Phase 2						
PacAlaska LNG Associates Liquefaction Facilities	\$	140,097	\$14,081	\$	186,500	
Alaskan Pipeline System Pacific Marine Associates	_	197,921	1,476	_	199,397	
Total Phase 2	\$	370,340	\$15,557	\$	385,897	
Total PacAlaska Project	; \$	1,224,218	\$47,870	\$	1,272,000	
Total LNG Projects	\$	1,788,762	\$79,426	. \$	1,868,188	

The above tabulation indicates that the total investment in the PacIndonesia and PacAlaska LNG projects will be \$1.87 billion. Exhibit A-I8 of Western Terminal shows that of the \$1.87 billion, the amount of \$1.65 billion will be cash requirements that must be financed. Also, Exhibit A-18 indicates that \$188 million will be the required equity investment of both PG&E and PLC.

The pipeline facilities for the transmission of the regasified natural gas from Point Conception to PG&E's line at Gosford, California, is estimated to cost \$117 million. (Ex. A-14, p. 4) This pipeline will be jointly owned 50% by PG&E and 50% by PLS. The pipeline will be financed conventionally with no special financing earmarked for the pipeline construction. Rather, the capital will be provided from general corporate financing as part of PG&E's and PLC's overall construction programs.

2. Project Financing Proposed

Western Terminal proposes to finance the terminal facilities with project financing. In project financing, lenders rely chiefly on assurances of adequate revenues flowing from the project itself through contractual arrangements or tariffs, rather than on the direct general credit of the sponsoring companies, in this case, PG&E and PLC. Although the sponsors' credit is indirectly involved, the chief recourse of the security holders is through operations of the project.

Moreover, project financing of this LNG terminal will permit the project to be financed while at the same time permitting the financial integrity of the sponsoring companies to be preserved. Project financing is particularly appropriate for new, single-purpose endeavors such as herein proposed.

The record shows that project financing is the least costly feasible method to finance the terminal. Both staff and Western Terminal's financing analyses demonstrated that project financing results in lower costs to the consumer because it permits the use ______ of a greater portion of lower cost debt in the capital structure A. 57626 et al. ALT.-RDG-IM

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of the project in comparison to other conventional types of financing. The proposed capital structure is 25 percent equity, to be invested by PG&E and PLC, and 75 percent debt. Western Terminal has estimated a 10 percent cost of debt for these LNG projects.

The record shows, however, that such financing will be available only if the required revenues assurances for lenders are built into Western Terminal's contractual arrangements and tariffs.

Western Terminal's financial witness testified that to be able to project finance these LNG supply projects, it will be necessary for PG&E and SoCal to obtain authorization from this Commission to guarantee the Western Terminal construction loan. Commission approval will also be necessary to allow the sponsoring companies to recoup all of their reasonable costs. He stated these assurances must be forthcoming before actual financing takes Place, and that the lenders will require assurances that the sponsoring companies will be able to meet their equity investment requirements. He said, "The fact of equity having to go in concurrently or just ahead of debt is just a fact of life . . . your equity is going to have to be in there. That is just a basic principle."

While it is not necessary for us to resolve this issue in this decision inasmuch as PG&E and SoCal will have to file a separate application with the Commission to obtain such assurances, we would be remiss if we did not clearly point out to all concerned that this Commission does not intend to deviate from its policy of delineating the rights and duties of investor and consumer.

We have stated in the past that the California consumer will not be required to become an involuntary investor, with no control over management, in projects that lawfully must be initiated by the utility owner or debt holder. The project financing that we will approve by subsequent decision, after all other regulatory approvals have been obtained, must be able to meet the foregoing criteria.

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3. <u>Review of the Financing Plan</u>

The staff introduced a number of exhibits on the financial aspects of The application. It should first be pointed out that staff's analysis of the financing techniques proposed for the LNG projects clearly establishes that project financing is the best method to utilize. The key economic indicators reviewed by the staff in its analysis are highest in those tables assuming project financing. Also, staff asserted that PG&E will, even assuming its large capital A. 57626 et al. 🛑 cb 🕈

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Staff^Ts presentation indicated that it is concerned about the ability of PLC to finance its share of its investment in LNG projects. Staff raises this issue because applicant has stated that before any financing of LNG projects takes place, the equity investment must be tied down. This concern was based on PLC's statement to staff that its investments in gas supply projects will be financed with common stock and that in escalated dollars, this financial burden over the next five years will be \$708 million. In light of this response, it appeared to staff that when realizing PLC presently has 23 million shares of outstanding stock, PLC might experience difficulty in marketing 37 million additional shares. Staff was concerned that if at some point PLC was unable to market its stock to raise capital for its equity investment in the projects, SoCal would require extraordinary rate relief which would have significant effects on SoCal's ratepayers.

Based upon rebuttal testimony of Western Terminal, it now seems that some of staff's concerns are unwarranted.

Western Terminal's rebuttal shows that PLC has financed approximately \$75 million already for proposed gas supply projects. These amounts will serve to reduce the amount of new equity required to be issued after construction starts. Moreover, it also demonstrates that PLC will finance its portion of the required investment in the LNG projects with issues of common stock, preferred stock, or convertible debentures. Also, straight debt will likely be used on a short or medium term basis to lengthen the period over which equity funds are to be obtained.

This rebuttal also indicated that it is unlikely that the convergence within the next five years will occur as stated in the capital budgets submitted to the staff. Western Terminal's witness indicated that its submittal to staff represented PLC's goals and did not necessarily reflect real world conditions.

In fact, Western Terminal's financial witness testified to the current status of the various gas supply projects of PLC. It is not necessary to describe the various stages of the projects identified. It does appear, based on the testimony of Western's financial witness, that due to delays being experienced with other gas supply projects, PLC will not require all the financing within the time frame shown in the projected capital budgets supplied to the staff. The record is not clear when the other gas supply projects of PLC will reach the stage of requiring additional financing of the magnitude indicated in the capital budgets supplied the staff. When PG&E and SoCal come before this Commission for authorization to guarantee Western Terminal's construction loans, more definitive facts may be available to indicate the status of all PLC's gas supply projects.

The PacIndonesia project has been determined to be in the public interest by the DOE. In Opinion No. 1 of ERA, an all-events, costof-service tariff as requested by applicants was found not to be in the public interest. This finding and conclusion was in agreement with this Commission's continuing position on the subject and as reflected in the Commission's briefs in the PacIndonesia filing before the appropriate federal regulatory bodies (FPC, ERA, FERC). The Commission adopts the positions set forth in its briefs before the FPC, ERA and FERC in the <u>PacIndonesia</u> proceedings (Dockets Nos. 77-001-LNG; CP74-160, CP74-207, CP75-83-3.)

The PacIndonesia project, including the Point Conception terminal, appears to be the most viable gas supply project, and the first project that will have to be financed. The evidence is convincing that the proposed terminal can be financed, assuming that market conditions are normal, that security arrangements and return on equity are deemed adequate by the investors, and that regulatory authorities approve the tariffs and other matters essentially as proposed. Given the same conditions, the record indicates that the_ PacAlaska project, which will follow PacIndonesia, can also be financed.

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In this proceeding, it is the contention of Western Terminal that costs had been incurred to date for the development of terminal sites other than Point Conception. There were two sites mentioned in particular, Los Angeles Harbor and Oxnard, that had been under consideration for an LNG Terminal in California. The record indicates that the costs incurred for these two potential sites include elements of the development of a terminal that would be applicable to the Point Conception site. Since the filing of this application, expenditures for other sites have also been incurred by Western Terminal.

It is the intention of this Commission to recognize all prudently expended costs for Los Angeles Harbor, Oxnard, Point Conception or any other potential sites as part of any LNG terminal project ultimately constructed in California. However, in connection with the staff's Cost Monitoring Plan, all costs being incurred for the development of an LNG terminal in California are being examined and will continue to be examined to determine their prudency.

F. Cost of Service

Western Terminal's Exhibit A-29 presents an estimate of investment requirements and cost of service for 500, 700, 900, and 1,300 Mcfd capacity incremental expansions of the LNG terminal facilities in mid-1977 dollars. The total investment requirements for each phase of development of the LNG facilities is: \$572,100,000 for 500 MMcfd; \$591,276,000 for 700 MMcfd; \$597,600,000 for 900 MMcfd; and \$650,100,000 for 1,300 MMcfd. Should the facilities be constructed without phasing them, as shown in Exhibit A-14, the total investment requirement is \$681,000,000 for 1,300 MMcfd.

Under the phased approach of Exhibit A-29, the fifth-year unit cost of service of the terminal, not including the pipeline, is 56 cents per million Btu (MMBtu) for 500 MMcfd; 45 cents per MMBtu for 700 MMcfd; 36 cents per MMBtu for 900 MMcfd; and 31 cents per MMBtu for 1,300 MMcfd. Assuming no phasing of construction, the fifth-year unit cost of service is 34 cents per thousand cubic feet (Mcf). A. 57626 et al. acb *

Exhibit A-14 shows that the estimated annual cost of service related to the pipeline is \$11,662,000 in the first year of operation, and \$18,561,000 in the fifth year of operation. According to Exhibit A-14, the unit cost of service for the pipeline is \$0.02per Mcf in the first year, and \$0.04 per Mcf in the fifth year.

Exhibit A-37a illustrates the cost impact on SoCal's average consumer price of gas in mid-1977 dollars. This exhibit demonstrates that in the anticipated first calendar year of full operations (1984), the cost impact of 450 MMcfd[#] upon SoCal's average consumer price of gas is 27 cents per Mcf; in the fifth year the cost impact is 13 cents per Mcf.

Exhibit A-47 illustrates the LNG cost impact on PG&E's average consumer price of gas. In the first calendar year of full operations (1984), the cost impact from receiving 450 MMcfd 1s 19 cents per Mcf; in the fifth year the cost impact will be 21 cents per Mcf.

Exhibit A-48 sets forth the cost impact of the Indonesian LNC alone on SoCal's average consumer price of gas in mid-1977 dollars. The cost impact in the first year of full operation is 20 cents per Mcf and in the fifth year the impact is 12 cents per Mcf. Exhibit A-47 demonstrates the cost impact of the Indonesian LNG alone on PG&E's average consumer price of gas. In the first full year of operations, the average consumer cost impact is 12 cents per Mcf and 21 cents per Mcf in the fifth year of operations.

The evidence presented by Western Terminal shows the LNG projects' impact on the rates that the gas distribution companies will charge the natural gas concumers in California. This impact depends upon the cost of new gas supply to the distribution companies and upon the then existing quantities and costs of all their other supplies of gas.

^{*/} This represents SoCal's 50 percent share of the project gas supply of 900 MMcfd gas from the PacAlaska and PacIndonesia projects.

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This opinion presents an opportunity to put Western Terminal on notice with respect to an important cost of service element, federal income tax expenses. The cost of service passed from Western Terminal to its public utility affiliates (PG&E and SoCal) will receive careful scrutiny. Potential for abuse exists wherever regulated utility monopolies have procurement transactions with non-public utility affiliated companies. Accordingly, when Western Terminal commences delivery of gas to PG&E and SoCal we must decide if the price paid by the public utilities to their supplier affiliate

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is a reasonable expense for ratesetting purposes.

Western Terminal will have the option to account for accelerated depreciation and investment tax credit (ITC) by either flow through or normalization. If Western Terminal flows through the tax deferral and savings from taking accelerated depreciation and ITC, it will have a reduced revenue requirement and gas users will have lower rates. The normalization route, if elected, will mean the effect of accelerated depreciation and ITC are largely ignored, and the consumer gets the prize of higher gas rates resulting from fictitious tax expense being passed his way. We are certain that the public utility partner s in Western Terminal are aware of our longstanding position on the normalization versus flow through issue.

Western Terminal is hereby put on notice that if it elects to normalize we will make a ratemaking adjustment to SoCal and PG&E expense for Western Terminal gas to reflect the flow through of tax savings. We may not make Western Terminal adopt flow through and we may not direct PG&E and SoCal to not pay their affiliate a gas price that reflects normalization. But we can impute tax savings available to Western Terminal and pass the benefits on to California's ratepayers in our ratemaking process.

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X. THE ALTERNATE SITES

A. <u>Camp Pendleton</u>

1. Ste Description

This dite is ranked first among four in the final report of the CCC. It is on a southwest-facing coastal terrace in San Diego County within the boundaries of the Camp Pendleton Marine Corps base, about 10 miles north of Oceanside and five miles south of the Edison nuclear power plant at San Onofre. It is bounded by Highway 5 on the east and Horno Canyon on the north. The site itself is barren except for scrub grasses.

The site encompasses about 100 acres of the coastal terrace which has a gentle southwestern slope of less than 5 percent. Bluffs having an average height of 90 feet front the beach, which ranges in width from 40 to 100 feet.

The terrace deposits of Salinas clay loam tend to be loose, porous, unconsolidated or poorly consolidated, and expansive. They average three to five feet in depth and are underlain by Monterey formation and San Onofre formation bedrock materials. This area is prone to soil creep, soil expansion, and large landslides. The cliffs are actively eroding, largely as a result of landslide activity. Landslides ranging from a few feet to 400 feet are not uncommon in this region.

The site is not located within any major groundwater basin. Surface drainage is effected predominately through sheetflow (off the terrace to the ocean) and through Dead Dog Canyon, the southwest trending barranca that transects the site. This barranca has shown an average erosion rate of 15 feet per year.

No active faults have been identified within the Camp Pendleton area. The nearest active fault is the South Coast Offshore Zone of Deformation which is six miles west and is ascribed a maximum credible earthquake (MCE) of 7-1/4 magnitude (0.5 to 0.67g). The Cristianitos fault lies three miles north of the site. It exhibits no evidence of any fault movement in the past 500,000 years.

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Winds exceed 25 knots five days a year. Wave heights exceed six feet nine days each year.

2. Conceptual Layout of Terminal

At the request of the staff, Western Terminal produced conceptual layouts for a terminal at each of the alternative sites ranked by the CCC. In each case the terminal is designed to receive, store, regasify, and deliver to a transmission pipeline the same ultimate capacity as planned for Point Conception. As the basis for developing the conceptual layouts, Western Terminal used the engineering design for the proposed Point Conception terminal modified to fit the topographical, environmental, and other peculiarities of each particular site.

There are certain major modifications in design involved in mitigating measures desired by local and state authorities at each site; therefore, the staff requested Western Terminal to provide design and cost data on these modifications. At Camp Pendleton these mitigating measures concern: building an undersea tunnel in lieu of a trestle between ship berth and onshore facilities, placing the LNG storage tanks below grade, and utilization of nuclear power plant cooling water in the vaporization process.

In the following descriptions of conceptual layout at each of the three alternate sites only those portions of the terminal which are significantly different from the basic Point Conception design are discussed.

Marine Facilities

The ship berth at the Camp Pendleton site would be 8,700 feet offshore at the seaward end of the trestle. The cryogenic transfer line which carries LNG from unloading arms at the ship berth to the shore facilities would require a pipeline 36 inches in diameter because of the longer trestle length. The seawater intake line would have to extend 3,200 feet offshore to reach a water depth of 30 feet. The cooled seawater discharge line would extend 8,500 feet to reach a water depth of 50 feet. A. 57626 et al. - 🎽

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Western Terminal's design for an undersea tunnel as an alternative to the trestle at Camp Pendleton calls for a two-chambered structure. One would be used for LNG transfer, recirculation, and vapor-return lines; the other would provide for maintenance, communications and electric lines, service piping, etc. A barge dock would be added to the berthing facilities for receiving and unloading ship stores and liquid nitrogen. During construction of the tunnel, a bulkhead and temporary marine trestle would have to be built in the surf zone.

In constructing such a tunnel at Camp Pendleton, one million cubic yards of sandy soil would have to be dredged and disposed of offshore. Also, one-half million cubic yards of backfill and 25 thousand cubic yards of foundation stone would need to be barged to the site. The requirement to construct the undersea tunnel would add 28 months to the construction schedule for a Camp Pendleton terminal, delaying the on-line date from October 1, 1984 until February 1, 1987. (See Figure 1., $-\frac{*}{}$ infra.)

Seawater Exchange

This mitigation measure for Camp Pendleton would require the diversion of 137,000 gpm of heated seawater effluent from the San Onofre nuclear generating station. The original proposal for this mitigation measure envisioned obtaining the heated seawater discharge from the power plant, pumping the water 27,000 feet to the LNG plant, passing it through the vaporizers, then returning this water, 14°F cooler, to the power plant outfall system for discharge to the sea. This proposal was modified by Western Terminal to

Figure 1 has been developed from the staff Exhibits A-115 and A-120, as well as related testimony. It assumes that all necessary regulatory approvals for an alternate site could be obtained in one year from the date of filing an application for the alternate site.



Figure 1.

PLANT AVAILABILITY COMPARISON

NITH MITIGATION MEASURES



eliminate returning the cooled seawater to the power plant by utilizing an independent outfall system for discharge directly from the LNG plant to the sea. The modified proposal would require pumps totaling 15,500 horsepower.

Construction of a seawater exchange system would not affect the overall construction schedule at Camp Pendleton.

LNG Storage Tanks

To reduce the hazards of locating the three 550,000-barrel LNG tanks in proximity to the highway and railroad, Western Terminal would construct concrete dikes around each tank. As a mitigating alternative, the tanks could be placed so that two-thirds of their outer wall height would be below plant grade. Under this arrangement, the tanks would be surrounded above plant grade by an earthen berm with a top elevation equal to the maximum LNG level. Ingrounding the LNG tanks in this fashion would add seven months to the time required to bring an LNG facility at Camp Pendleton on-line, moving the estimated operational date, as estimated by the staff, from October 1, 1984 to May 1, 1985. (See Figure 1.)

Electric Service

Electric service would be readily available from SDG&E. SDG&E has an existing 230-kv line running within 1,500 yards of the proposed Camp Pendleton site.

Access Road

Highway 5 and The Atchison, Topeka and Santa Fe Railway run along the coast adjacent to the site and would be available to transport personnel, material, and equipment to the site. Because present roadway access to the site is inadequate, Western Terminal would construct on the beach side of Highway 5 a new two-mile access road from the Las Pulgas interchange to the site.

Gas Transmission Pipeline

This pipeline would be constructed over an 84-mile route from the metering station at the Camp Pendleton terminal to the existing PLS twin 36-inch transmission lines at Fontana in San Bernardino ² County, with intermediate connections to existing SoCal 12-inch (30 MMcfd) and 16-inch (350 MMcfd) lines serving San Diego County.



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The new transmission line would consist of one 34-inch buried line, which would carry the peak output of the terminal without requiring compressor stations en route.

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3. <u>Major Environmental Concerns</u>

The Camp Pendleton site has easy access to both an interstate freeway and a railroad line. Highway 5 is one of California's major highways. Approximately 68,000 cars per day pass directly by the site. The LNG facility would be visible from Highway 5. Two miles to the northwest of the site there is a customs-immigration check point, the operation of which causes northbound traffic frequently to be backed-up along the highway for a considerable distance.

Military operations at Camp Pendleton would interfere with the operation of an LNG terminal and vice versa. Camp Pendleton is one of two remaining Marine Corps bases in the United States; it is the only site on the west coast that can accommodate training exercises in amphibious landings. The Marine Corps is firmly opposed to use of the site for an LNG terminal. The Navy Department contends that continuation of the present use of the beaches near the site for combined marine and naval assault training is essential to the national defense.

Marine barracks are located 3.8 miles from the site. Including Marine Corps personnel, there are over 6,500 residents within four miles of the site. This density exceeds the population criteria of the Act. The record shows that it would cost 50 to 75 million dollars to qualify this site by relocating the Marine Corps facilities outside the four-mile radius.

The socio-economic impacts at this site would probably be minor. Camp Pendleton is within commuting distance of a large labor pool so the socio-economic impacts produced from in-migrant labor populations would be minimal.

There is extensive public recreational use in and around the proposed Camp Pendleton site. San Onofre State Beach, having an

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annual attendance of nearly half a million people, is within one mile of the site. Within two miles of the proposed site is a recreational vehicle campground, known as Red Beach, which accommodates approximately 2,000 recreational vehicles per year. Contiguous to the proposed site there is a highway turnout and viewpoint. Immediately northwest of the site is a bicycle path, and the site itself is within the one half-mile corridor proposed by San Diego County for riding and hiking trails.

In general, the site does not support significant marine resources, although Exhibit 00740 introduced before the CCC by the California Department of Fish and Game Report shows that the site is more heavily used by sport fishermen than the other sites. Also, the site does not support significant land resources and the majority of land crossed by the pipeline is disturbed land. Moreover, the development of an LNG terminal at Horno Canyon would have minimal or no impacts on archaeological or sacred/religiously significant sites.

It is clear to us that Horno Canyon, as with the other two CCC recommended sites, does not meet the spirit if the letter of S.B. 1081.

Section 5552 is crystal clear as to the need for, and reason for, requiring a remote site. Section 5582 provides specifically the limits of acceptable population density. If Section 5582 standards cannot be met the site is not lawful. Horno Canyon does not qualify because of the permanent personnel within the four mile limitation. Furthermore, we will not ascribe to the legislature the inconsistency of mandating a remote site ... "to provide the maximum possible protection to the public against the possibility of accident" while expecting the CCC and this Commission to ignore significant transient public exposure far beyond the 60 person per square mile limit of Section 5582 but = within the four mile proscription. No site can be remote that lies within the four mile range of heavily used state parks and an interstate highway with the volume of traffic set forth in our record.

At this time it appears that operation of an LNG facility at the site would not contribute significantly to the emissions inventory in the San Diego air basin. Emissions from ship traffic would be minimized somewhat since tankers would be berthed about two miles from shore.

4. Investment Required and Cost of Service

The staff's Exhibit A-120 shows that the investment (in mid-1977 dollars) required for a terminal at Camp Pendleton would be \$1.016 billion. Ingrounding the LNG tanks would require an additional \$85 million, the submarine tunnel would require an additional \$366 million, and the seawater tie-in to the San Onofre nuclear generating station would require an additional \$29 million. Incorporating these three mitigating measures into the plant would increase the total investment requirement for a terminal at Camp Pendleton to \$1.435 billion.

According to Exhibit A-120 the fifth-year cost of service for the terminal at Camp Pendleton would be \$0.52/Mcf without the mitigating measures, \$0.55/Mcf with ingrounding of the LNG tanks, \$0.69/Mcf with substitution of a submarine tunnel for the trestle, and \$0.53/Mcf with a seawater tie-in to the San Onofre nuclear generating station. Incorporating all three mitigating measures into the project would increase the fifth-year cost of service to \$0.71/Mcf.

B. Rattlesnake Canyon

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1. Site Description

Rattlesnake Canyon is ranked second among the four sites included in the final report of the CCC. It is located on a southwest-facing coastline in San Luis Obispo County, two miles northwest from Point San Luis and four miles southeast of PG&E's Diablo Canyon nuclear power plant. The site area is a 1-1/4-mile portion of a six-mile stretch of coastal terrace which is currently partially used for the cultivation of snow peas.

Terrace elevations vary from 50 to 100 feet at the top of the coastal bluff to 160 feet at the base of the mountains, increasA. 57626 et al. - bf

ing at a gentle slope of 2 percent. The terrace is incised to a depth of 30 feet through the center by Pecho Creek. The sea cliff stands near vertical at the surf line where a wave-cut bench in the bedrock protects the terrace from rapid erosion.

Alluvial terrace deposits are underlain by competent sandstone and claystone. The area north of Pecho Creek is well graded and soils are granular with low compressibility. South of Pecho Creek, deposits from Rattlesnake Creek exhibit landslides and slumping. These deposits are compressible. The surface soils average three to seven feet and are composed of sandy silt with a moderate percentage of clay. These soils are unsuitable for foundation materials and would have to be removed. The terrace materials would be subject to frost heave if exposed to extreme cold from LNG.

Ground water is probably as deep as the interface between the 60- to 70-foot terrace deposits and the underlying bedrock. However, there is water seepage at the 10-foot level south of Pecho Creek, and multiple lenses of water after heavy rains indicate a need for mitigating measures to preclude liquefaction problems.

The Hosgri Fault lies five miles offshore. It is ascribed an MCE of 7-1/2 magnitude with peak accelerations at the site of 0.5g to 0.62g.

Pinnacles abound in the offshore area, where the 60-foot depth is reached 3,500 feet from shore. Pecho Rock is plainly visible as are other rookeries for sea otters, seals, and birds.

Winds exceed 25 knots 41 days per year. Wave heights are in excess of six feet 34 days per year. Swells exceed safe limits 37 days per year.

2. Conceptual Layout of Terminal

As at Camp Pendleton, the conceptual layout for Rattlesnake Canyon was developed using the proposed Point Conception terminal, modified for local conditions. As an environmental mitigating measure, the conceptual layout includes the alternative of a seawater exchange system with PG&E's Diablo Canyon nuclear generating station.
Rattlesnake Canyon is unique among the four sites in that, because of its hostile marine environment, it would require construction of a massive breakwater, a major civil engineering undertaking, to protect berthing tankers from the sea.

Marine Facilities

The ship berth at Rattlesnake Canyon would be 1,800 feet offshore at the end of a trestle. In Western Terminal's conceptual design, the breakwater would be L-shaped, with the combined length of its two legs totaling 9,300 feet. This breakwater would provide a 3,000-foot diameter turning basin for LNG tankers, as well as a protected area where tugboats could meet and maneuver the tankers. In order to develop the nearshore tanker berth, a number of pinnacles would have to be blasted and three reefs would need to be removed. An estimated total of 1.6 million cubic yards of underwater rock would have to be removed and barged to a disposal site.

Seawater Exchange

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This mitigation measure for Rattlesnake Canyon would require the diversion of 137,000 gpm of heated seawater effluent from the Diablo Canyon nuclear generating station. The original proposal for this mitigation measure envisioned obtaining the heated seawater discharge from the power plant, pumping the water 22,000 feet to the LNG plant, passing it through the vaporizers, then returning this water, 14°F cooler, to the power plant outfall system for discharge to the sea. This proposal was modified by Western Terminal to eliminate returning the cooled seawater to the power plant by utilizing an independent outfall system for discharge directly to the sea from the LNG plant. The modified proposal would require pumps totaling 14,000 horsepower.

Construction of a seawater exchange system would not affect the overall construction schedule at Rattlesnake Canyon.

LNG Storage Tanks

Western Terminal's conceptual design at Rattlesnake Canyon calls for a concrete dike, rather than an earthen basin around each of the 550,000-barrel LNG tanks.

Electric Service

Electric power would be supplied by PG&E via a 17-mile long 115-kv line_which would parallel the 500-kv transmission lines from the Diablo:Canyon nuclear power plant. Connection to the 500-kv transmission lines, which pass within three miles of the LNG site, is precluded by the high cost of a transformer station required to step down 500 kv to a lower voltage and by a reduction in reliability which would result from dependence on those particular lines.

Access Road

The PG&E access road, which was improved during the construction of the Diablo Canyon nuclear generating station, passes by the LNG site. The road should require no improvements other than the possible need for construction of a box culvert at Pecho Creek. This access road connects with Highway 1 via Avila Road.

Gas Transmission Pipeline

As proposed by Western Terminal, a transmission pipeline would be constructed from Rattlesnake Canyon to the existing PG&E twin 34-inch transmission lines at Gosford in Kern County, with intermediate connections to an existing SoCal 16-inch line serving Santa Barbara County and an existing PLS 34-inch line serving the San Joaquin Valley. The pipeline would be designed to carry a 1,300 MMcfd base-load and a 1,600 MMcfd peak load. From the metering station at the LNG terminal, 68 miles to the eastern edge of the Carrizo Plain, it would consist of one 34-inch buried line. From there, two 34-inch buried lines would traverse the remaining 33.4 miles to Gosford. No compressor stations would be required in the operation of this transmission line.

3. <u>Major Environmental Concerns</u>

San Luis Obispo Bay is two miles east of the Rattlesnake, Canyon site. This is a popular recreation area which includes the Port San Luis Harbor District and the town of Avila Beach. The latter has a shoreline park used by almost one million visitors per year. The permanent population within a four-mile radius of the site is about 800. The growth of Port San Luis and surrounding areas would be impacted by the population density limits of the Act.

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As with Horno Canyon, the Rattlesnake Canyon site cannot be said to meet the "remoteness" criteria mandated by S.B. 1081. Avila Beach and Port San Luis lie within two miles of the site. Irrespective of the permanent population within the four mile exclusion area the recognized transient population at any given time must exclude Rattlesnake Canyon from qualifying as a remote site.

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High visual impact would result from the placement of an LNG terminal at Rattlesnake Canyon. This would be mitigated, in part, by the limited access that the public would have to the site and that it is hidden by the adjacent hills and mountains. The breakwater and trestle would be visible to the public south of Point San Luis.

Construction activities would impinge heavily on Avila Road and Highway 1, which is used by 25,000 cars per day. No railroad facilities exist near the site; therefore, all construction equipment and materials would need to be transported by barge or truck. Furthermore, it appears that construction at this site would require in-migration of a significant number of construction workers and might result in periods of tight transient housing markets in the San Luis Obispo County area.

Archaeological remains of Chumash Indian villages are located on the site. These remains could not be avoided if a terminal were constructed on this site. Rattlesnake Canyon, moreover, is considered sacred by Native Americans (although less significant than Point Conception) and is used for such purposes as burial of the dead. It, therefore, is clear that the potential cultural resources impacts at this site should be considered to be very significant.

Severe environmental impacts at Rattlesnake Canyon would arise from the effects of construction of the breakwater and trestle on the diverse and abundant marine fauna and flora offshore of the site. Blasting of offshore pinnacles would have a significant effect on marine biology. Based on the experience at Diablo Canyon nuclear plant, harbor seals might not return. The greater throughput of seawater which would be required at this site, because of lower ocean temperature, would result in greater fish entrainment. Staff's EIR consultants asserted that marine biology impacts at this site would be greater than those at Point Conception.

Development of the site and pipeline would alter or destroy hundreds of acres of undisturbed land including riparian habitat.

Also, operation of an LNG terminal at Rattlesnake Canyon would contribute pollutants to a large air basin with a high inventory of existing-emissions but with good assimilative capacity.

As stated above, the NRC has advised this Commission that the siting of an LNG terminal at Rattlesnake Canyon may preclude the operation of a nuclear facility at Diablo Canyon because of the potential hazard to the nuclear facility from LNG vessel traffic.

4. Investment Required and Cost of Service

The staff's Exhibit A-120 shows that the investment requirement in mid-1977 dollars for siting an LNG terminal at Rattlesnake Canyon would be \$1.564 billion without, and \$1.578 billion with, the mitigation measure of a seawater exchange system with PG&E's Diablo Canyon nuclear power plant. The fifth-year costs of service incurred by these investments would be \$0.76/Mcf and \$0.77/Mcf, respectively.

C. Deer Canyon

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1. Site Ranking

The Deer Canyon site is ranked fourth in the final report of the CCC, if several mitigation measures are adopted at Point Conception. If these measures are not adopted the Deer Canyon site is ranked third. This is specified on page 27 of the CCC final report dated May 27, 1978 (Appendix D to the Decision):

"With conditions 23 through 28 which prohibit a seawater intake system and electric transmission lines at the site, require partial ingrounding of storage tanks, and provide for public access to the area, the overall adverse impacts of a terminal at this site would be moderately more severe than at the higher ranked Rattlesnake Canyon site, but slightly less severe than the lower ranked Deer Canyon site. If the PUC does not impose the specific conditions recommended for a terminal at Little Cojo, Little Cojo would be ranked fourth, with moderately more adverse impacts on Coastal Act objectives than Deer Canyon, which would then be ranked third."

As discussed in Section XIV of this decision, the PUC is not adopting "the specific conditions recommended for a terminal at (Pt. Conception)." Therefore, the Deer Canyon site should be considered to be ranked third.

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2. Site Description

Deer Canyon is located on the Ventura County coast, 12 miles from Oxnard and two miles from the Los Angeles County line. It is 4.5 miles east of Point Mugu, between Point Mugu State Park and Leo Carrillo State Beach. The site is in a narrow, steep-sided canyon with complex and varied geology that is moderately susceptible to landslides. The canyon extends two miles inland from the coastline in a roughly north-south direction. It has a relatively wide bottom at its mouth for about 1,000 feet inland. There are many tributary canyons with slopes which rise steeply, as much as 500 feet. Ridges in the surrounding area reach heights of 1,500 feet.

Access to the site is via Deer Creek Road and Highway 1, which passes through the site near the shoreline. The site is privately owned and is not now developed or used.

The principal onshore geological formation is the Topanga formation which consists of moderately landslide-prone sandstones and conglomerates. It is locally intruded by igneous rocks. The soils range from a classification of highly erodible at the mouth of the canyon to very highly erodible further inland. A broad east-west trending, faulted anticline underlies the Santa Monica Mountains in the vicinity of the site.

No significant groundwater is present although minor amounts of perched groundwater appear after heavy rains.

Deer Canyon is on the upthrown block of the Malibu Coast Fault which passes one mile offshore and may dip beneath the area. The epicenter of the Point Mugu earthquake of 1973 was approximately two miles west of the site. The MCE for the Malibu Coast Fault is 6-3/4. An unnamed offshore fault, with an MCE of five, lies four miles from the site.

The 60-foot water depth is reached one-half mile offshore. Rocks and some pinnacles are exposed to the southeast. There are scattered kelp beds.

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Winds exceed 25 knots six days a year, while wave heights in excess of six feet occur 11 days a year.

3. Conceptual Layout of Terminal

The high-relief terrain of the site requires a more complex design than is needed for the flat coastal terrace sites. At Deer Canyon, extensive grading would be required to develop a flat pad of 100 acres, or several pads totaling that area. The distribution of sedimentary and igneous rocks at Deer Canyon may complicate grading and may require development of borrow areas of unknown distances from the pad.

Western Terminal's concept would create over 22 million cubic yards of excess cut material because massive excavation would be required to develop terminal facilities to an elevation of 200 feet. The problems associated with disposal of excess cut material could be significantly reduced by a design layout that would put the LNG storage tanks at a higher elevation; however, this would require additional booster pump capacity.

Marine Facilities

The ship berth at Deer Canyon would lie 4,300-feet offshore at the end of a connecting trestle. It would carry a 32-inch cryogenic pipeline which would transfer the LNG to terminal facilities ashore. The Western Terminal concept would have the trestle and pipeline cross Highway 1 overhead. An alternative would be to have the LNG lines pass under the highway.

Seawater System

Western Terminal proposes a different seawater intake system than it proposes for the other sites. A caisson-type seawater intake structure would be constructed 2,000 feet offshore in about 30 feet of water. The screening and pumping equipment would be located in this structure. From this intake, seawater would be filtered and pumped to onshore vaporizers. After passing through the vaporizers, the cooled effluent seawater would be discharged through a 4,000-foot outflow line into a 50-foot water depth.

LNG Storage Facilities

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Under the Western Terminal concept, concrete dikes would be constructed around each of the 550,000-barrel tanks to minimize the

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amount of blasting and excavating required. An alternative would be to create a higher level area for the tanks with fill material, thereby eliminating the need for the excavation and the construction of concrete dikes.

Electric Service

A 66-kv electric transmission line, 14.5 miles long, would be constructed between Edison's Ormond Beach generating station and Deer Canyon. The proposed route goes inland, rather than following the coast. Only 1.5 miles of the line would follow existing rights-of-way.

Access Road

Access to the site would be obtained by the construction of a short road to Highway 1. Highway 1, itself, would be altered by the elimination of a southbound passing lane and the construction of a 1,000-foot left-hand turning pocket. Actuated traffic signals would be installed, and they would remain in operation after completion of construction. No railroad facilities are available near the site.

Gas Transmission Pipeline

Western Terminal proposes a 141.3 mile pipeline from Deer Canyon to Arvin in Kern County. The line would be routed over the mountains to an intermediate connection with an existing PLS pipeline at Quigley. From there it would go northward to a termination at PG&E's twin 34-inch transmission lines at Arvin.

4. Major Environmental Concerns

Exhibit 00481 and other correspondence introduced in the CCC proceedings show that the commander of the Navy's Facific Missile Test Center at Point Mugu takes a firm position that the siting of an LNG terminal at Deer Canyon would have a severe adverse impact on that naval facility, and that it would interfere with fleet maneuvers. This site is proximate to large urban populations and several state parks. Activity involved in developing the site would adversely affect nearby recreational areas. A. 57626 et al. - Alt. RDG - im*

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The visual impact of an LNG terminal at Deer Canyon would be relatively low because the terrain would conceal much of the facility; however, the trestle and berth would be visible from Oxnard. A trestle crossing at Highway 1 would have a visual impact near the crossing, but this impact would be limited in extent by the winding character of the road. Visual impact would also be limited by virtue of the sparse local population consisting of six permanent residents within one mile and 304 within four miles of the site. Perhaps the greatest impact would be upon the users of nearby Leo Carrillo State Beach and Point Mugu State Park, each of which attracts over 300,000 visitors annually. The California Department of Parks and Recreation has expressed an interest in acquiring the entire coastline between the two state parks.

Once more we are faced with considering a site which clearly falls outside the standard of one that is remote. Lying between two state parks with a combined annual population of over 600,000 people, within less than one mile of one, and little over two miles of the other we find it inconceivable that anyone could believe we have complied with the legislative intent if we seriously considered Deer Canyon for an LNG facility.

The Deer Canyon site is within commuting distance of large labor pools and construction activities would not produce significant socio-economic impacts. However, since there is no rail service to the site, Highway 1 which passes adjacent to the site would experience significant increases in road traffic during construction of the LNG terminal.

Development at the site may also have major impacts, although probably less serious than at Point Conception and Rattlesnake Canyon, on sacred areas. Alteration or destruction of archaeological resources at the site could not be avoided during the construction ~

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Kelp, commercial fish, and other marine resources are sparse near the site. The State Water Resources Control Board has designated the waters offshore to the 100-foot isobath as an Area of Special Biological Significance, but it has not yet determined a policy for controlling lowered temperature discharges in areas so designated. Furthermore, the massive earth movement required for preparing the site would also disturb the riparian community lining the canyon bottom, including two rare plant species and local populations of coyote, bobcat, and cougar. A. 57626 et al. - bf

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Air pollution emissions at Deer Canyon during Santa Ana wind conditions could make a significant contribution to worstcase smog formation in the Oxnard plain. Also, since the site lies between the Los Angeles and Ventura air basins, potential emissions from this project would be subject to broader regulatory review.

5. Investment Required and Cost of Service

The staff's Exhibit A-116 shows that the investment requirement in mid-1977 dollars of an LNG terminal at Deer Canyon, with the land facilities of the terminal at the 200-foot level as proposed by Western Terminal, would be \$1.50 billion. The investment requirement, with the land facilities at the 600-foot level, would be \$1.15 billion. The fifth-year costs of service related to the 600-foot level investments, as shown in Exhibit A-120, would be \$0.58/Mcf. Exhibit A-120 shows that if a submarine tunnel were constructed as a mitigation measure in lieu of an overwater trestle, the investment requirement for the 600-foot level would increase to \$1.29 billion, with a fifth-year cost of service of \$0.66/Mcf.

XI. SITE SELECTION

A. The Peasibility Test

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1. Sites Considered in Order of CCC Ranking

This Commission must select the highest ranked site submitted by the CCC - <u>unless</u> it makes a specific finding that "with respect to each higher ranked site that it is not feasible to complete construction and commence operations of the terminal at such higher ranked site in sufficient time to prevent significant curtailment of high priority requirements for natural gas and that approval of the lower ranked site will significantly reduce such curtailment." Further, the Commission is precluded from issuing a permit for construction or operation of a terminal at any site unless it finds that to do so is "consistent with public health, safety and welfare."

2. Factors to be Considered

Contrary to the position taken by Hollister Ranch Owners Association (Hollister) that the only factor the Commission can consider is project timing and not such other factors as the relative costs of alternate sites, the Act requires the Commission to consider other factors. Section 5559 defines "feasible" as meaning "capable of being accomplished <u>in a successful manner</u> within a reasonable period of time, <u>taking into account</u>: (a) economic, environmental, social, technological, safety, and reliability factors, (b) gas supply contracts, (c) gas supply and demand forecasts, (d) federal regulatory requirements, and (e) alternative sources of natural gas." (Emphasis added.)

Accordingly, we will make our selection by examining the sites in the order of CCC ranking and by taking into account those factors, among the ones designated, which are pertinent to each site in determining its feasibility as the location for an LNG terminal.

3. General Timing Consideration

In undertaking the site selection process, we are mindful of the general consideration that, as discussed above, a substantial amount of time would be required for preparing new or amended applications and obtaining regulatory approvals, particularly federal approvals for a site other than Point Conception. The resulting delay would <u>significantly increase</u>: (1) the potentiality of losing the LNG supply contracts, particularly the Pertamina contract; (2) the required investment in the project through escalation and increased allowance for funds used during construction (AFUDC); and (3) the likelihood of curtailment of high priority requirements for natural gas.

The principal item in the record relating to project timing is the staff's "Alternate Siting Report", Exhibit A-115. Chapter III of this report develops estimated time schedules for bringing an LNG terminal on-line at each of the four CCC ranked sites. These time schedules are based upon a critical analysis by the staff of detailed estimates of project scheduling for design engineering and

During the hearings, on May 3, 1978, the presiding ALJ denied a motion by Fred H. Bixby Ranch Company (Bixby) to strike Chapters II and III of this report on the grounds that they consist of hearsay and conjecture. In its June 9, 1978 filing with the Commission commenting on the final CCC report, Bixby renewed this motion to strike. Bixby has furnished nothing in the interim to support a reversal of the earlier ruling. The motion is again denied.

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construction requirements for a 1.3 Bofd base-load LNG terminal at each alternate site. The detailed estimates were made at the staff's request by Western Terminal's engineering contractor and were based-upon preliminary planning and conceptual plant layouts for each of the alternative terminal locations. The report qualifies the estimated time schedules for the alternate sites as being "based upon extremely tight engineering and construction schedules and with the assumption of an exceptionally optimistic regulatory approval process."

Were we to select an alternate site in this decision, Western Terminal, if it so chose, would have to prepare and file an amended application, and this Commission would be required to schedule and hold further hearings. Although preparation time would be reduced somewhat because part of the environmental work on alternate sites has been done, the reports are incomplete and fragmentary, and extensive further environmental impact studies would be required. While action by this Commission, as lead agency, would certainly occur within the one-year period required by AB 884, we cannot agree with Hollister that state approval could be obtained in six months. Mindful of the need to avoid delay resulting in curtailments to high priority users and to avoid impairment of contracts for supplies of natural gas, this Commission, however, would be obligated to expeditiously process an application for an alternate site. Nor can we agree that federal approval could be obtained within one year, as estimated by the staff in formulating its time schedules in Exhibit A-115. We are convinced by the reasoned analysis of the federal regulatory process put forth by SDG&E, in its June 9, 1978 filing, that a twoto three-year delay for regulatory approvals would be much closer to reality than the one year assumed by the staff. SDG&E's review of the regulatory approval process that an alternate site would be required to undergo shows that the staff was "exceptionally optimis -tic" in this instance.

While Point Conception has not yet cleared all federal regulatory hurdles, it is at least well down the road. Assuming Western Terminal would not, in prudence, begin construction (field move-in)

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until the necessary federal approvals are in hand, the two- to three-year regulatory delay would make the operational dates at the three alternate sites one to two years later than estimated by the staff. Fortuitously, this does not detract from the usefulness of the staff's timing estimates for purposes of the comparisons we are making here; rather, it may enhance their value because the time differences between Point Conception and each of the alternate sites are understated as developed by the staff. Thus, to the extent that the staff errs, it is to the disadvantage of Point Conception in relation to the three alternate sites; whereas, for comparisons among the three alternate sites, the time differences shown by the staff are unaffected, because, to the degree that there is an understatement of regulatory lag, the operational date of each is thereby displaced by the same amount of time.

B. <u>Camp Pendleton</u>

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1. Timing

Figure 1 shows that the <u>earliest</u> date a plant could reasonably be expected to be in operation at Camp Pendleton is October 1, 1984. This would not be soon enough to avoid the curtailment of highpriority gas use according to the supply and requirement determinations made in Case No. 10342. Furthermore, if either of two mitigation measures (ingrounding of LNG tanks and substitution of a submarine tunnel for an over-water trestle) were required, the on-line date would be delayed for an additional seven to 28 months.

2. Gas Supply Contracts

In addition to resulting in the foreseeable curtailment of high-priority gas requirements, the plant availability date for Camp Pendleton (with or without the mitigation measures) is extended far enough into the future as to make probable, as a result of Indonesian and Alaskan contract cancellations and expirations, the loss of the very LNG supplies which a Camp Pendleton terminal would be constructed to receive.

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3. Economic Factors

For comparative purposes, most of the cost figures presented during the hearings in the applications, as well as in this decision, are in mid-1977 dollars. For purposes of the site selection we are here engaged in, any constant dollar basis for determining capital requirements is inappropriate because the construction schedules of terminals at the alternative sites are noncoincident with and are extended over greater periods of time than the schedule for Point Conception.

To be realistic, we must give recognition to the effects of inflation on the costs of goods and services during the time of project construction. In determining capital requirements for the site selection process, we will escalate mid-1977 dollars by an annual figure of 8 percent \pm to arrive at a more meaningful deter mination of the economic factors involved. When this escalation factor is applied, the grand total of capital costs required for the PacIndonesia and PacAlaska LNG projects with a terminal sited at Camp Pendleton is \$2.807 billion. The comparable figure for Point Conception is \$2.171 billion. Thus, Western Terminal's sponsors would have to raise well in excess of one-half of a billion dollars more in the siting of the terminal at Camp Pendleton. This greater capital requirement results, not just from inflation, but from design changes and increased AFUDC requirements arising from the delays attendant upon locating the terminal at the alternate site.

The record in this proceeding is not without questions as to PLC's financial ability to participate in an LNG project calling



We believe 8 percent to be a conservative figure. The evidence in these proceedings indicates that 10 percent per year is closer to the level of cost inflation that may reasonably be expected in constructing an LNG terminal.

^{**/} This capital requirement difference reflects the staff's "exceptionally optimistic regulatory approval process." Regulatory approval delays beyond one year would, of course, markedly increase this difference.

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4. Jurisdiction

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Western Terminal asserts that the United States government has exclusive jurisdiction over the Camp Pendleton Military Reservation; that such jurisdiction was acquired in a series of transactions in the 1940's; and the validity of the federal government's exclusive jurisdiction over the realty it holds in fee within the boundaries of the State has been upheld in the courts. Western Terminal cites <u>California v. United States</u>, (9th Cir. 1956) 235 F.2d 647, 655-656, in which the court stated as follows:

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The Secretary of Navy has the authority to lease property within the Camp Pendleton Military Reservation, if he considers it advantageous to the United States and the terms of such lease will promote the national defense or be in the public interest. (10 USC Section 2667.) However, the Secretary of Navy has already indicated opposition to the siting of a facility at Horno Canyon, thereby making it doubtful that the necessary approvals would be forthcoming. (CCC Exhibit 00730, Dept. of Navy Letter.) If the Navy Department will enter into a lease, an act of Congress would be required for Western Terminal to acquire the right to construct an LNG terminal on the marine base. Furthermore, by letter dated July 7, 1978, Joseph M. Hendrie, Chairman of the Nuclear Regulatory Commission advised the Commission that the siting of an LNG terminal at Camp Pendleton (or Rattlesnake Canyon) may preclude the operation of existing nuclear facilities at San Onofre (or Diablo Canyon in the case of Rattlesnake Canyon) because of the potential hazard to nuclear facilities from LNG vessel traffic. A copy of this letter was mailed to all parties of record in Applications Nos. 57626, 57792, Case No. 10342, OII 1. This letter expands upon points raised in previous correspondence between NRC staff and the Coastal Commission.

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If Edison's experience in siting its nuclear power plant at San Onofre provides an example, the delays resulting from controntation with the Navy and ultimately obtaining Congressional approval for acquisition of a part of Camp Pendleton would be of such duration as to probably cause the loss of the gas supply contracts for the terminal.

Edison made its first contact in May of 1960 with the Marine Corps Commandant regarding a specific site on the base. In December of that year, the Marine Corps suggested that Edison consider another site located elsewhere on the base (San Onofre), although the Marines were still opposed to any site on the base. In December of 1962, the Navy Department agreed not to oppose the San Onofre site. In May of 1963, after legislation had been introduced in the

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House and Senate, the Navy wrote to the House Armed Services Committee stating that it had no objection to the San Onofre site. Negotiations with the Navy after December of 1962 concerned the terms of the easement, but the easement was not finally obtained until May 1964.

Western Terminal contends that, since Horno Canyon is within exclusive federal jurisdiction, the CCC exceeded its authority by even considering it as a possible LNG terminal site; that the CCC went beyond the explicit powers granted it by the State of California in the California Coastal Act of 1976 and the Act; and that for the CCC to consider Horno Canyon is not only contrary to California law, but is contrary to federal law since the State is not allowed to legislate over federal property.

The CCC's authority to rank potential LNG sites is found in Section 5611 of the Act. It is to rank "any onshore sites proposed by any person" by applying the policies, goals, and objectives in Chapter 3 of Division 20 of the Public Resources Code (part of the California Coastal Act of 1976). Section 30200 of Chapter 3 of the Public Resources Code states that the policies must be consistent with the goals of Section 30001.5 of that Act. Part (a) of that section declares one goal to be to "protect, maintain, ... the coastal zone environment...." "Coastal zone" is defined for purposes of this Act as those lands over which the State of California has jurisdiction. Section 30008 of the Public Resources Code excludes from the coastal zone "land, the use of which is by law subject solely to the discretion of or which is held in trust by the federal government, its officers or agents."

It is legally arguable that (1) the CCC cannot regulate lands on the coast of California that are within federal ownership, and (2) the CCC has authority only over coastal properties within the jurisdiction of the State of California and can only consider sites

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over which the State of California has jurisdiction. Assuming arguendo the validity of this contention, the CCC would have no authority to nominate and rank any location on the Camp Pendleton Military Reservation as a site for an LNG terminal.

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This Commission, however, does not wish to engage in a jurisdictional dispute with another state agency especially as it relates to that agency's authority vis-a-vis the federal government. The Commission believes that it is not feasible to complete construction and commence operation of an LNG terminal at Camp Pendleton in sufficient time to prevent significant curtailment of high priority requirements for natural gas and that selection of Camp Pendleton, based on the evidence of record, would not be consistent with the public health, safety and welfare.

Because of all the foregoing and in particular because Horno Canyon does not qualify as a remote site pursuant to Section 5582(a)(2) of the Code it must be rejected from further consideration.

C. Rattlesnake Canyon

1. Timing

As Figure 1 shows, May 1, 1985 is the <u>earliest</u> date on which a terminal at Rattlesnake Canyon could reasonably be expected to be in operation. This would not be soon enough to avoid the curtailment of high-priority gas use according to the supply and requirement determinations made in Case No. 10342.

2. Gas Supply Contracts

Because of the longer time involved, the potential for loss of the gas contracts through delay is considerably greater for Rattlesnake Canyon than for any of the other sites. The likelihood of the Indonesian and Alaskan suppliers staying with the amended project through the period required for necessary regulatory approvals would be considerably diminished by the prospect that the <u>earliest</u> date the terminal could receive their gas would be in the year 1985.

3. Esonomic Factors

As we did in the case of Camp Pendleton, we will escalate the mid-1977 capital cost figures for a terminal at Rattlesnake Canyon by an annual inflation rate of 8 percent. When this escalation factor is applied, the grand total of capital costs required for the PacIndonesia and PacAlaska LNG projects with a terminal sited at Rattlesnake Canyon is \$3.714 billion. The comparable figure for Point Conception is \$2.171 billion. Thus, Western Terminal's sponsors would have to raise in excess of one and one-half billion dollars more if the terminal is sited at Rattlesnake Canyon.

All of the adverse economic aspects that would evolve from the location of the terminal at Camp Pendleton, would pertain to Rattlesnake Canyon, but to a degree that would be much more severe. In any case, it is doubtful if the project could be financed in view of the huge capital cost, the large amount of AFUDC resulting from the extended lead time, and the higher cost of capital related to the increased risk.

4. <u>Reliability Factors</u>

In the CCC's final report, there is only indirect reference to the sea-state conditions at the Rattlesnake Canyon site. The report obliquely mentions that a breakwater would be constructed at this site. It should be noted that there is insufficient evidence in the record to determine what kind of breakwater is needed to make this site reliable.

In the staff's Exhibit A-103, Rattlesnake Canyon's sea-state is compared to other sites as follows:

"This site is located some 45 miles north of Point Conception on a portion of the coastline fully exposed to sea and swell attack from the west and southwest and, to a

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lesser extent, from the south and northwest. Waves are a significant factor in berth availability during all months; however, poor visibility becomes very important in the summer and fall. Its exposed location combined with conditions of poor visibility make this site a rival with Guadalupe Dunes for the lowest berth availability ranking. Provisions of an effective breakwater would reduce the site's vulnerability to waves. However, the poor visibility would still prevent it from approaching the highest berth availability ranking."

The record in this case supports the conclusion that the windwave conditions at this site are relatively severe compared with sites just below Point Conception. However, there is no specific onsite data for Rattlesnake Canyon in the record as there is for Point Conception. Wide-ranging estimates of sea-state conditions for Rattlesnake Canyon have been presented in the record of OII 1. Because no specific onsite wind-wave measurements for Rattlesnake Canyon exist, there is no reliable evidence indicating the extent to which a breakwater would improve berth availability. However, the record supports the conclusion that the sea-state is more severe at Rattlesnake Canyon than Point Conception. It follows then that sea-state conditions at Rattlesnake Canyon could make it unacceptable both as to safety and reliability.

In OII 1, the staff introduced Exhibit 0-91, a report on berth availability and reliability. The study concludes that "the Rattlesnake Canyon site would not be capable of sustaining an average throughput of 1,300 MMcfd without a breakwater." It implies that even with a breakwater, maintenance of long-term throughput is uncertain. This conclusion seems reasonable, especially so, in view of the lack of onsite data for Rattlesnake Canyon. The staff pointed out that throughput capacity for this site with a breakwater could probably be increased to over 1,300 MMcfd by an additional LNG tanker or a second berth. Either of these would, of course, entail substantial additional investment.

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The CCC report fails to address the presence of reefs, rocks, and pinnacles, which compound the shipping problems at Rattlesnake Canyon. While many of these hazards would be removed in order to clear a path to the berth, the remaining reefs, rocks, and pinnacles would still endanger LNG tanker traffic.

5. <u>Summary</u>

The Commission will enter findings that: (1) it is not feasible to complete construction and commence operations of a terminal at Rattlesnake Canyon in sufficient time to prevent significant curtailment of high-priority requirements for natural gas; and (2) selection of Rattlesnake Canyon would not be consistent with the public health, safety, and welfare; (3) Rattlesnake Canyon does not meet the criteria of remoteness required by Section 5552 of the code.

Rattlesnake Canyon is eliminated from further consideration herein as a potential LNG site.

D. Deer Canyon

1. <u>Timing</u>

As Figure 1 shows, April 1, 1987 is the expected date a terminal could begin operations at Deer Canyon. In Exhibit A-115, the staff considered the possibility of advancing the operational start-up date to May 1, 1985 if the LNG storage tanks were located at elevation 500 feet rather than elevation 200 feet. The change in tank elevations would achieve a balance in earthwork cut and fill operations and a savings of 23 months in construction time. Even giving consideration to the earlier start-up date of May 1, 1985, it would still not be soon enough to avoid the curtailment of high priority gas use according to the supply and requirement determinations made in Case No. 10342.

2. <u>Gas Supply Contracts</u>

Similarly as discussed for the Rattlesnake Canyon site, the selection of the Deer Canyon alternative also poses the potential for loss of the gas contracts through delay because of the longer project timing requirements. The probability of Indonesian and south Alaskan contract cancellations and expirations is considerable A. 57626 et al. Alt: RDG

in light of-delaying the plant availability date to May 1985, at the earliest.

3. Economic Factors

The capital cost and length of construction time for a plant in Deer Canyon at the 500 foot elevation are greater than at Camp Pendleton while less than or equal to, respectively, those for Rattlesnake Canyon. It is therefore apparent that the escalated total capital costs for the PacIndonesian and PacAlaska LNG projects with a terminal sited at Deer Canyon would fall between the escalated values of \$2.807 billion for Camp Pendleton and the \$3.714 billion for Rattlesnake Canyon. The comparable figure for Point Conception is \$2.171 billion. Here again, Western Terminal's sponsors would have to raise well in excess of one-half of a billion dollars more to site a terminal at Deer Canyon.

Here too, all of the adverse economic aspects that would result from the location of the terminal at Camp Pendleton, would pertain to Deer Canyon, but to a degree that would be more severe. In any case, it is doubtful if the project could be financed in view of the larger capital cost, the sizable amount of AFUDC resulting from the extended lead time, and the higher cost of capital related to the increased risk.

4. Summary

The Commission will enter findings that: (1) it is not feasible to complete construction and commence operations of a terminal at Deer Canyon in sufficient time to prevent significant curtailment of high-priority requirements for natural gas; and (2) selection of Deer Canyon would not be consistent with the public health, safety, and welfare; (3) Deer Canyon does not meet the criteria of remoteness required by Section 5552 of the Code.

Deer Canyon is eliminated from further consideration herein as a potential LNG site.

Ε. Point Conception

In considering need and project timing, the evidence demonstrates that Point Conception is the only feasible site for the

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commencement of operations in sufficient time to prevent significant curtailment of high-priority requirements for natural gas.

The earliest date for the start of construction at any of the alternate sites would be February 1, 1981, compared to an estimated field move-in date for Point Conception of March 1, 1979. Figure 1 illustrates that the plant availability for Point Conception is November 1, 1982, compared to earliest possible dates of October 1, 1984 for Camp Pendleton and May 1, 1985 for Rattlesnake Canyon.

Evidence was presented in OII 1 which shows that, when evaluating the entire LNG transportation system for the proposed project (from loading at the liquefaction plants to delivery to the pipeline at Point Conception), including particularly wind-and-wave conditions, a terminal at Point Conception could maintain a long-term average throughput in excess of 1,300 MMcfd. The ability of Rattlesnake Canyon to sustain such a throughput, even with a breakwater, is uncertain.

Based on the record as made in Case No. 10342, OII 1, and Applications Nos. 57626 and 57792, the Commission must eliminate the higher-ranked sites and grant Western Terminal a conditional permit to construct and operate an LNG terminal at Point Conception.

Readers of this opinion will notice that we have exhaustively explored many problems and complications with respect to the Point Conception site. This is not because there are fewer problems or obstacles at the alternative sites. Rather the fact is simply that Point Conception has received the closest scrutiny as a result of the application and EIR process. It may not be axiomatic that the old grass-always-looks-greener saying applies when deciding on siting for an LNG plant, but the tendency surely exists. Our deliberations on these proceedings has taught us that. It can be said that we know a lot about Point Conception, although more investigation and analysis will be required in Phase II of OII 1.

XII. ENVIRONMENTAL IMPACTS AT POINT CONCEPTION

A. The EIR Process

1. Background

The environmental review process for this project began on August 30, 1976, when Western Terminal filed an application for a general plan change with the Santa Barbara County Planning Commission, followed by an application for rezoning on October 19, 1976. In November 1976, the county assumed the responsibilities of the lead agency for the purpose of preparing an EIR. Approximately six months later, the county entered into contracts with various consultants to gather and analyze the data necessary for an EIR.

On September 16, 1977, the Act became effective vesting exclusive jurisdiction in this Commission to issue a permit for the construction and operation of an LNG terminal and designated the Commission as the lead agency for purposes of compliance with CEQA. On October 14, 1977, Western Terminal filed its application for a permit with the Commission, and on October 19, 1977, the contracts between the EIR consultants and Santa Barbara County were assigned to the Commission as the new lead agency.

2. Scope of Environmental Review

On March 1, 1978, the Commission staff issued the DEIR and mailed it to various federal, state, and local agencies; public libraries; parties to, and interested parties in, the litigation; public interest and environmental groups; representatives of the press, including newspapers, United Press International, and Associated Press; and a number of state and federal legislators.

Previously, during the period beginning in December, 1977, and ending in February, 1978, the staff had circulated 25 technical reports containing information supporting the DEIR. The reports were distributed to interested federal, state, and local agencies; interested parties in the litigation; libraries; and public interest_ and environmental groups.

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On April 1, 1978, the staff issued and circulated two additional technical reports (Nos. 23A and 26) supplementing the DEIR. The public comment period on the DEIR, which was to have closed on April 15, 1978, was extended to May 21 for the receipt of written comments on the supplementary material. Public hearings on the DEIR and technical reports were held during the period March 14 through May 5, 1978 in the Application No. 57626 proceedings and the OII 1 proceedings.

In addition, miscellaneous reports were prepared in order to address the concerns raised during the DEIR comment period. These were issued from time to time and included reports on geoseismic hazards at Las Varas and Rattlesnake Canyon sites, environmental data on Deer Canyon and the impacts on OCS development. The Commission held environmental hearings for public input in each county in which a CCC-ranked site is located. These hearings were held during the week of May 8 through 12, 1978 in the cities of San Luis Obispo, Santa Barbara, Oxnard, and Oceanside. The staff incorporated all of the written comments on the DEIR, as well as comments received during the hearings of May 8 to 12, 1978, into the FEIR. The FEIR was made available to the Commission on July 18, 1978, and was formally filed on July 28, 1978.

This decision includes, pursuant to Rule 17.1 of the Commission's Rules of Practice and Procedure, a series of findings based on the FEIR's coverage of (1) the environmental impact of the proposed action, (2) any adverse environmental effects which cannot be avoided if the proposal is implemented, (3) mitigation measures proposed to minimize the impact, (4) alternatives to the proposed action, (5) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, (6) any irreversible environmental changes which would be involved if the proposed action should be implemented, (7) growth-inducing impact.

This decision is to be considered a Statement of Overriding Consideration as required by the California Administrative Code, Title 14, Division 6, Section 15089 which states:

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"15089. Statement of Overriding Considerations.

- "(a) CEQA requires the decision-maker to balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve the project. Where agencies have taken action resulting in environmental damage without explaining the reasons which supported the decision, courts have invalidated the action.
- "(b) Where the decision of the public agency allows the occurrence of significant effects identified in the final EIR without mitigation, the agency must state in writing the reasons to support its action based on the final EIR and other information in the record. This statement may be necessary if the agency also makes a finding under Section 15088(b) or (c).
- "(c) If an agency makes a statement of overriding considerations, the statement should be included in the record of the project approval and should be mentioned in the Notice of Determination.

The Commission, as a basis for making any order pursuant to the provisions of Section 762 of the Public Utilities Code relating to location of structures, is required to give consideration to, and include in its order findings upon, the following factors:

- (a) Community values.
- (b) Recreational and park areas.
- (c) Historical and aesthetic values.
- (d) 'Influence on environment.

These elements are tested in the FEIR and supporting technical reports. Additional testimony and exhibits bearing on these elements were introduced during the public hearings aforementioned.

3. Positions of Bixby and Hollister on the EIR Process

Bixby asserted that the DEIR fails to disclose the Commission's proposed decision and choice of priorities and, therefore, does not reflect the independent evaluation and analysis of the lead agency _ as required by CEQA. These contentions are without merit and are based on an erroneous interpretation of CEQA and the CEQA Guidelines.

The EIR is an informational document, the purpose of which is to identify significant effects of a proposed project and indicate how the significant effects can be mitigated or avoided. (Public Resources Code Sections 21002, 21002.1(a), 21061; 14 Cal. Admin. Code Sections 15011.6(a), 15012.) These sections make it clear that the EIR is intended to provide to the decision makers and general public the necessary environmental information on which the decision to approve or deny a project is based. Contrary to Bixby's assertions, the EIR is not intended as the vehicle by which the lead agency renders its decision and explains the reasons underlying such decision.

CEQA Guidelines contemplate the lead agency's issuance of a separate decision based on all the evidence, including the FEIR. (14 Cal. Admin. Code Sections 15088 and 15089.) For example, Section 15088(b) expressly provides that if the agency decision allows the occurrence of substantial adverse environmental consequences, a statement of overriding considerations must be prepared to explain the agency's reason to support its action; however, "(t)his statement need not be contained in the EIR."

Moreover, under the Act, the Commission cannot issue a decision until the CCC's evaluation and ranking of sites has been completed and the FEIR is submitted. There is nothing in either CEQA, the CEQA Guidelines, or the Act to suggest that the Commission must disclose its preferences or value judgments before it makes its decision on the application for a permit to construct an LNG terminal.

Bixby appears to contend that, because outside consultants have prepared portions of the DEIR and technical reports, the DEIR is somehow defective. First, both CEQA and the Act contemplated the employment of outside experts to aid the lead agency in preparing the DEIR. (Section 5635(b).) Second, it should be noted that once this Commission became the lead agency for this project pursuant to the provisions of the Act, its staff assumed the function of over- seeing all aspects of the preparation of the DEIR, including researching and writing certain sections, reviewing work done by consultants, and coordinating work done by both staff members and consultants. Third, each of the technical reports has been admitted

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into evidence and thereby made a part of the record in these proceedings. The authors of these reports, whether outside consultants or PUC staff members, appeared as witnesses at public hearings in this matter and underwent cross-examination. Finally, the entire record herein, including the technical reports, the witnesses' testimony, and the FEIR, was submitted to the members of this Commission for their review before the issuance of this decision.

Bixby also claims that supplementary technical reports issued after March 1, 1978 were not made available to the public for the minimum 45-day comment period required by CEQA and the CEQA Guidelines. Hollister raises a similar point.

The supplemental material issued after March 1, 1978 consists of Technical Reports Nos. 23A and 26, which were mailed to all interested parties, including Bixby and Hollister, on April 1, 1978. In the middle of April, the staff notified all interested parties that the public comment period, which closed as to the DEIR on April 15, would be extended for these reports to and including May 21, 1978, more than 45 days after April 1.

All of the supporting technical reports, including Nos. 23A and 26, were sent to public libraries throughout the state to ensure wide public access to these documents. Between April 1 and May 21, 1978, the authors of the reports appeared and testified at the hearings in the above matter and were subjected to cross-examination thereon.

The Commission has complied with CEQA and the CEQA Guidelines. It provided a minimum of 45 days each for the public to comment on the DEIR and on the additional technical reports issued after March 1, 1978, and it took all reasonable steps to assure wide public access to these documents.

In raising another issue, Bixby asserts that federal authorities have approved Oxnard as an LNG terminal site, and that the DEIR's discussion of project alternatives is inadequate for failing to take into account this fact and the related issue of possible federal preemption of site choice.



Bixby's characterization of federal "approval" of Oxnard is misleading. In Opinion Number One, DOE/ERA <u>conditionally</u> approved Oxnard as an LNG terminal site, provided safety and environmental requirements are met. DOE/ERA expressly qualified its decision, stating "we do not, however, conclude that it is necessarily the only acceptable site." The DOE/ERA concluded that since California has a legitimate interest in the outcome of the site selection process and may choose an acceptable or preferable site by July 31, 1978 as provided by the Act, the federal government should defer to California at least until July 31, 1978.

The Commission must operate under applicable California law in selecting an LNG terminal site. It is, therefore, bound by the population density criteria in the Act. Oxnard does not comply with these criteria and, therefore, cannot be considered under existing law. No purpose would be served in discussing in the DEIR the possibility that at some future date the federal government will impose its preliminary preference for Oxnard on California. The DOE/ERA has deferred to California's site selection process and is awaiting the Commission's decision based on California law.

Bixby asserts that the DEIR is premature, because the applicant allegedly has not yet submitted sufficient terminal design information to the Commission. This assertion is without merit. Bixby ignores the provisions in CEQA and the CEQA Guidelines that are intended to preserve a reasonable degree of flexibility in the EIR process.

Section 15140(c) of the CEQA Guidelines provides that the EIR "shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public." Section 1514(g) states: "(d)rafting an EIR necessarily involves some degree of forecasting." As a result, CEQA contemplates only reasonable specificity of design information and does not require completion of all details on the project design = before an EIR can be prepared.

Moreover, one of the purposes of the EIR process is to suggest changes in the project (and the design) which might reduce adverse environmental effects. "The CEQA reporting process is not designed to freeze the ultimate proposal in the precise mold of the initial project; indeed, new and unforeseen insights may emerge during investigation, evoking revision of the original proposal." (County of Inyo v. City of Los Angeles, (1977) 71 CA 3d 185, 199.)

Planning a major project such as the LNG facility at issue here is necessarily an ongoing process which may result in the discovery of new information after the draft or even the FEIR has been completed. Provisions of CEQA and the CEQA Guidelines clearly allow for changes in the project. Only in certain limited circumstances, however, will such changes require preparation of an additional (subsequent or supplemental) EIR. (Public Resources Code Section 21166; 14 Cal. Admin. Code Section 15067.)

In our opinion, sufficient design information has been supplied to permit the EIR to analyze the significant environmental impacts of the project.

B. <u>Significant Environmental Impacts and Proposed</u> <u>Mitigation Measures</u>

As a major industrial project, the Point Conception LNG project's construction and operation will lead to a broad range of significant environmental impacts. The most important significant impacts identified during the environmental review process are highlighted below. Also highlighted below are the most important mitigation measures that were suggested during the EIR review. The discussion presented herein relates to those facts developed during the EIR process.

Our EIR review process has demonstrated that the environmental impacts and technical factors and their mitigation measures are complex. For some issues such as air and water quality, objective standards exist which can be used to assess both the project impacts _ and the effectiveness of various mitigation measures. However, with respect to other issues, such as visual or cultural resources impacts, no objective criteria are available for judging the severity

of the impacts or the desirability of a particular mitigation measure. In these cases we have been required to exercise our subjective Judgments, which is made even more difficult by the fact that the proposed mitigation measure can usually lessen, but not eliminate, an environmental impact.

Additionally, mitigation measures identified in the Final EIR and supporting technical reports are summarized and referenced in Appendix P. This appendix also notes which measures were accepted or rejected and the condition under which accepted measures will be implemented. Condition No. 33, which is set forth later in this decision, requires the implementation of a variety of lesser mitigation measures that are not included in the other conditions.

1. Soils, Geology, and Seismicity

The Point Conception site will require approximately 1.5 million cubic yards of earth to be moved, which will change the land forms of the marine terrace. This portion of California is a seismically active region, and resistance to seismic shaking and protection from soil liquefaction are major design criteria. Since publication of the DEIR, evidence of active faulting has been discovered on the site.

The EIR record shows that the geophysical hazards and impacts associated with the LNG project can be reduced by the proper application of soils engineering practices, including stabilization of finished slopes in graded areas, proper soil compaction and drainage of subsurface soils, reliance on rock or well-stabilized foundations for major structures, and top soil conservation and replacement. The proposed Safety Standards issued by the staff, moreover, would require a somewhat more stringent design than that proposed by Western Terminal to mitigate the potential for geophysical hazards.

As discussed elsewhere in this decision, however, further seismic investigation is needed to resolve the question concerning the exact risks presented by the on-site faulting. We agree with _____ the FEIR conclusion that "if the faults are secondary, the site may be feasible if major components are relocated to avoid these features. If the seismic risk is higher than originally anticipated, an addendum to the FEIR will be prepared."

2. Air Quality

The proposed LNG project will have a significant adverse air quality impact. The principal pollutant sources are the LNG ships' burning high-sulfur fuel, with correspondingly high sulfur dioxide emissions, and the gas turbine power generators with high nitrogen oxide emissions, and the onshore vaporization facilities.

Because of the elevated terrain around the terminal site, the effluent plume from the ships or turbines will result in high ground-level concentrations during common meteorological conditions. An air quality model of the effluent plumes indicates that the state one-hour standards for sulfur dioxide and nitrogen dioxide will be violated 69 hours and 77 hours per year respectively in the site vicinity. Project emissions, then, would be a significant increment to the region or air basin emissions inventory. The LNG project as described in the application will emit pollutants at a rate which exceeds New Source Regulations of the Santa Barbara County Air Pollution Control District and the U.S. Environmental Protection Agency.

Western Terminal submitted on March 17, 1978 an application to the Environmental Protection Agency (EPA) for New Source Review approval of the Point Conception project. In this application, Western Terminal has stated plans to use low-sulfur fuel in the LNG ship's boilers and to use offsite electrical power even for the initial phase of project development as measures to mitigate air quality impacts. Terminal operations will, of course, be required to comply with the provisions of any permit granted by the EPA. The use of offsite power is discussed in greater detail under the heading "Mitigation Measures - Electric Transmission Line".

Air quality impacts can be substantially reduced through the adoption of mitigation measures. The Commission, therefore, requested the California Air Resources Board (ARB) to perform a

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New Source Review for the proposed project and to recommend mitigation measures needed to bring the project into compliance with all applicable air quality standards. These recommendations are included in Response Bll in Volume II of the FEIR.

The ARB's proposed mitigation measures are similar to the ones that were developed for the Sohio project. The proposed measures seem to address conditions related to oil transporters and do not always seem applicable to LNG vessels. The estimated maximum emissions, as shown in Table 4 of Response Bll, disagree with the comparable levels shown in Table 3.5-4 of the Draft EIR, once Table 3.5-4 has been corrected to reflect .25% Sulfur fuel for LNG ships instead of the 3% as shown. Moreover, it is not clear as to what, if any, trade offs will be required to meet the Air Pollution Control District's new source criteria. Therefore, we are ordering further hearings on these recommendations to develop a record which will allow us to determine the extent to which these air quality mitigation measures should be adopted.

3. Water Quality/Marine Biology

The Point Conception marine environment is unique because colder waters from the north and warmer waters from the south meet and mix there. This unique environment is inhabited by an unusually diverse population of fish and invertebrate species, many of which are at their range limits or are found only in this biological transition zone. The waters offshore from the site have been identified as being within the "nodal point" of this transition zone. There is some evidence that the Point Conception area is also important to migrating gray whales and marine birds. (CCC Final Report page 30) The marine environment near the site also supports important commercial resources. The proposed marine facilities are located in commercial Kelp Bed 32, the state's largest and most productive bed. The area is also used extensively by commercial fishermen.
Three aspects of the proposed LNG project will have significant impact on the marine environment: construction of the trestle and submarine seawater lines, operation of the seawater system for vaporizing the LNG, and operation of the LNG ships and associated small craft.

Construction of the trestle and seawater lines will affect roughly 30 acres of the rocky reef east of Canada del Cojo. Although most of the disturbance is temporary (the construction period is about one year), it will entail nearly complete destruction of kelp and bottom-dwelling marine organisms in the construction zone. Blasting, if any, can be conducted to minimize the potential injury to fish. After completion of the trestle and seawater lines, the construction zone will be a rock substrate suitable for recolonization by the same species present today. We expect substantial recovery of the kelp and associated marine organisms within a period of two to five years after construction. The temporary loss, however, will adversely affect the resource exploitation of Point Conception which includes kelp harvesting and sports fishing in the area east of Cojo Bay.

The ocean is the principal source of heat for vaporizing the base load at the terminal. At full development, the terminal will take in 160,000 gallons of seawater per minute, or 230 million gallons per day. Although a large volume of seawater, it is roughly one-quarter of the intake rate of a typical electrical power generating station along the south coast.

The seawater intake will entrain fish and plankton in the intake station. Western Terminal proposes to use a velocity cap, an intake structure which has proved to reduce fish entrainment at Southern California Edison power plants. Nonetheless, a reasonable high estimate of entrainment is 40,000 pounds of fish per year. Western Terminal further proposes to screen these fish from the seawater stream in an onshore screenwell and to pump the fish through a discharge pipe. An offshore screenwell, which separates the fish from a seawater stream while they are still in the ocean, is an alternative. We believe that the offshore screenwell is

feasible and has a better chance of minimizing the impacts on the fish. Further discussion on this issue is presented under the heading "Mitigation Measures - Seawater Vaporization System."

The plankton entrained will be killed by the combination of mechanical injury and chlorination. The dead plankton discharge will have little value to the ocean food chain from which they were taken. Nonetheless, most plankton have a very high rate of reproduction, and we do not expect any significant impact on the populations. The entrained plankton will include roughly one-half to one ton of fish eggs and larvae per year. For species which have small populations at Point Conception, the egg and larvae mortality could adversely affect a marginal population. Rare species could become even rarer.

To protect the seawater system from fouling by marine organisms such as barnacles and mussels, Western Terminal proposes to chlorinate the seawater at its intake point. The dosage will be roughly 1 to 1-1/2 parts per million chlorine, producing a residual chlorine of from 0.2 to 0.5 parts per million. This will require roughly one and one-half tons of chlorine per day. Chlorine will be generated onsite by electrolysis of a portion of the seawater streams. As the chlorine oxidizes organic materials, metals, and armonia, most of it will convert to chloride ion which is abundant in seawater. Any residual chlorine will be destroyed by addition of sulfur dioxide. The water chemistry of seawater chlorination is complex, and there is the possibility that continual low levels of toxic substances will be discharged.

The seawater is cooled by passage through the LNG vaporizers. The maximum temperature drop is 12°F. When discharged, the cold jet of seawater rapidly entrains warmer surrounding water, and the plume is warmed. Organisms which float passively in the seawater will be exposed to the cold water plume as the water in which they float is entrained. Average exposure time is 30 seconds, and typical maximum temperature drop is on the order of 4° to 6°F for the majority of the organisms affected. Since this is a once-through impact, we do not expect it to have a significant effect on plankton.

Even a temperature drop of 12°F will have little effect on marine organisms for short exposures. If the cold water plume were directed against the-sea floor, the benthic (or bottom dwelling) organisms would have a far greater exposure and could suffer an adverse impact on population structure. The final studies of plume dynamics will be used to refine the design to minimize bottom impact.

The LNG ships will be fueled at Point Conception. The heavy residual fuel oil (Bunker C) will be delivered in roughly 20 ship loads per year to the terminal and transferred to each LNG ship which off-loads. The numerous transfers of fuel may result in operational spills. Most of these will be small, but there is a chance of larger spills. There is already much oil in this portion of the Santa Barbara Channel from existing oil and gas development as well as from natural seeps. If some oil escapes containment, the principal impact will be on the immediate shoreline of the LNG terminal; thus, this impact would be locally significant. The maximum credible oil spill could affect an area of shoreline between Refugio Beach and Point Arguello, but has an extremely low probability of occurrence over the project life. Other chemicals which may be toxic to marine life will arrive at the LNG site by rail and are not expected to pose a problem.

The vessel activity at the marine terminal will cause injuries to kelp similar to those at the existing points of small craft activity along the Santa Barbara Channel. The deep draft, large horsepower tanker propeller will disturb sediments along the rocky reef, seaward of the berth. Although most of the impact is away from the principal area of the kelp bed, the operation of the Point Conception terminal will cause a continual low-level degradation of the kelp and associated resources. At present, there is no proposal for a major exclusion zone around the trestle. To the extent that vessels and divers must avoid the area for safety reasons, commercial and sports fishing and commercial kelp harvest ______ would be adversely affected.

Although seasonally high concentrations of the endangered California gray whales and some migratory birds occur in the terminal vicinity, at this time we believe the project should not have a major adverse effect on such species. The entrainment of 40,000 pounds of fish or more per year is potentially mitigable. Western Terminal is considering a fish separation mechanism in the intake sump (screenwell). Coupled with a fish-return line, this measure may reduce fish damage to an undetermined extent.

As mentioned above, an alternative mitigation measure is provision of a screen at the water intake at the 30-foot water depth, 1/2-mile from shore. In principle, this method would more effectively reduce fish damage and appears to be feasible. Chlorination of intake seawater to prevent fouling of equipment may result in discharge of low levels of toxic substances. The seawater system effluent should be monitored and the chlorination program modified, if necessary. Also, a supplemental method of fouling control should be used to reduce the reliance on chlorine (see Technical Report 26). In addition, an oil spill contingency plan and spill containment and cleanup equipment at the site should be provided to minimize the impacts of any potential oil spills associated with fueling the LNG ships.

4. Terrestrial Biology

The LNG project will result in activity on land for terminal construction at the Point Conception site, for pipeline construction from Point Conception to Gosford in the Central Valley, for road construction from State Route 1 to the site, and for power line construction from Goleta to the site. Each of these activities will entail some degree of disturbance to terrestrial biology.

Terminal construction at Point Conception will disturb roughly 150 acres, two-thirds of which is grassland and the remainder, scrubland with some coastal sage. Apart from the pipeline crossing, there is no need to disturb the Cojo ravine. There is the possibility that several rare or endangered species of plants and animals are associated with the site. Overall, the terrestrial biology impact of site construction is small in a regional sense, since the habitat affected is already disturbed by grazing which is common in the vicinity.

The pipeline stretches 112 miles, with a 100- to 125-foot-wide construction right-of-way. The corridor affects an area roughly 10 times greater than the terminal construction does. The pipeline is only able to use existing rights-of-way for a small portion of its length. Roughly one-third of the pipeline affects disturbed agricultural or vacant land. Of the remainder, only 5 percent is wooded, the balance being brushland and grassland. These communities are expected to revegetate the pipeline scar. Woodland will be excluded within 20 feet of the pipe.

Several rare or endangered species are known to be along the pipeline route. These species include the San Joaquin Kit Fox and the Blunt-Nosed Leopard Lizard in the Carrizo Plain. A detailed survey of at least a portion of the pipeline route is necessary to determine whether the pipeline will impact concentrations of these animals.

Road access to the site crosses numerous ravines. Major construction would adversely affect several riparian zones and patches of coastal sage. In a regional sense, road construction has a more significant impact on terrestrial biology than terminal construction does. The damage by road construction can be minimized to the degree to which road improvement is minimized or right-of-way corridors are used.

Construction of either a coastal or inland power line on steel towers will have a minimal terrestrial biology impact. Some brush will be cleared for road access to the tower sites, but the rightof-way between towers need not be disturbed. The electrical conductors pass high above the more sensitive vegetation along the bottoms of the numerous coastal drainages.

These terrestrial biological impacts at the project site can be mitigated by minimizing disturbance, for instance, by protecting Canada del Cojo from grading and by routing the access road to avoid major fill in the coastal ravines. The land taken for the proposed site can be compensated for by using some of the adjacent pasture land as a large buffer zone around the terminal and allow-



ing it to revert to a natural vegetation community. The pipeline impact can be minimized by careful survey to avoid rare or endangered species and by a vigorous revegetation effort wherever compatible with pipeline maintenance.

5. <u>Noise</u>

Both construction and operations will create a new noise source in an otherwise extremely quiet rural area. The pipeline route is mostly through unpopulated areas, and its construction will cause noticeable noise for only a few days as the construction crews pass near several populated areas. Its operation produces no noise impact. Terminal construction will increase sound levels up to 15 decibels on the A scale (dBA) at 4000 feet from the center of the site.

An alternative access road is presently being considered as a desirable mitigation measure. This alternative involves use of the Hollister Ranch Road, with some improvements to upgrade it to a 25-mile-per-hour (mph) speed. If this is done, construction workers would have to be bused to the site, causing additional noise impacts during construction. Access road alternatives via an improved Jalama Road or the gas pipeline corridor would have similar noise impacts during construction. During terminal operation with power generation by gas turbines, sound levels will increase by up to 10 dBA at 3000 feet from the center of the site. The sound levels outside the terminal during operation will be around or below Environmental Protection Agency (EPA) criteria.

6. Visual Aspects

The immense bulk of the LNG storage tanks, the trestle, LNG ships, and miscellaneous structures on the site will appear in sharp visual contrast to the undeveloped setting at Point Conception. Since the public does not have easy access to the site, however, the terminal itself will not significantly impact the public view. The power transmission line, if built as a steel tower line on the coastal terrace, will result in serious visual impacts.

The terminal structures can be visually softened to a limited degree by camouflage painting and by proper landscaping to protect the principal scenic vistas of Point Conception. Partial inground-



ing of the tanks should also be considered. When the power transmission line is constructed, visual impact can be reduced by locating the line out of view from the coast wherever possible. Also, the alternative of providing power to the site utilizing existing wooden pole power lines and by undergrounding the line through Gaviota State Park appears to be an attractive visual mitigation measure.

We are, therefore, requiring Western Terminal to provide the Commission with a study to determine the exact extent to which existing wooden poles can be utilized and the extent to which the transmission line can be undergrounded. In addition, we are asking Western Terminal to submit a landscaping plan which would also mitigate visual impacts.

7. Land Use

The terminal itself will require slightly over 200 acres and right-of-way for the access road may require another 75 acres. Construction of the gas transmission pipeline will cause a short term impact to over 1000 acres until the right-of-way is revegetated with native plant species. The project will introduce a new land use to the Point Conception area. This use is compatible with continued cattle grazing, the dominant present use. It is also compatible with the existing oil tank and oil tanker mooring buoy and the Southern Pacific Railroad. However, it is less compatible with recreation and low-density residential development, which are current land use trends in the area. The terminal will, of course, have a significant impact on the open space character of the land. There will be no significant change in surrounding land use as a result of this project.

The basic conflict in land use cannot be changed. However, any reduction in cumulative environmental effects, including visual, would mitigate the impact.

It should be noted, however, that the California Legislature, in enacting SB 1081, determined that the LNG terminal could be located at such a remote and undeveloped location, since, neces-

sarily, there would be little residential or permanent working population. In effect, the Legislature has made the decision that siting a terminal in a relatively undisturbed location is both acceptable and necessary for this LNG project.

8. <u>Socio-economics</u>

The total socio-economics impact will not be adverse. Project construction will require a large number of workers over a period of three to six years. Although project construction will lead to temporary large employment, there will be little long-term population growth in the area, since the facility operating staff is small.

The urban areas within and around Santa Barbara County can easily supply most of the labor needed for construction if this were the only project. However, cumulative construction employment requirements of the LNG project, the Vandenberg space shuttle program, and Outer Continental Shelf (OCS) development would result in a significant number of temporary in-migrant construction employees. The projected vacancies in transient accommodations and permanent housing in the area, as reflected in county statistics, appear sufficient for the cumulative requirements of the projects as they are now scheduled. Adverse impacts could result with certain combinations of project schedules, resulting in small reductions in tourists accommodated, further tightening of the local housing market, and increased use by labor of north county accommodations.

There will be some additional demands on public services, but these will be more than balanced by the increased economic benefit from employment and the expanded tax base. Market attractiveness of property surrounding the site will be reduced, and residential land values may tend to decrease in this locale.

The project impact on the socio-economics aspects of Santa Barbara County is small and requires little mitigation. Most important is for the project constructor and local agencies to discourage overdevelopment of housing or services in the community.

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9. Ancillary and Induced Development

The development of the Point Conception site will not, in all probability, provide an incentive for industry to move into such a remote location. Cryo-utilization will, at most, provide a basis for very limited industrial development. It is possible, however, that onshore support facilities for the development of outer continental shelf oil and gas leases could be attracted to the area, since it will offer power and pipeline infrastructures. These facilities are small compared to the proposed LNG project.

10. Cultural Resources

Known significant archaeological sites are within the boundary of the terminal area, within the pipeline corridor, and along the proposed access road. The project as planned will result in the destruction of many significant cultural resources.

Point Conception is regarded as a sacred place by some American Indians. Indians throughout the West are said to believe that Point Conception is the "Western Door" through which souls enter and leave this world. The local Chumash Indians consider themselves to be the keepers of the door, and they conduct religious ceremonies in the vicinity. The record does not show that the specific site selected for the LNG plant has any particular religious significance as opposed to other areas in the vicinity of Point Conception. The project will impact the religious values present in the Point Conception area.

The proposed project's potentially major impacts on archaeological sites at Point Conception and along the pipeline and power line routes can be reduced substantially by shifting the location of proposed project facilities to avoid the significant resources sites. The access road has less flexibility in altering the route to avoid major archaeological sites. In sensitive areas, road improvements might be limited to avoid impacting cultural resources at the cost of increased traffic problems or the need to bus construction workers to the site. Mitigation by salvage rather than by avoidance is a second, but far less desirable, option.

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Although operation of an LNG terminal at Point Conception will not necessarily interfere with religious practices in this area, the visual and acoustical impacts on the sacredness of the Point Conception area to Native Americans are impacts for which there appears to be no remedy.

11. Energy

The project will consume significant quantities of electricity; however, its net energy impact will be a major increase in gas supply to California.

Energy use at the terminal can be reduced slightly by actions such as energy recovery in the seawater outfall and use of seawater for peakload as well as baseload vaporization of LNG; however, these measures would increase cost and reduce reliability. A major energy saving might be realized from cryo-utilization to generate power without additional fuel. At present, the feasibility of this process and its impact on reliability remain unproven. Other energy-use reduction alternatives, such as the use of all gasfired vaporizers or solar power, will be further evaluated in the ARB hearings to be held at a later date.

12. Marine Traffic

The Santa Barbara Channel is an active transportation corridor for coastal maritime trade. The LNG ships and associated supply shipping produce only a small increase in existing channel traffic. The LNG ships bound for and departing from Point Conception must cross the western portion of the Santa Barbara Channel vessel traffic lanes; however, simulation of possible vessel encounters indicates that the impact of LNG ships on existing traffic is negligible.

As mentioned ship traffic in the Santa Barbara Channel was simulated to evaluate the potential for marine accidents associated with 193 LNG ship deliveries per year. The simulation indicated that the chance of an LNG ship being involved in any sort of an accident while approaching the site is an event with a recurrence interval of more than 10,000 years (less than 10^{-4} chance of accident per trip). Also, because the double hull design of the

LNG ship makes the ships more resistant to minor accidents such as bumps and scrapes, accidents severe enough to cause an LNG spill are expected to be very rare. Analysis indicated that the probability of losing the contents of one ship's tank of LNG, based on about 190 shipments per year, is an event with a recurrence interval of 12,500 years (approximately 8×10^{-5} per year).

The low probability of a serious ship casualty, coupled with mitigating measures to further increase vessel safety and the low population density in the vicinity of the terminal and the marine approach lanes, makes Point Conception a suitable site with respect to vessel traffic safety.

Further reduction in the already low risk of vessel casualties might be achieved by further improving communication and navigation procedures for the ship's approach to the Santa Barbara Channel and the LNG berth. Contingency plans for responding to minor incidents to prevent their escalation are also likely to further mitigate marine traffic risks.

13. Terminal Reliability

As stated, the proposed project is designed to supply up to an annual average volume equivalent to 1.3 BCF/D of LNG to California gas users. The reliability of this supply depends on a number of factors: The reliability of the liquefaction plants supplying the LNG, the reliability of the LNG ships with respect to delivery of LNG without delays long enough to cause a temporary disruption in gas availability to California users or to cause an inability to accept annual contract quantities of LNG, and the reliability of the receiving terminal facilities.

Historical evidence indicates that liquefaction terminals and shipping operations can be considered to be essentially 100 percent reliable. This reliability, to some extent, is due to excess capacity typical for liquefaction facilities and to the availability of extra ships if an occasional additional shipment is required.

Occasional unfavorable combinations of weather conditions (wind, waves, and fog) may prevent the LNG ship from docking as soon as it arrives near the terminal. Based on currently available

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information the long-term average berth availability at Point Conception will be in the range of 84 to 93 percent. This is more than the 83-percent limit estimated as the minimum level at which a long term throughput of 1.3 BCP/D can be maintained. Additional data on the sea state at Point Conception are currently being recorded to allow future improvement of the berth availability analysis. Recent onsite data seem to confirm preliminary conclusions, but additional information on southern hemisphere swell will be obtained during the summer of 1978.

The mechanical reliability of the LNG terminal itself is estimated to allow the 1.3 BCF/D capacity to be maintained 99.41 percent of the time. If the terminal were operated at maximum capacity with allowance for reduced output because of mechanical failures, an annual average rate of 1.57 BCF/D of LNG send-out could be achieved if the LNG supply were unrestricted. This excess capacity allows some flexibility in catching up after periods of reduced output as a result of equipment failures or delays in unloading the LNG from the ship. Since California has underground gas storage volume equal to about 5 months' sendout from the proposed terminal at 1.3 BCF/D, short interruptions can be tolerated as long as an annual rate of 1.3 BCF/D can be maintained.

The continuing high reliability of California's only LNG supply depends on maintaining a spare parts inventory of critical items. In the early phases of the project, the terminal reliability is high enough so that the cost of adding further redundant systems is not justified in terms of increased reliability. However, at full capacity, it may be desirable to consider adding another peakload vaporizer. The addition of a fourth tank as discussed in the Draft EIR is no longer considered desirable, since existing underground gas storage capacity in California can be used as buffer storage instead of additional LNG terminal storage.

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[&]quot;Berth availability" is the term used to describe the percentage of the time that an LNG ship can safely dock at the berth and unload LNG.

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14. Terminal Safety

A review of the safety of the proposed terminal facilities indicated that it is technologically feasible to achieve high levels of safety at the Point Conception site. Seismic design requirements for the Point Conception location can be met with existing technology within reasonable costs. Although Western Terminal's seismic design analysis for major components of the terminal is not yet complete, recommended criteria for the design will ensure construction of a terminal that meets satisfactory safety and reliability standards. The staff has issued proposed LNG Facility Safety Standards, which, if promulgated, will assure a high level of safety.

The foregoing statement is based upon our knowledge of the seismic state of the site as our evidentiary record exists at this moment. The further hearings we will hold on this issue may materially change our evaluation of terminal safety and our ultimate decision.

Most accidents that might occur at the terminal would not be serious enough to have potential offsite safety impacts. Only a major failure of one of the LNG storage tanks has the potential for creating a serious offsite risk, although more limited LNG releases associated with ship unloading line accidents or spills in the land storage or vaporization areas might endanger some terminal personnel or persons in the vicinity of the marine trestle. The analysis of both the probabilities of various accidents at the LNG terminal and their potential consequences indicated that the probability of an accident involving more than 10 fatalities is extremely low, with a recurrence interval in excess of 1 million years. This low-risk level is due to the combination of inherent terminal safety and the low population density near the site. Some perspectives on interpreting these estimated risk levels are presented in Section 5 of the FEIR.

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The possibility of accidents from malicious acts ranging from vandalism to sabotage was also evaluated. Security measures planned by Western Terminal and divulged to the safeguards analysis team on a restricted basis were judged by the reviewers to be adequate after some recommended modifications were adopted.

Impacts of the LNG project on public safety can be minimized both be reducing the likelihood of LNG spills at the terminal through accident prevention and control procedures and by remote siting to reduce the number of people potentially exposed to the



consequences of such an accident. The Point Conception site location is in a remote area, and LNG ships approaching the site also are distant from population areas. The land-use control provision of the ING Terminal Act will maintain future population density at low levels in the terminal vicinity. The Commission staff has issued proposed Safety Standards for LNG facilities which would impose some design requirements on Western Terminal. Indeed, it is all important to state that the Point Conception site is the only one before us which poses no problem with the application of the "remote" criteria mandated by S.B. 1081. Within the four mile perimeter spelled out in Section 5582 there is no doubt that neither permanent nor transient population exists to the extent that any question of remoteness may be raised. The closest state park capable of producing significant transient population is some nine miles distant while surfers, fishermen and kelp harvesters, do not operate in sufficient numbers within the proscribed distances to raise the 1ssue.

In addition, in Phase II of OII-1 we will consider the establishment of a staff Risk Management Group that will have an active and continuing role in ensuring that the facility safety systems are properly designed, operated, and maintained. Under staff surveillance, Western Terminal's operating procedures, contingency plans, site security equipment and procedures, operator selection and training procedures, and plans for investigation of minor accidents and malfunctions will be reviewed to maintain a high level of safety at the terminal. The staff has issued a Safety and Construction Monitoring Plan which gives further details on its proposed risk management program.

C. Unavoidable Adverse Impacts

Although many of the significant environmental impacts of the proposed project can be successfully mitigated, some residual impacts are unavoidable. The major unavoidable impacts are highlighted below.

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1. Topography, Soils, Geology, Hydrology, Seismic

Grading and cut and fill operations will modify topography and eliminate some existing topographic features. Removal of top soils in the developed area will result in loss of productivity. Erosion and water turbidity are likely to increase slightly during project construction.

2. Air Quality

As discussed earlier, further hearings will be held to determine what air quality mitigation measures will be required. It is the intent of the Commission that sufficient trade-offs and/or mitigation measures will be required so that the project will not have a significant impact on air quality in the South Central Coast Air Basin. The following paragraph describes the project's impacts without consideration of additional mitigation measures as trade-offs.

Cumulative annual average emissions from the LNG project add a significant increment to the pollutant emissions within the North and South Santa Barbara air basins. Nitrogen oxides produced by terminal fuel combustion are a large increment to emissions in the immediate area and are a small addition to the already significant nitrogen oxide emissions in the air basin as a whole. Under adverse weather conditions, short-term state standards for nitrogen oxide are violated a few percent of the time.

3. Water Quality/Marine Biology

The seawater system will entrain plankton, and plankton mortality will result from the effects of anti-fouling chemicals. Also, some residual fish entrainment and mortality in the seawater system are possible if planned mitigating measures are not fully effective.

4. Visual

The large structures and man-formed industrial character of the proposed terminal and the power transmission line will conflict with the present open space character of the area.

5. Land Use

The proposed project will permanently remove about 300 acres of land from agricultural and recreational use, and temporarily disrupt more than 1,000 acres of land during construction of the pipeline. The terminal will conflict in land use with its surrounding open space, recreational, and residential area.

6. <u>Cultural Resources</u>

The proposed terminal site and pipeline corridor contain some significant archeological resources which would be destroyed during construction. Construction of either the proposed or one of the alternative access roads will result in major unavoidable impacts to cultural resources. Also, the terminal site at Point Conception would conflict with and decrease the religious value of the Point Conception area for Native Americans.

7. Marine Traffic

Vessel traffic will increase about 4 percent because of the LNG ships and by 1 to 1-1/2 percent as a result of service traffic

in support of the project. Also, a petroleum product spill might result from a casualty involving these ships; however, the chance of such an occurrence is small.

8. Onshore Transportation

Project and construction traffic increases will impact traffic flow of State Route 1 at the access road intersection. Use of either the Hollister Ranch Road or the Jalama Road for an access road will impact the existing character of these routes.

D. <u>Mitigation Measures - Seawater Vaporization System</u>

1. <u>Deficiencies in Design</u>

Because of the importance of the seawater vaporization system to the reliable operation of the LNG terminal and because the operation of the seawater system will cause one of the major environmental impacts of the terminal, staff submitted Exhibit A-102, a special report on the design and operation of the seawater system. This report, which indicates the seawater system has major design deficiencies, was sponsored by a consultant to the Commission. The consultant's report examines the means which could be utilized to reduce damage to entrained fish and to improve the effectiveness and reliability of the fouling control for the seawater system.

2. Mitigation of Fish Entrainment

Western Terminal's proposed fish return system consists of an onshore pump and screenwell with a fish return elevator that removes entrained fish from the screenwell and places them in the seawater outfall line. Although it is of the same design as planned for San Onofre Units 1 and 2, this entire fish return system has never been tested in actual operation. The deficiencies of this system are described in Exhibit A-102 as follows:

"First, it removes the fish from their natural ocean waters and relies on mechanical separation and return. In the course of this, the fish are exposed to damage from mechanical trauma and chlorination of the intake water. Although based on an existing design, the effectiveness of the fish return in reducing fish mortality is unproven at the scale and location of the Point Conception LNG plant. Furthermore, the equipment required for the fish return is elaborate: it requires several thousand feet of discharge conduit, mechanical elevators, separate pumps and possible separate dechlorination.

The report proposes a preferred alternative to an onshore screenwell. This alternative utilizes a caisson-type seawater intake system. It largely eliminates damage to entrained fish; further, its component parts have been proven in operation. The record shows that this seawater system would cost no more than the onshore screenwell system. According to Exhibit A-102, it also "may simplify fouling control by eliminating the need to precisely control chlorine concentration in the intake, screenwell, and fish return conduit. With respect to trash rejection and anti-fouling, the offshore concept may be more reliable than the onshore concept with a fish return." Western Terminal has not chosen to utilize this design.

Exhibit A-96 indicates that Western Terminal rejected the caisson-type system not on the basis of overall effectiveness, but on the basis that it has not been proved reliable in an open marine environment. Western Terminal believes additional hydraulic testing of the design is needed. Staff argues, however, that Western Terminal's real reasons were stated by its witness when he was asked the following question by staff counsel:

- Q. "What I don't understand, Mr. Fuller, in light of the facts, with respect to the onshore pumping system, you will have to go ahead and conduct additional studies with respect to exomotive chlorination levels, so forth, why you haven't considered the possibility of going forward with necessary hydraulic tests necessary to determine the reliability of the caisson pump station concept?
- A. "The sole reason is that we are attempting to eliminate as early in the game as we can concepts that we need not pursue longer and spend the time and the money making those additional investigations.

"I think that what we have done to date has been thorough, and it admittedly has work yet to be done, but at least I think that we have identified the issues in sufficient detail so that a rational decision can now be made and the concept selected." (T. 2880-2881.)

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It appears that Western Terminal had decided to go forward with the proposed design, and by the time the offshore caisson screenwell Intake system was proposed, Western Terminal was already committed. This conclusion would seem to be supported by the response of the witness to a further question concerning the costs of conducting the necessary hydraulic tests to determine caisson system reliability:

- Q. "Any indication of what the cost of such a test would be?
- A. "No, I don't believe we have that.

"I think the bigger cost is associated with going ahead through the design work and finding at a later date we will have to back up and start again with a new design effort on a different concept." (T. 2882)

Based on the available evidence, it appears that the caisson screenwell intake is more effective than the applicants proposed method. Condition 4, discussed in Section XIV, will require the development of this system unless the applicant can demonstrate that it is infeasible or that another method is more effective.

3. Control of Fouling

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The principal design deficiency which the staff's consultant found with respect to the fouling control is related to Western Terminal's proposal to rely on electrically generated chlorine as a reasonably safe and cost-effective method of controlling fouling of the seawater intake system. He noted that the major problem with this proposal is that Western Terminal intends to rely on the effectiveness of a continuous, low-level chlorine injection system that has never been tested and that Western Terminal had made no provision for a backup anti-fouling arrangement in the event of greater than expected fouling. Exhibit A-102 points out that, in addition to not allowing for the intrinsic demand that seawater itself makes upon the chlorine, Western Terminal has failed to demonstrate that mixing of the chlorine would occur to a degree sufficient to maintain its effectiveness. The staff's consultant

expressed the opinion that a higher level of chlorination would probably be required and that the increased dosage would have a greater impact on fish sucked into the seawater intake.

The witness who sponsored Western Terminal's seawater system study (Exhibit A-96) conceded on cross-examination that testing would have to occur in order to determine the level of chlorine injection that will actually be required and that tests would need to be made to determine how to design for sufficient mixing.

Because of the essential role of the seawater system in LNG terminal operations and because low-level chlorination has never been used before in the manner proposed, the staff recommends that Western Terminal should adopt the staff consultant's proposal for alternative means to control fouling, as detailed in Exhibit A-102.

Based on the foregoing, the Commission will adopt the following staff recommendations with respect to the seawater system, in addition to our condition as set forth later herein:

- "1. Part of the operating procedures for the Point Conception plant should include monitoring for biological fouling in the intake conduit, the screenwell, the vaporizers, the fish return and the discharge conduit. The monitoring should include both instrumentation to measure resistance to flow and periodic visual inspection. In this way the effectiveness of the anti-fouling program can be continually evaluated, eliminating the tendency for over dosage and warning of possible unscheduled maintenance.
- "2. Design should include the use of a long-life toxic coating such as B. F. Goodrich 'No-Foul' for those portions of the seawater system which would be the most difficult and time consuming to clean manually in the event of an anti-fouling failure. Particular attention should be paid to the fish return conduit. If that line becomes fouled, the flow restriction will interfere with the efficiency of the fish return and the likelihood of mechanical damage to fish in the narrow conduit will sharply increase.

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"3. The applicant should provide a contingency maintenance plan for the seawater system showing the operating procedure for seawater shut-down for time intervals of four hours, one day, five days and fourteen days. The contingency plan should include provision for de-watering a portion of the system, providing access to all critical components and should estimate the cost of outage and the source of alternate gas supply to California."

E. Mitigation Measures - Access Road

1. Existing Access Roads to Site

At present, access to the Point Conception site is via the existing Hollister Ranch Road, which begins at Highway 101 at Gaviota State Park and follows the coastal terrace through Hollister Ranch and the Edison property of which the proposed site is a part. The distance from Highway 101 to the site is 13.4 miles and takes about 40 minutes. Alternate access is provided by the Bixby Ranch Road, which originates northwest of the terminal at the County's Jalama Road and generally follows the coast to the site.

As envisaged by Western Terminal, the proposed access road will be used during both construction and operation for equipment and for material carried by trucks, for labor transportation and for emergency services. Western Terminal contends that an adequate access road is an essential element of the project; that neither the Hollister nor Bixby roads are adequate for the planned movement of labor and materials during construction; and that an adequate all-weather road is required in meeting the day-to-day labor and material needs of the completed project.

Only small amounts of material and equipment will be hauled by pickup trucks over the existing access road. Western Terminal states that the majority of such cargo will be transported by rail and unloaded at a new railroad spur to be constructed at the site.

2. The Railroad Route

Western Terminal originally proposed an access road designed for 45 mph traffic with a route parallel to the existing Southern Pacific railroad. It is the most direct route, following the coast from Highway 101 to the LNG site. For six miles, from Highway 101 to Drake, the route follows the Hollister Ranch Road corridor. At two points near existing high railroad trestles, the

route departs from the railroad right-of-way and curves inland around arroyos to avoid bridge construction. Considerable cut-andfill work would be necessary as this route crosses the mouths of about two dozen arroyos.

The record shows that construction of a road over this route would have greater environmental impact than construction of the terminal itself. The road would substantially alter the visual character of the route; it would significantly impact the terrestrial biology; and it would pass through and destroy a dozen archaeological sites. Further, the route passes through Gaviota State Park. The EIR evaluated this proposed access road and found it unacceptable.

3. The 40-MPH Improved Hollister Alternative

An alternative to the railroad route is an improved Hollister route following the existing Hollister Ranch Road corridor with departures to reduce the number and sharpness of curves to accommodate 40-mph traffic. Edison has a 200-foot wide easement along the corridor. Western Terminal estimates that three-fourths of this alternative road would be within this easement. It would, however, place the access road well within the array of Hollister Ranch's 100-acre residential parcels between Drake and the terminal. Western Terminal indicates that the required cut-and-fill earth movement along this route could be almost as extensive as that required for the railroad route.

This alternative can be regarded as somewhat preferable to the railroad route because construction would cause less disturbance of terrestrial biota, and it would impact few archaeological sites. However, this route also traverses Gaviota State Park.

4. The Improved Jalama Route

The Jalama route differs distinctly from the others in that it approaches the terminal site from the northwest through the undeveloped Bixby properties. Utilizing this route would require the construction of seven miles of new road from Jalama Road at Jalama Beach County Park to the terminal site, in addition to the reconstruction of eight miles of the Jalama Road. The new road

would replace the winding Bixby road from Jalama Road to a point past Black Canyon. The route then follows the Southern Pacific line across the coastal terrace to the railroad spur at Point Conception, where the Bixby road diverges from the railroad and enters the terminal site from the west.

This route is 26 miles longer than the railroad route. Cumulative long-term costs of this route, because of travel time for construction, labor, and additional expenses for the movement of equipment, would be significantly greater than for the other routes.

Because the coastal terrace is relatively flat, there appears to be greater opportunity for flexibility in designing the placement of a road along this alternative route. Thus, although there are many cultural resource sites along this route, many could be avoided. However, over 140 mature trees would have to be cut down during improvement of the Jalama Road.

5. The 25-MPH Improved Hollister Alternative

After distribution of the DEIR, which identifies the environmental impacts of the proposed railroad route and the above alternatives, Western Terminal proposed, as a mitigation measure, a plan to improve the existing Hollister Ranch Road for a design speed of 25 mph. The improved Hollister alternative road would provide all-weather access with significantly smaller and fewer environmental impacts than any of the above alternatives. Western Terminal alleges that these impacts are likely to occur whether or not the LNG terminal is ever constructed; that sooner or later, Hollister will have to make many of the improvements to maintain the road and eliminate trouble spots.

6. Staff Position on the Access Road

The staff believes that if the Commission permits an LNG terminal at Point Conception, it should authorize an improved access road. The staff took the position that, of the foregoing four alternative routes, the proposed 25-mph improved Hollister Ranch Road should be conditionally authorized on the basis that this proposal would provide the most efficient access with the

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least environmental impact. Following testimony presented in behalf of Hollister Ranch Owners Association, however, the staff qualified this position. Hollister offered evidence on the high level of costs which would be incurred in improving the existing Hollister Ranch Road as well as evidence on the feasibility of constructing a road from Highway 1 over the Santa Ynez Mountains to the site. As a result, the staff now recommends that the Commission develop further evidence on the issue of routing the access road. It is the staff's present view that the record as made contains insufficient evidence on the access issue. The staff points out that if it is feasible to transport most of the labor and material to the site via the railroad or to construct an access route similar to route 4-4a as shown on Hollister's Exhibit A-105, the environmental impacts of the proposed project might be greatly reduced. The staff, therefore, recommends that the Commission adopt its proposed Condition No. 16, which is set forth later in this decision.

7. Hollister's Position On the Access Road

It is Hollister's position that all of the acceptable access routes have major adverse environmental impacts and that any permit should be conditioned to require the use of barges and the railroad exclusively. Citing County's findings in Condition No. 59, Hollister points out that any improved road will become a major inducement for increased industrial and other urban growth throughout the Point Conception area. County recommends that all transportation of construction personnel and material to the proposed LNG site be by Southern Pacific from the Lompoc Valley spur. County also found that Lompoc is easily serviced by rail and that approval of this railroad access would put the major burden of providing housing on Lompoc and the north county areas where the housing situation is far less acute than exists in southern Santa Barbara County where the rental vacancy factor is minimal and much of the area is under a building moratorium.

Hollister points out that the record in OII 1 shows that, if use of the present track as extended by short spurs at either end to unload trains were found infeasible for reasons of opposition

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by Southern Pacific or Amtrak, the estimated cost of constructing a new temporary track, alongside the existing Southern Pacific track and within the right-of-way, would be one-fourth to one-third as much as the cost of any vehicular access route to the site. Hollister asserts that with little, if any, need for cutting and filling, the laying of temporary track would be far less damaging from an environmental standpoint.

Hollister contends that should it for some reason be impossible . to utilize the railroad for all construction traffic, construction access should be limited to a yet-to-be-constructed private road leading northward from the site and connecting with Highway 1 at its nearest point, following generally the proposed pipeline route, with the precise alignment to be so designed as to avoid cultural sites, to minimize earth moving, and to avoid degradation of significant vegetation and wildlife habitats. According to Hollister, such a northerly access route has been recommended by County in an amendment to its Condition No. 49 for substantially the same reasons it put forward in support of railroad access via Lompoc.

CCC, in its Condition No. 23, recommends maximum feasible use of barges and the railroad for transport of workers, materials, and equipment. It specifies minimum improvement of the Hollister Ranch Road as a supplemental means of access should vehicular access prove necessary. Hollister points out that CCC did not have the benefit of the testimony of its witness relative to the actual condition of the Hollister Ranch Road and the impacts of reconstruction and that, therefore, its recommendation does not appear to be supported by evidence. Hollister urges, therefore, that the Commission modify CCC's Condition No. 23 under Subsection (b) of Section 5633 of the Act and require the northerly route recommended by County. Hollister submits that a northerly route is preferable to a route extending from Gaviota through the Hollister Ranch to the proposed site for the following reasons:

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"1. It better diffuses the impact of traffic and housing within the County, focusing these impacts at a more median point in the County, and, in particular, diminishing the housing impact on the already overcrowded Santa Barbara-Goleta urban areas.

- "2. It avoids the impact of heavy construction traffic through Gaviota State Beach Park.
- "3. It avoids disruption and damage to existing residential and agricultural developments.
- "4. Reconstruction of the existing Hollister Ranch Road entails extensive cuts and fills, realignment and grade reduction along a ten-mile stretch of narrow coastal terrace, resulting in greater visual degradation, increased land use impacts and greater safety problems.
- "5. The northerly route offers sufficient flexibility in alignment to permit by passing of archaeological sites and other cultural resources, thereby eliminating the severe impact to archaeological sites entailed with any route through the Hollister Ranch.
- "6. Use of the dangerous Gaviota turn-off on U.S. Highway 101 involving an on-grade crossing of southbound lanes by all northbound traffic, is eliminated; use of the interesection of Highway 1 and U.S. Highway 101, where a full diamond interchange exists, will result in a major reduction of traffic hazards."

8. Railroad Commuter Service

Western Terminal investigated railroad service as an alternative to transporting construction workers to and from the LNG site. Western Terminal states that it rejected railroad commuter service as being infeasible and offering no evironmental advantage for the following reasons:

- "(1) Given institutional restraints and opposition by Southern Pacific Railroad and Amtrak, it : would be difficult to achieve this alternative.
- "(2) Response time for emergency service would be significantly greater using the existing roads rather than an improved access road.



- "(4) Even with a rail commuter service, a minimum access road would still be necessary for access during the construction as well as during operation of the facility.
- "(5) A staging area for the train would also be necessary, producing significant impacts.
- "(6) It would be an extremely expensive alternative."
- 9. <u>Conclusion</u>

Conclusion 16, discussed in Section XIV, will require the applicant to develop transportation plans for the 25-mph Hollister Ranch alternative and the improved Jalama Route, As requested by Santa Barbara county, a northern route generally following the pipeline corridor will also be studied.

F. Mitigation Measures - Electric Transmission Line

1. An Air-Pollution Mitigation Measure

In its application, Western Terminal proposed onsite generation of the electric power for the initial 500 MMcfd capacity of the terminal (Phase I). Gas turbines were to generate the required electricity. Once a second LNG supply project (Phase II) had come on line, purchased electricity would be the normal source of power, with gas turbines assuming a standby role. The DEIR recommended as an air-pollution mitigation measure, $-\frac{\Phi}{2}$ that Western Terminal from the outset abandon onsite generation, except as a standby source, in favor of purchasing power from Edison. In order for Edison to provide power for the project, it will have to construct, own, and operate a 66 kv-transmission line to the site.

2. Disadvantages of Onsite Generation

For onsite generation, three gas-turbine power generators would be needed during the 500 MMcfd and 700 MMcfd phases of the project.

^{*/} The major environmental problem with onsite power generation is that the resulting emissions may result in violation of air quality standards. With onsite power generation, even at the Phase I level, the onsite gas turbines would emit more than 100 tons per year of NOx. This would classify the terminal as a "major emitting facility" under the Federal Clean Air Act.

Two would be in continuous operation; the third would be on standby. Peak power requirements for the terminal during these phases will be approximately 40 megawatts.

The DEIR shows that, even at the lower operating levels of the terminal there would probably be a violation of air quality standards and emission regulations. Exhibit A-87 (Technical Report No. 4 supporting the DEIR) states:

"The first few phases of project development specify that an average of 35 megawatts (mw) will be generated on site. ... Until that time the tremendous quantity of nitrogen oxides generated by high temperature combustion in the gas turbine generators will pose a local violation of the state 25 pphm hourly standard for nitrogen dioxide, particularly when the plant peaks at 50 mw." (Exhibit A-87, p. 161.)

Exhibit A-87 shows that even when operating at the 5 mw and 10 mw levels, the state NO_X standard would be equalled. The DEIR concludes that with onsite power, violations of state standards would probably occur approximately 77 to 133 hours per year. These violations are unacceptable. With purchased power at the 500 MMcfd throughput level, there is, according to Exhibit A-101, a substantial reduction in emissions.

Onsite generation has the following additional disadvantages: (1) It is less reliable. Having the gas turbines as backup to purchased power increases the reliability of the plant over total reliance on gas turbines; (2) Gas turbines are a source of a certain amount of noise. Elimination of turbine noise will improve the environment in the immediate vicinity of the plant; (3) It is less energy efficient. The energy efficiency of onsite power generators is considerably less than that of large utility generating plants. The everyday use of gas for onsite power generation is questionable.

3. Minimal Impact on Air Quality of Purchased Power :

Edison states that "this project will not represent a significant element of present demand and will be met from existing : or previously planned capacity." This demand for electric power is equivalent to 0.28 percent of Edison's 1977 capacity. The

pollution emissions from the Edison facilities to produce an equal amount of purchased power will be less than that emitted from onsite generators, due to higher efficiency and types of units used by Edison. Some of these units are nuclear and hydroelectric which do not produce air emissions. These emissions will be distributed throughout the Edison power generation grid with minimal impact upon air quality in any particular area.

4. Two Power Line Routes Available

The merits and demerits of two powerline routes have been developed on the record. These routes have been identified as the coastal route and the inland route. The required power could be transmitted over either or both of the two routes. Each route has certain environmental advantages and disadvantages with respect to the other. On balance, the coastal route is the environmentally preferred route.

5. Coastal Power Line Route

An existing 66-kv power line now parallels Highway 101 along the Channel coast from Gaviota to Goleta. The line is supported on wood poles. Another line on wood poles, a 16-kv distribution line, runs from Gaviota substation through Gaviota State Park along the coastal terrace past the project site.

The 66-kv line could be modified to accommodate a second 66-kv line for the project. Wood poles could still be used. The 16-kv distribution line could be upgraded to carry both the 16-kv line and a 66-kv line. This would involve replacing the existing wood poles with wood poles roughly 20 to 30 feet taller and installing new crossarms, insulators, and conductors. In Western Terminal's opinion, the environmental impacts caused by upgrading these existing lines would be minimal and substantially less than the impacts caused by installing entirely new lines and supporting structures.

The only significant environmental impact of routing a power line along the coast is visual. The reconstruction and upgrading of the existing lines along the coastal route should not result



Installing the 66-kv facilities along the coastal route would cost less than for the inland route. Routing the project's 66-kv line around Gaviota State Park would be costly and could have a greater environmental impact.

6. Inland Power Line Route

The inland route follows along the southern border of the Los Padres National Forest on an existing Edison easement which parallels the coast. The 10.4-mile Hollister Ranch section of the route is in the same easement as proposed for the coastal route. A power line constructed along this easement would generally be out of sight of persons on the coastal terrace. The only environmental advantage of this route over the coastal route is visual. The line would utilize steel tower supports, but fewer people would see a power line constructed on this route than one following the coastal route.

The inland route would extend along 27.8 miles of existing Edison right-of-way. It would have a total length of 32 miles and require the construction of over 50 miles of access road to reach remote tower sites. If this route were selected, it would be difficult to avoid cultural impacts in the construction of the required extensive access road.

7. Edison Presentation

At the request of the staff, Edison presented testimony by its supervisor of transmission and maintenance. He indicated that = Edison had provided applicant with two conceptual plans for providing



Edison's witness was questioned concerning the feasibility of: using the existing 66-kv pole line that runs from Goleta to the Gaviota substation; upgrading the supporting structures of the existing line that runs along the coast from Gaviota past the site; utilizing alternate corridor routes; and undergrounding the transmission line. In response to each of these areas of questioning, he indicated that additional engineering would be required to provide meaningful answers.

As to the feasibility of undergrounding the transmission line, Edison's witness indicated that the current cost of undergrounding a typical 66-kv transmission line is on the order of \$500,000 per mile plus right of way costs. He indicated that until additional studies are conducted, he could not state the extent to which the transmission line could be undergrounded or what would be the actual cost of undergrounding.

Edison's witness indicated that for the routes he examined, he assumed wood poles would not be adequate. He stated that steel structures are the only satisfactory line supports in rugged terrain because span lengths often exceed the strength characteristics of wooden poles.

8. Staff Position on Transmission Lines

Staff believes applicant should be authorized to construct a single-circuit 66-kv power line to serve the terminal during Phase I of the project. The staff recommends, however, that Western Terminal, in conjunction with Edison, should conduct the necessary preliminary engineering studies and submit to the Commission a plan indicating the maximum extent to which it is feasible to place the transmission line underground in the coastal zone and in Gaviota State Park. Where undergrounding is not feasible, the plan requested by the

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staff would include utilization to the maximum feasible extent of existing poles and/or upgrading of existing poles. The staff further recommends that Western Terminal should be required to carry out the recommendations set forth in its Condition No. 15, infra.

9. <u>Conclusion</u>

Based on this record, total undergrounding of the electric transmission line does not appear to be technically feasible. However, the record does show that portions of the transmission line could be undergrounded and that along portions of the routes existing wooden poles might be utilized. The visual advantages of undergrounding or using existing wooden poles are obvious. By Condition No. 15, set out later in this decision, we are requiring additional studies and hearings on this issue.

G. Mitigation Measures - Gas Transmission Pipeline

1. Proposed Trans-Mountain Pipeline Route

Western Terminal states that it selected the proposed transmountain pipeline route because it represents the most reasonable balance of tradeoffs of design and costs versus environmental effects. Western Terminal's proposal is based on a three-mile corridor width to permit flexibility in final pipeline alignment in response to specific engineering and environmental factors. A wide corridor provides latitude for: avoidance of archaeological resources, populated areas, and sensitive biological habitats; use of existing right-of-way and previously disturbed areas; and minimization of impacts to natural and artificial drainage, natural biological habitats, terrain (topographic alteration and increased erosion/ siltation rates), and existing land use.

Once constructed, the pipeline will be completely underground. A permanent 50-foot-wide zone along the transmission pipeline corridor will be required during operation, except the 45 miles of looped line will require a 75-foot-wide right-of-way.

The proposed tie-in from Point Conception to Gosford appears to be the most economic transmission pipeline routing available. An added advantage of the proposed route is that it traverses the

Ten Section oil field. This field has great potential as an underground natural gas storage or banking facility. SoCal and PG&E are planning to-purchase the Ten Section oil field for this purpose.

No unusual biotic associations occur in the pipeline area. The three-mile pipeline corridor provides sufficient flexibility for minimizing impacts to natural and artificial drainages and special habitats. Once the pipeline is completed, Western Terminal agrees to have the right-of-way revegetated with native grass or agricultural crops and generally restored to its original use and appearance.

Western Terminal believes that the proposed route will result in less impact to cultural resources than other routes. To ensure protection of cultural resources, Western Terminal states that it will employ an archaeologist to accompany the pipeline surveyors. He will provide guidance in avoiding cultural resources or salvaging their sites, as appropriate.

The record shows that population concentrations along the proposed route are very small. Generally, such concentrations as there are can be avoided so that few people would be exposed to construction noise, dust, and other interference.

Western Terminal and the staff gave consideration to more direct pipeline routes across the mountainous region. Neither found a more direct trans-mountain route to be acceptable because of the steep terrain and greater adverse biological impacts.

2. Coastal Route

The coastal alternative route is approximately twice as long as the proposed route. The pipeline would follow the Channel coast and then go inland across Ventura County to Los Angeles County. In contrast to the proposed route, it would traverse some of the region's most heavily developed areas around the city of Santa Barbara as well as urban centers at Ojai, Newhall, and Palmdale. Agricultural land use and residential development in general is more intensive along the coastal route, and the area is noted for

its beauty. In addition, there are numerous cultural resources. Land use impacts, therefore, would be correspondingly great, and in general, the environmental effects of this alternative are more adverse than the proposed route.

3. Staff's Position on the Gas Pipeline

Staff believes that the record in this case clearly establishes the proposed route as the most favorable corridor in which to construct the proposed gas transmission line. As stated in DEIR, "The coastal pipeline approach offers no advantages to the trans-mountain pipeline approach currently proposed. The coastal approach is roughly twice as expensive, it entails construction in difficult terrain and in more urbanized areas, and its environmental impact is generally more adverse."

It is the staff's position that the proposed pipeline is a necessary adjunct to the proposed Point Conception regasification facility. The staff believes the utility has made reasonable representations of the total pipeline costs and scheduling, and the pipeline unit costs of service are acceptable. The staff points out that the record shows that the capacity of the existing gas transmission system is adequate to accept the initial volumes proposed under Application No. 57792, and that the existing gas transmission system would be capable of accepting ultimate plan output volumes after various minor modifications. The staff also believes the construction of the pipeline is feasible from economic, engineering, and environmental points of view. The staff recommends that the Commission grant PG&E and PLS a certificate of public convenience and necessity to construct the proposed gas transmission pipeline, subject to pertinent portions of the staff recommended terms and conditions, infra.

4. Conclusion

The record clearly shows that the proposed pipeline corridor is the most feasible and has the least adverse environmental impact. -Alignment of the pipeline with this corridor shall be determined as specified in Condition 8 in Section XIV. A. 57626 et al. acb *

XIII. LNG SAFETY ISSUES

Section 5632 of the Act provides that the Commission: "shall not issue a permit ... unless it finds to do so is consistent with public health, safety and welfare and may impose such conditions on the issuance of a permit as may be necessary or appropriate to ensure the public health, safety and welfare."

It was principally to comply with this provision that OII 1 was commenced. The procedural history of OII 1 has been described earlier. What follows herein is our opinion on all safety issues raised by Western Terminal's application to build an LNG facility at Point Conception.

A. General Comments

Before reviewing the evidence in this proceeding with regard to safety and making the determinations required by Section 5632, some general comments with regard to safety and the concept of risk are in order.

Practically every industrial activity being undertaken in our society presents some risk of bodily harm to people whether they are workers within the industry or the general public in the vicinity of the industrial activity in question. Modern, complex industrial systems are carefully engineered to provide continuity of operation and are specifically designed not to fail. Nonetheless, failures do occur, and sometimes, the consequences of such failures in terms of the extent of casualty incurred can be quite large.

To a large extent, the level of safety of a new facility can be determined by design options. For example, building codes are generally based on severe conditions (e.g., wind, flood, seismic events) which have occurred within 20 to 50 years' experience. These conditions are likely to recur during the life of a structure designed to the building code. Because of some safety factors in the design of structures, even if a somewhat more severe event
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occurred, such structures would not be likely to fail. However, there would be some chance of failure should an unusually severe natural disaster occur.

In contrast, design criteria for nuclear reactors are based on the concept that release of radioactive material from an accident is not tolerable. Therefore, nuclear power plants are designed to withstand extremely rare natural disasters. For example, when seismic design levels are established, an analysis is made to determine the most severe seismic event that might occur at a particular site. Also, containment vessels are designed to withstand tornadoes with winds of 300 mph, even though 99 percent of all tornadoes have lower winds.

Where a component or subsystem failure could cause a potential hazard, redundant safety systems are incorporated in the design. Of course, such stringent design criteria are expensive to implement, but have been judged to be necessary by the Nuclear Regulatory Commission (NRC) to minimize the risk to the public to the lowest level consistent with existing technology. While zero risk cannot be achieved, the NRC still permits operation of nuclear facilities designed to stringent criteria.

The California Legislature in the Act decided that California's first LNG import terminal should be sited in a region of low population density. This approach is based on an assumption that a catastrophic accident might occur at the facility and that potential consequences of such an accident can be mitigated by strictly limiting the number of people who might be exposed to the risk. However, in formulating safety standards we cannot rely exclusively on remote siting. The probability of occurrence of failures within a system and the expected consequence of the failures as expressed by total casualties make up the overall risk associated with that system.

Risk, then, has two major components. First, there is the probabilistic component of risk which represents the likelihood

with which system failure may occur. Second, given a failure has occurred, a certain level of casualties may result. This second component, is generally considered deterministic in that once the failure scenario has been postulated, its impacts are predictable in absolute terms.

Because risk has two components, the risk presented to people (i.e., the impact of concern is casualty as opposed to dollar loss or environmental damage) by an industrial system can be reduced by introducing measures which would either reduce the probability of failure, reduce the level of casualty in the event of failure, or reduce both the probability of failure and the level of casualty. The preferred way of reducing the risk would depend on details of the industrial operation, the existing level of risk, and the extent of reduction in risk which is desired. The last of these, the desired level of risk reduction, depends largely on perceptions of acceptability of risks.

To decide whether the additional costs required to reduce risk levels are justified in the interest of adequately protecting the public, it is necessary to make a judgment as to what risk levels are acceptable. While it is difficult to quantify risk levels for an LNG facility accurately, it is often possible to make fairly conservative estimates of risk and then compare estimated risk levels with information on risk levels associated with other, more familiar activities.

In attempting to arrive at a decision regarding the desirability of constructing the proposed major LNG importation facility at Point Conception and in developing Safety Standards for LNG facilities, we are, in effect, engaged in a risk management process. The construction and operation of the LNG terminal at Point Conception pose some risk. In the final EIR, the risk is identified considering general system failure modes and the expected consequences of such failures. The probability with which various levels of casualties may occur was quantified and reported

for the Point Conception site in a series of risk profiles. These risk profiles constitute a graphical representation of the measured risk.

The risk profile for the proposed LNG terminal at Point Conception indicates that the probability of incurring an accident with a casualty level of one or greater is about 1×10^{-6} events per year (one chance in 1 million years) with the existing population level and about 2×10^{-6} events per year (one chance in 500,000 years) for a hypothetical population equal to the maximum allowed under the Act. In the Final EIR, these probability levels for one or more casualties are compared with the probability of incurring a fatality as a result of several voluntary and involuntary activities that people are exposed to in the United States. As the table indicates, a person living near the proposed LNG terminal takes about the same risk as an average American has of dying in a tornado. A person living in the close proximity of the proposed LNG terminal has a much larger chance of dying in a fire in his/her home than being adversely impacted by an accidental release of LNG.

From a multiple casualty point of view, the risk profile for Point Conception indicates that ten or more casualties may be expected with a probability of occurrence of about 10^{-8} per year, given the existing population in the terminal area. Should current population increase to the maximum allowed under the LNG Terminal Act of 1977, 20 or more casualties could occur with a probability of about 10^{-8} per year. This probability of 10^{-8} per year is the equivalent of a recurrence interval of one hundred million years.

It remains for us to determine whether the risks are acceptable as they are; whether the risks should be lowered by the introduction of practical and cost-effective risk control strategies; or whether the risks are unacceptable. The first and the last of these possible determinations are straight-forward in the absolute nature of their finding. The determination that the risks should be lowered by introduction of effective risk control strategy leads to the necessity of making further, more complex, decisions.

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B. Remote Site Requirement

Western Terminal submitted evidence demonstrating the proposed site's compliance with the remote siting requirement and population density criteria (Sec. 5582). The information establishes that there are approximately four persons per square mile living within one mile of the terminal site and approximately 3.3 persons per square mile living within four miles of the site.

With respect to the Act's requirement that the terminal be located so that no marine vessel transporting LNG would be required or permitted to pass closer to areas of population density than the distances heretofore specified, the supervisor of marine transportation of Pacific Marine Associates and Western Terminal presented a marine operations plan. The berth's location was identified as approximately 4,600 feet offshore. It further showed that vessels handling LNG would approach from a southeasterly direction after turning out of the southbound vessel traffic lane in the Santa Barbara Channel.

While one party suggested that the construction of an LNG terminal will increase population density to a level beyond that permitted by Section 5582, no party contested the fact that currently $\frac{4}{2}$ the site meets the population density requirements of that Section. Further Western Terminal's marine operations plan shows that it will comply with the requirement of subsection (a)(3) of that section which provides:

"The Terminal shall be located so that no marine vessel transporting LNG would be required or permitted in the normal course of marine operations, ... to pass closer to the areas of population density than the distances specified in paragraphs (1) and (2)." (10 persons per square mile for a distance of one mile; 60 persons per square mile for 4 miles).

Section 5582(a) provides in part that, "(f)or the purpose of = selecting the site ... 'population density' shall be established as of the effective date of this chapter."

C. Engineering Design

Sec. 5601(b) requires the applicant for a permit pursuant to the provisions of the Act, to provide in its application "a detailed description of its engineering design." Western Terminal presented several witnesses who provided testimony concerning the engineering design of the proposed LNG facility. Their evidence which follows demonstrated the manner in which the proposed terminal will operate."

An engineer with Fluor Engineers and Contractors, Inc., presented testimony providing further details on the engineering design of the proposed LNG facility. He described the facility's extensive fire protection system. The witness stated that the marine berth, docking structure, and trestle can be designed consistent with the state-of-the-art to accommodate wind and wave conditions known to exist at Cojo Bay.

A design engineer with Chicago Bridge and Iron Company, provided testimony on the design of the storage tanks for the proposed LNG facility. The tank design was described by the witness as follows:

"... an outer cylindrical tank, having a self-supporting dome roof, flat bottom, and a cylindirical inner tank with an open top and flat bottom. The inner tank is concentric within the outer tank. A suspended insulation deck, hanging from the outer fixed roof, is located at the top of the inner tank."

The inner tank, which is designed to contain the stored LNG, has a shell and bottom formed from 9 percent nickel steel. Nickel steel is a proven material for use in cryogenic tanks. The outer tank, which is gas tight, is designed to contain the insulation and gas vapor. Electrical heating cables are placed under the outer tank bottom to protect the foundation against damage caused by frost heave. The design provides for the sloshing of LNG within the = storage tanks during an earthquake.



A detailed description of the engineering design of the proposed project is presented in Part B of Section IX of this decision.

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The manager of cryogenics for Pacific Alaska LNG Associates and Western Terminal provided detailed evidence on the cargo transfer system for the proposed facility, showing the flow of the LNG cargo transfer system from the ship manifold connections to the receiving terminal storage and the major valving required for transfer operations and shut-down. The valves are to be controlled remotely and automatically, with manual overrides, and the cryogenic piping is to be constructed of stainless steel.

Western Terminal presented additional testimony concerning the engineering design for undergrounding storage tanks. Western Terminal stated that totally undergrounding LNG storage tanks is technically feasible, but that totally undergrounding is not the optimum design for the proposed project, due to the fact that ground water below the tanks freezes, causing unnecessary stress on the tanks.

Western Terminal contends that this serious engineering problem more than negates any visual benefits of inground storage tanks. Their witness estimated that the cost of constructing the tanks would increase by one-third to one-half if required to be placed inground. Their witnesses also described the impounding system for the aboveground tanks. The impounding system will contain 100 percent of the contents of a full LNG tank below the grade level of the plant site, with berms extended above that level, making the total capacity of the containment system 125 percent of a full tank.

An issue was raised regarding a proposal to require that the tank foundations be set only on bedrock. Such a proposal implies that only bedrock is structurally adequate. We are inclined to accept that premise unless and until a complete and thorough soils investigation and structural analysis of the tanks shows it to be unreasonable. This responsibility to implement this requirement will be left to Western Terminal's structural and soils experts with review by the Commission safety and construction monitoring program and final approval by the Commission.

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D. Pipeline Safety

On ApTil 2, 1971 we revised General Order No. 112-B to 112-C (Decision No. 78513). General Order No. 112-C contains rules governing the design, construction, testing, maintenance and operation of utility gas gathering, transmission and distribution piping systems. One of the expressed purposes of the rules is to "to safeguard life or limb, health, property and public welfare..." (General Order No. 112-C, Sec. 102.1) Western Terminal described its plans concerning the proposed 34-inch pipeline to be constructed to transport regasified LNG from the terminal facility at Cojo Bay, near Point Conception, to an interconnection with existing pipelines near Gosford, California. The description included the proposed pipeline's specifications, the pipeline testing, and the pipeline's capacity to withstand floods, landslides, earthquakes, and other hazards.

No party contested the fact that Western Terminal had provided adequate evidence that it will construct, operate, and maintain the proposed pipeline in a safe manner that equals or exceeds all the requirements set forth in General Order No. 112-C. We will so find.

E. Operating Procedures

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Western Terminal's proposed operating procedures were briefly described as follows:

"The LNG facility will require operations on a 24-hour seven-day-a-week basis to meet the maximum base load delivery rate of approximately 1.3 billion cubic feet per day. LNG will be periodically unloaded from LNG ships (approximately 190 ship arrivals per year), transferred from the berthing area to the storage tanks through the cryogenic transfer line. The LNG will be stored on site in the three storage tanks and will be pumped from the storage tanks to the base load seawater vaporizers where it will be vaporized into natural gas for delivery into existing pipelines. Fired vaporizers will be put into service as required to meet operating conditions and deliver larger than base load volumes of gas to the pipeline system."

Western Terminal's witness stated the facility would require an operating staff of 50 persons.

F. Marine Transportation and Operations

Subsections (b) and (d) of Section 5601 require the applicant for a permit pursuant to the provisions of the Act to provide information concerning marine transportation related to the proposed LNG project, to submit a proposed plan for marine operations, and to provide information concerning public safety

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of the proposed LNG project, including marine navigational systems.

Western Terminal presented evidence describing the vessels which will deliver LNG to the terminal. All vessels, foreign and American flag, will meet U.S. Coast Guard requirements.

Western Terminal's witness described the vessel traffic in the Point Conception area, and the only vessel traffic in that area is traffic transiting the Santa Barbara Channel. He also testified that the LNG vessels will not interfere with that traffic.

The staff's consultant, John J. McMullen Associates, Inc., presented an analysis of vessel traffic safety in the region surrounding the proposed LNG terminal site.

Staff's consultant sponsored Exhibit 0-55 which stated the following:

"(V)essel traffic in the Santa Barbara Channel is generally controlled in an advisory manner, by the established vessel traffic lanes.

"Vessel traffic safety involves the types of casualties which may be suffered by an LNG tanker: Collision with another vessel; ramming of a stationary object, such as on an oil platform; grounding of the ship on the sea floor; wrecking, which is striking a submerged object; and foundering. Of these, by far of most concern is the possibility of collision. The configuration and depth of the ocean in the vicinity of Point Conception makes grounding and wrecking highly unlikely and large ships of modern construction simply do not founder without any initiated casualty. The only oil platform in the vicinity of Point Conception is Platform HERMAN. During any time that the LNG ship may be in the vicinity of that platform, the tugboats will be available to take control of the ship should an onboard casualty render the ship helpless and in danger of striking the platform. The probability of collision has been investigated based on worldwide casualty experience and statistics and on data specifically applicable to the Santa Barbara Channel.

"During the 8-year period since the vessel traffic lanea_were established, there have been no collisions or casualties of any sort in the Santa Barbara Channel. During this period, there have been over 36,000 vessel movements through the Channel. This does not imply that the probability of a casualty is zero, but may be used to calculate a value below which the probability lies..."

Based on experience over the 8-year period since 1969, during which traffic service (traffic lanes) have been in operation in the Santa Barbara Channel, the probability of a casualty of any sort in the Channel is less than 8.2×10^{-5} per ship movement. The probability of a casualty serious enough to lead to the possible loss of a ship or a possible spill of LNG might be significantly smaller.

Western Terminal's witness also described Western Terminal's marine operation plan, which will apply to all vessels calling at the proposed LNG terminal. Its provisions are in addition to, not in lieu of, U.S. Coast Guard and other applicable requirements for vessel operations. All masters of vessels calling on the LNG facilities will be required to be familiar with the marine operations plan.

The witness testified that the plan requires all vessels to establish and maintain communications with the LNG facility while approaching the facility and departing from it. All vessels will monitor their radar for the presence of other vessels in the area. The LNG vessels will not enter the approach zone if another vessel is transiting it. All vessels will approach the LNG terminal from a southeasterly direction. During initial operations, Western Terminal has established as operating criteria that berthing will not be permitted when visibility is less than one mile, when winds exceed 25 knots, or when wave heights exceed six feet. In addition, the master of each vessel calling on the terminal will retain discretion to not berth even if those criteria are not exceeded. Three

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tugboats and two line-handling boats will be available at all times to assist in the berthing of LNG vessels. Once berthed, unloading will not commence until representatives of the vessel, the LNG facility, and the Coast Guard have conferred, and all parties are satisfied that unloading can be safety conducted. The vessels are responsible for the proper discharge of their cargo and will coordinate all such activities with the responsible terminal officials.

A marine consultant also testified on behalf of Western Terminal concerning its marine operations plan and stated:

"Considering the vessels, the weather conditions we will encounter in the proposed area, the equipment proposed for assisting the vessels, I have concluded the vessels can be safely handled at the proposed terminal."

The evidence with regard to the marine navigational systems showed that each vessel will have two marine radar sets, a collision avoidance radar set, a Loran unit, and radio direction finder equipment for navigational purposes. All vessels will also have the latest marine navigational charts. The trestle and pier will be properly lighted to conform to U.S. Coast Guard requirements. The pier and trestle will also be equipped with radar reflectors.

Staff's maritime consultant recommended measures which should be applied to reduce the risk associated with LNG vessel traffic to and from Point Conception. These recommended mitigating factors were divided into the two general categories of equipment and procedures. These are equipment measures and site instrumentation.

The equipment measures are as follows:

Ship Instrumentation

1. <u>Anemometer</u> - the ship should be equipped with an anemometer, providing wind speed and direction information to the bridge. This information will be necessary for the docking phase, and ensure that docking is not attempted under conditions outside the specified operational envelope.

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- 2. Rate of Turn Indicator the ship should - be equipped with a rate of turn indicator, reading out at both the steering stand for use by the helmsman, and at a second appropriate place on the bridge for use by the Master/Pilot. This indicator will assist in maneuvering and docking of the LNG ship.
- 3. <u>Docking Velocimeter</u> if not provided on the pier itself, the ship should be equipped with a direct reading bridge instrument displaying the velocity of the bow and stern (separately) toward the pier. This will assist in preventing too high a lateral velocity of the ship into the pier.
- 4. <u>Collision Avoidance System (CAS)</u> the ship should be equipped with a modern CAS to provide rapid indication of potential collision threats and free the bridge crew from the time-consuming task of radar plotting.

Tug and Work Boat Equipment

- 1. Open-Sea Towing Capability Via Tugboat -Each tug should be equipped with a multiple drum towing winch. This machinery should be equipped with a minimum of 2000 feet of wire tow rope and a similar length of 9 or 12 inch nylon rope. All tugs should possess at least 4-5000 horsepower (HP) and perhaps one vessel, 7,500 HP. Personnel should be trained and experienced in salvage, damage control and especially ocean towing.
- 2. <u>Firefighting Capability Aboard Tugboats</u> -Given the nature of LNG, its behavior when spilled, and the threat it poses to personnel and ships, the tugboats should be outfitted with extensive firefighting equipment and with personnel welltrained in LNG firefighting techniques.
- 3. <u>Pollution Control Via Vessel</u> -The work boat planned for use at the terminal should be capable of deploying some kind of open water

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-pollution control equipment. Included in this equipment should be a rapid deployment container boom and a skimming device. The work boat will require a deck crane for launching and recovering the skimmer.

Navigational Aids

- 1. <u>Range Markers</u> the facility should be equipped with a set of range markers defining the initial approach path to the pier. One marker at the end of the trestle and a second on the mainland, properly aligned, are recommended.
- Bouys a buoy should be provided marking the location of the reported rock (hazard to navigation) at a depth of 4 fathoms which must be avoided by LNG ships.

At least two buoy should be provided to mark the southern- and western-most extremes of the field of submerged well-heads in the vicinity of Platform HERMAN. These well-heads are at a depth of 6-1/2 fathoms and should be avoided by LNG ships.

No other buoy marking the approach to the dock are recommended inasmuch as they could become a hazard rather than provide assistance.

3. <u>Lighting of Pier</u> - the entire trestle and pier head should be lighted with shielded lights; the lights should not be directly visible from seaward. These lights should be in operation at night and under all conditions of reduced visibility. Except for actual search purposes, spotlights or floodlights pointing seaward should be avoided.

A light atop the control tower is recommended. This light should be of a distinctive color and occulting, and will serve as a navigation aid to ships further away than in the docking approach.

Site Instrumentation

- 1. Weather Instrumentation the control tower should be provided with an anemometer for direct on-site reading of wind speed and direction. This will assist in determining if the wind conditions at the pier are inside or outside the specified operational envelope.
- 2. <u>Visibility Measurement</u> the control tower should be provided with equipment and a procedure for determining the extent of visibility. A series of distances along the trestle marked so as to be visible from the control tower would be adequate. This will assist in determining if the visibility conditions at the pier are inside or outside the specified operations envelope.
- 3. <u>Swell/Wave Measurement</u> the pier should be equipped to observe and measure the wave and swell height, direction and period. This may be accomplished by observing the wave and swell action against a marked piling. This will assist in determining if the ocean water conditions are inside or outside the specified operational envelope.
- 4. <u>Radar</u> the control tower on the pier should be equipped with a surface search radar with 15- to 20-mile range capability. This radar should be operated during periods when an LNG ship is in transit and within range.

The procedural measures are as follows:

1. <u>Approach Route</u> - for the Alaska tankers, an approach route to the vicinity of the pier, beginning when the arriving ship reaches latitude of about 34°40' and follows a rhumb line to a point 2 to 4 miles south of Point Conception, is recommended. For Indonesian LNG tankers, it is recommended that the ships enter the southbound vessel traffic lane, and then turn to cross the northbound lane and proceed to the vicinity of the trestle.

2. Communications - during its approach to the vicinity of the trestle, the LNG vessel should attempt to communicate with all other vessels within or potentially within its path and inform them of its intentions. It is recommended that the control tower on the pier attempt to communicate with vessels with which the LNG ship may interact, and inform them of the intentions of the ship.

The ship and the site should mutually confirm, by use of their radar and communication, all vessel traffic with which the LNG ship may interact. This procedure, particularly under conditions of limited visibility will, in effect, be a vessel traffic service for the LNG ships during their approach and departure.

Western Terminal indicated its intention to adopt the recommended equipment measures and its willingness to consider the propriety of the suggested procedures. We will order it to do so.

G. Public Safety and Protection Features

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The Act requires the applicant for a permit to provide information regarding safety and public protection features, including fire protection measures, marine navigational systems, emergency systems for shutting down the terminal, and other contingency plans for accidents. (Sec. 5601(d).)

Western Terminal presented evidence with regard to the public safety features at the proposed LNG terminal. The LNG facility will have an automated-control system which will continually monitor conditions at the plant, and automatically shut down operations if abnormal conditions cannot be corrected before they become hazardous. In addition, the plant will have redundant manual emergency shutdown stations for use by the plant's personnel. In the event the

control system should itself fail, the valves in the emergency shut-down System automatically move to a safe shut-down position. Standby electric power will be provided at the terminal by two full capacity electric generators and a battery powered electrical system. Equipment will be located on the site with sufficient clearance so that an emergency at one part of the plant (even a fire) would not affect other parts of it.

The LNG cargo transfer system contains main shut-down isolation valves which can be activated to isolate the various portions of the system. Furthermore, pumps and piping will be installed so that LNG can be transferred between tanks, or circulated within one tank, a capability that allows the operator to avoid rollover and to empty a tank if it is necessary.

Western Terminal presented as a witness a consultant in the LNG safety area, who described the planned fire protection equipment for the proposed facility. He testified that the Point Conception terminal will have its own complete fire and leak detection and protection system. In the event of fire, fixed monitors will spray water on adjacent equipment to provide cooling, so as to prevent damage. In this connection, Western Terminal stated that water deluge systems will be placed on each storage tank to protect them from damage from fire in an adjacent impounding area.

Although Western Terminal presented extensive evidence that it will include adequate and advanced public safety and protection features at the proposed LNG terminal, we will require that prior to commencement of operations, Western Terminal shall prepare a fire protection plan for the affected area. The plan shall provide measures to adequately minimize risks to life and property from fire.

Terminal operations will not be permitted to commence until the Commission, after consultation with the Santa Barbara County Fire Department, has approved Western Terminal's plan. This plan shall be consistent with any safety regulations adopted by us pursuant to Section 5637 of the Act. A. 57626 et al. _____cb *

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H. Emergency Shutdown and Other Contingency Plans

The Act also requires that the applicant provide information on its emergency systems for shutting down the terminal and other contingency plans for accidents (Sec. 5601 (d)).

Western Terminal submitted evidence that the LNG terminal will have a control system that will shut down the terminal in the unlikely event that an emergency would so require. The system includes an automatic shut-down capability, redundant manual controls, and it automatically moves the valves to a safe shut-down system if the control system fails. The terminal's impoundment basins, which will be constructed around the storage tanks and the LNG handling operating equipment, will contain any LNG spill. In the event of an emergency, the tanks can be emptied into other LNG tanks. The terminal control system is powered by an uninterruptible power supply. Excessive ship movement will automatically stop the LNG unloading and close the valves. The control system will shut down the facility within one minute of the sensing by the detection system of an abnormal condition. If either the air control system or the electrical system should fail, the failure would initiate a safe shutdown of the plant. According to Western Terminal's evidence, the cargo transfer system is designed to permit the rapid shutting down of that system in an emergency.

Western Terminal also presented evidence on contingency plans for accidents, showing that plant personnel will be given training for emergency conditions at the terminal. If LNG is spilled, the impoundment system will confine it, the shut-down system will be initiated, and high expansion foam will be employed to reduce its dispersion. If a fire is ignited on land, the fixed water system will be activated, the dry chemcial system will discharge automatically, and the high-expansion foam system will be activated to control the fire. In the event of an earthquake causing damage to the facility, the facility will be shut down until the appropriate inspection and repair, if necessary, are completed. If a spill -

were to occur at the unloading dock, operations that might act as a source of ignition would be halted immediately and safety shutdown systems for the unloading operations would be initiated. If a fire occurred at the pier, the fixed water and dry chemical systems would be activated.

• Vessel collisions involving no spillage of LNG would be handled in the same manner as any ship collision. If a spill occurs, steps would be undertaken to stop or minimize the leak (by cargo transfer, trimming of the cargo, or jettisoning it at a safe location). Operations involving a source of ignition would be ceased immediately.

Western Terminal has been ordered by the Department of Energy to submit to it, within 90 days after the site and tariffs are approved, a contingency plan for use in periods of service interruptions. The plan is required to insure, to the extent possible noncurtailable supply continuity for high priority customers of SoCal and PG&E for five consecutive months of peak use.

I. Analysis of Accidents, Consequences, and Risks

The Act requires applicant to provide an analysis of accident possibilities, consequences, and risks for the terminal. (Sec. 5601(c)). Western Terminal has submitted an extensive analysis of the accident possibilities, risks and consequences in a report entitled "LNG Terminal Risk Assessment Study for Point Conception, California".

The study analyzed the level of risk to the general public from the delivery of LNG to the proposed terminal near Point Conception. The study assumed a 4 Bofd delivery rate in place of the 1.3 Bofd average for which Western Terminal's application was filed. It considered various types of initiating events that could cause a condition in which a risk to the public may be present, and the probabilities of those initiating events. The study examined: (1) internal plant failures: (2) natural events (severe winds, storms, tsunamis, earthquakes, and meteorites; (3) ship collisions;

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(4) aircraft hazards; and (5) missile impacts. The study also considered projected population data for the region surrounding the site. =

The evidence developed that LNG itself is not explosive and that the greatest hazard related to LNG is the potential release of a large, low-lying vapor cloud.

Based upon the analysis performed, the study concludes that the level of risk to the public arising from the proposed LNG terminal is:

"The highest fatality probability is one chance in 14 million */ per person per year within 1-1/3 miles of the site, decreasing to probabilities ranging from one chance in 1 billion to one chance in 10 billion per person per year or less within 2 miles of the site. The probability of one occurrence of 10 to 100 fatalities is one chance in 29 billion per year, and the maximum fatality count per occurrence is 54, with a probability of one chance in 760 quintrillion (760 followed by 18 zeros) per year."

Comparative data was presented showing that an individual's chance per year of dying from fires and burns in the United States is one chance in 30,000. The study concludes "on the basis of this study that the LNG risks to populated areas near the Point Conception site are extremely low."

Further evidence on the risks associated with the LNG terminal was given by the staff's consultant, Dr. Elizabeth Drake. Her study concludes that detonation of LNG is "extremely unlikely", is not a "realistic hazard", and that the probability of an accident involving ten or more casualties due to the proposed project was around 10^{-8} per year (100 million years recurrence interval) for existing population levels." She further stated:

^{*/} The probability decreases to one in 43 million per person per _ year if the assumption of 100 percent fatalities in the plume area is not used.

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"The low levels indicated are due to the conservative design of the terminal to minimize the chance of accident as well as to the low-population density in the region surrounding the Point Conception site."

SDG&E presented evidence that it has operated an LNG facility (liquefaction and gasification at Chula Vista) for approximately 10 years and has never experienced an accident, incident, spill, or leak associated with its LNG storage tanks.

The staff study comports with our earlier expressed general views on risk analysis. We will adopt its conclusions.

J. Sabotage and Vandalism

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Two reports, one classified and one unclassified, were prepared in connection with the sabotage protection plan for the proposed LNG facility. The classified report provided a complete description of the security plan. That report is being held by the California Department of Justice on a confidential basis, pursuant to legal advice of the Attorney General that Section 6255 of the Government Code authorizes its treatment as classified information. The second report, which contains more general information was presented by consultants to the staff and was the subject of hearing.

The sabotage protection plan includes: (1) perimeter fencing. (2) multiple phenomena sensors, (3) a roving security patrol, (4) a vehicle barrier, (5) access control measures, (6) special trestle, pier, and ship security measures, and (?) special employee selection and training methods. The sabotage plan should also protect the terminal against vandalism.

The report concludes as follows:

"The security plan as presently proposed will serve to deter sabotage attacks as well as provide a level of protection against sabotage threats which is to be considered adequate. If implemented as proposed, the plan will provide greater security than at other LNG facilities

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and will approach that employed at nuclear plants and Department of Defense installations, some of the most secure facilities in the country."

We will adopt the above-mentioned conclusion, pertaining to security of the proposed LNG terminal against acts of sabotage and vandalism.

K. Insurance

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Western Terminal submitted evidence on its plans for providing insurance for personal injury and property damage in connection with its operation of the proposed LNG facility.

Western Terminal's witness testified that it is Western Terminal's intention to maintain Comprehensive General Liability and Terminal Operator's Legal Liability Insurance covering third party property damage and personal injuries in an amount not less than \$50 million per occurrence. Western Terminal will require that each LNG vessel which is used for the proposed project carry protection and indemnity insurance of not less than \$50 million per occurrence. Western Terminal will also insure the terminal facilities for the replacement cost of new plant. In the event of an incident at the terminal, Western Terminal intends to provide a centralized claims handling facility for the receipt and handling of claims by members of the public.

Southern Pacific Transportation Company, (SP) a party to the proceeding, proposes that the Commission condition any permit to require Western Terminal to indemnify SP, even for its own acts of negligence or even willful misconduct, unless Western Terminal enters into an indemnity agreement with it. Western Terminal resists such a proposal stating that SP will be covered by Western Terminal's insurance in the same manner that all members of the public will be, and no rational basis exists to give that party any special treatment in this proceeding. The Commission concurs with Western Terminal's position.

The County of Santa Barbara in their proposed terms and conditions recommended the imposition of strict liability on LNG terminal owners and operators for ultra-hazardous activities. Western Terminal 13 opposed to any condition of a permit that imposes strict liability for the activities of the project. The argument is that the condition is not feasible and will have impacts on the project which are difficult to predict and not readily quantifiable. Western Terminal indicates that unlimited Liability would cause a marked escalation in the costs of financing and could delay or prevent altogether obtaining of the necessary financing of the project. They indicate that while the potential cost impacts are likely to be serious, the uncertainty of impact upon scheduling and overall project viability is of even greater concern.

We take no exception to the intentions of Western Terminal regarding liability insurance coverage. The Commission will order Western Terminal to provide to the Commission evidence of their specific liability insurance coverage at the time of exposure and obtaining such insurance. For the purpose of this order the insurance coverage would include the marine facilities, the gas handling facility, all pipeline and transmission facilities to and from the property and all vessels, regardless of ownership or control, transporting or designed to transport or otherwise used in connection with the marine operations.

We do not see it as within our jurisdiction to either limit liability or to fix a standard of strict liability upon Western Terminal. We will fix safety standards and minimum insurance requirements. The extent of actual liability for the operation of the LNG terminal must be determined either by the courts if a mishap occurs or by legislative action.

L. Missile, Aircraft and Meteor Hazards

The proposed terminal is located so that it could be impacted by launches of missiles and space boosters from Vandenberg Air Force Base and the Pacific Missile Test Center. Therefore, damage to the storage tanks could result from the potential impact of a vehicle or vehicle fragments from a critical vehicle malfunction. In most cases, these vehicles are equipped with flight termination



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systems to prevent large deviations of the vehicle from the planned flight trajectory. Although none of the launch vehicles are expected to have trajectories which directly fly over the proposed LNG site, and although the activation of a flight termination system would prevent such overflight in most cases, the dispersion of some vehicles prior to destruct action, together with the effect of prevailing winds on the fragments resulting from vehicle breakup, could result in the impact of fragments on the LNG terminal. Some of these fragments would be capable of penetrating LNG tanks or major piping at the terminal. The average annual probability of one or more missile fragments penetrating an LNG storage tank, pipeline or LNG tanker tank is less than 3×10^{-6} in 1980 and declines to less than 4×10^{-7} by 1987. The Commission deems this probability to be sufficiently low as to render the risk of missile hazards acceptable.

Although the LNG terminal is located at a significant distance from any major airport, a possibility exists that an aircraft in distress may crash at the terminal and impact a critical LNG system. It has been concluded that the probability of an airplane's penetrating a critical LNG system at the shore-based terminal is about 5×10^{-5} occurrences per year (recurrences interval of 20,000 years) for the LNG pipelines and about 10^{-5} occurrences per year for an LNG tank roof, and 6×10^{-7} for an LNG tank sidewall. The risks from aircraft hazards are deemed acceptable.

Small meteors, entering the earth's atmosphere are usually completely disintegrated, due to aerodynamic heating and ablation processes that occur before they reach the earth's surface. Those meteors lasting to impact generally have pre-entry weights exceeding 100 pounds. These surviving meteors, called meteorites, would create a hazard for LNG tanks, tankers and pipes, if they were to impact with a mass and velocity sufficient to cause penetration of <u>-</u> the structure. It is estimated that 3,500 meteorites, having weights in excess of one pound, fall to earth each year. The probability of a tank, pipe or tanker being penetrated by a

meteorite has been calculated to range from 10^{-7} to 5 x 10^{-8} , a clearly acceptable risk.

We conclude, that the risks to the terminal from missile and aircraft hazards are acceptably low. The probability of a meteorite of sufficient mass and velocity to penetrate the LNG tanks, LNG ships and pipelines is so remote as to be acceptable.

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M. Sea-State Conditions

The acceptability of sea-state conditions, including wind, wave, current, and fog, at Point Conception is a zignificant issue with respect to the safety and reliability of the proposed project. In the event of poor sea-state conditions, an LNG tanker may not be able to dock at the facility or unload once at berth. Since occurrence of these sea-state conditions might interfere with the reliable operation of the project, it is critical to determine their frequency of occurrence, persistence, and impact upon system reliability.

Western Terminal presented a maritime operations plan which, among other things, indicates that during initial operation of the terminal LNG vessels will not be permitted to berth when steady winds exceed 25 knots, seas exceed 6 feet and/or during those periods when visibility is less than one mile. Western Terminal also sponsored evidence evaluating the level beyond which wave and swell-induced forces and motions of the ship at berth would require cessation of the LNG unloading operations. With respect to wind-related effects on tanker unloading, Western Terminal posited that the ship could safely stay at berth in winds up to 50 miles per hour without exceeding any design criteria. We accept Western Terminal's operating criteria as valid.

In order to evaluate the annual percentage of time the berth will be available to receive and unload LNG vessels, and accordingly to determine if throughput of 1.3 Bofd can reliably be delivered to the gas transmission system, an accurate assessment of oceanographic (sea and swell wave characteristics, current, etc.) and meteorologic (wind speed and direction, visibility) conditions at the Point Conception site is critical. The Commission must be in a position to conclude, on the basis of marine operating criteria set by Western Terminal, whether weatherrelated conditions at Point Conception will allow sufficient berth availability so that reliable delivery of 1.3 Bofd of gas on an average annual basis can be insured. A. 57626 et al. AL -RDG-IM

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Unfortunately, when faced with this critical determination, we are compelled to look to a limited record of on-site observation and measurement data which would accurately portray actual meteorologic and oceanographic conditions at Point Conception. In the absence of actual field measurement of conditions - the preferred but unavailable method - characterization of wind and wave conditions at Point Conception can best be accomplished utilizing techniques of hindcasting. Hindcasting is a process whereby historical weather information is used to estimate what conditions existed at a particular site during a specific period.

Much evidence was presented on the issue of sea-state conditions, or wind and wave conditions, in the vicinity of the proposed LNG terminal site. There were volumes of exhibits and several expert witnesses. The significance of the evidence lies in its application to two issues, project safety and project reliability.

Oceanographic Services, Inc. (OSI), undertook and presented a study on Point Conception hindcast for Western Terminal. The data employed by OSI in the preparation of its study was derived from historical weather maps prepared by the U.S. Weather Bureau, and section analyses of the southern California area prepared by OSI itself. To derive wave heights from this data, wind speed and direction, fetch length and duration were taken from the maps and analyzed by a computer model.

OSI studied wind and wave conditions at the proposed site for the years July 1961 to June 1962 and July 1964 to June 1965. Those years provided information which the OSI witnesses described as typical conditions at the site. OSI's conclusion that those

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years were typical years was based upon an analysis of weather conditions during the ten-year period, which revealed that the weather during the two-year study most closely fit the averages of the ten-year period. While OSI was instructed by Western Terminal to study typical years, and not extreme years, at the site, OSI did, as part of its report, provide Western Terminal with information on extreme wind and wave conditions at Cojo Bay.

Intervenors Bixby and Hollister alleged both prior and subsequently to the submission of OII 1 that Western Terminal's evidence contained insufficient data with regard to "extreme" year conditions at Point Conception. This allegation seems to be based principally on CSI's use of hindcast data from 1961-62 and 1964-65 to determine, per Western Terminal's instructions, "average" conditions (tankers will not land during "extreme" conditions). The OSI data was corroborated by additional evidence presented by Western Terminal: the Tetra Tech, Inc. studies.

The intervenors misconstrue the use of the term "average." No one contends that the conditions occurring in an "average" year will recur during every year of the life of the project. Rather that term only describes a quantity that roughly bisects a range of possible quantities. This concept is illustrated by the testimony on cross-examination of the staff witness in support of Exhibit No. 0-91:

- "Q. (by Atty. Green) Referring now to page 62 of Exhibit 0-91, the range of downtime percentages that appear on that page, am I correct in understanding that those are averages, perhaps over - - for the life of the project?
- "A. Those are long term averages.
- "Q. Okay. So then your conclusion there is not affected if, in one particular year, downtime percentages would exceed 17 percent?

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"A. Yes. On the contrary, it is constructed, assuming a fairly wide range of differences in years. It assumes that in half the years, the downtime will be in excess of that; and half the years, it will be less than that."

The conclusions reached by OSI on the basis of its hindcast study are:

- 1. The predominant direction of winds at Point Conception are from west-northwest to northnorthwest, with a combined annual frequency of 49.4 percent.
- 2. The frequency of occurrence of winds in excess of 25 knots is approximately 3.4 percent of the year or about 12.5 days per year at the site.
- 3. Winds at the site are lower than winds offshore or to the west of the site due to the protection afforded by Point Conception, Government Point, and the Santa Ynez Mountains.
- 4. The predominant directions of waves at the Cojo site are south-southwest to west-southwest, with a combined annual frequency of occurrence of 92.1 percent.
- 5. The site is sheltered from northwesterly swells and waves by the Point Conception promontory.
- 6. The annual frequency of swells greater than six feet is 0.2 percent.
- 7. The frequency of occurrence of waves in excess of six feet from southwesterly and southeasterly storms is less than 1/2 of 1 percent.
- 8. The frequency of occurrence of 25-knot winds simultaneously with six-foot waves from all sectors is less than 1/2 of 1 percent.

Delft Hydraulics Laboratory (Delft) undertook for Western Terminal modeling tests to determine the optimum berth orientation for the Cojo Bay facility. The modeling tests were carried

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out to ascertain the optimum berth alignment in terms of berth availability - that is, the percentage of time the berth is open to receive LNG carriers. Berth availability as that term is used by Delft is not operational berth time, but rather just a statement of the percentage of the time, on an annual basis, that the berth is available to accept vessels.

Delft's modeling tests considered various mooring arrangements, various line elasticities, wind types, and various wave conditions (including multiple wave conditions). In studying optimum berth orientation, Delft used the OSI hindcast data.

The Delft witness testified that the optimum berth orientation for the Cojo Bay site is within the sector of 225° to 255°. He further testified that the determination of the optimum berth orientation is based on the conclusion that yearly downtime due to excessive mooring forces and ship motions at the berth, and due to adverse waves, currents, and wind conditions is at a minimum of about 7 percent at the sector of 225° to 255°. He testified that the downtime calculations were made, in part, using Western Terminal's instructions that berthing would not take place when winds exceed 25 knots or significant wave heights exceed six feet. He also stated that those criteria are based upon a conservative assumption that the tugboats and line-handling boats at the proposed terminal cannot effectively operate when the criteria are exceeded.

Western Terminal also contracted with Tetra Tech, Inc. (Tetra Tech) to provide certain additional studies of the seastate conditions at Cojo Bay. Tetra Tech, on behalf of Western Terminal, conducted two principal studies in connection with sea-state conditions at the zite. First, it used certain historical data derived from wind and wave hindcasts of U.S. Navy Fleet Numerical Control and certain on-site measurements of winds to substantiate the OSI hindcast data. The Fleet Numerical data

was derived_from 26 years of weather maps (1949-1974) and the measured data was derived from a 150-foot meteorological tower which recorded conditions between March 1, 1971 through May 1, 1972. Tetra Tech concluded that the OSI wave statistics show consistent agreement with its findings, and that the OSI wind statistics were only slightly below those which it found.

With respect to the Fleet Numerical data employed by Tetra Tech, Bixby presented evidence to show that the data has a statistical bias which results in an under-representation of extreme conditions. The Tetra Tech witness testified that his firm was well aware of the stated limitations of the Fleet Numerical data at the time it used that data and that for the purposes for which the data was used (statistical analyses and comparison) it was employed by that firm with confidence.

Tetra Tech presented a later study showing on-site wind and wave measurements at Cojo Bay from December 1977 through April 1978. The period of time covered by the report is short, but the period includes some extreme weather conditions. That report indicates the lack of long-period waves at the site, but that a number of waves were measured with a significant wave height in excess of six feet.

Hollister presented two witnesses on sea-state conditions. One witness prepared a hindcast study of wind and wave conditions at Cojo Bay. The study was conducted for one year (1973), a year the author admitted was an above-normal year. The witness testified that based upon his study the berth would have been available at Cojo Bay 81 percent of that year. A staff consultant also analyzed this study and he interpreted it to result in 85 percent berth availability for 1973. The witness characterized the study results as the most conservative he reviewed.

Hollister's other witness testified that long-period wave activities "could cause very dangerous motion of the moored ships in an unprotected setting..." However, the study sponsored by 2

the witness was not a study of long-period waves at the proposed terminal site. The witness had not studied the effects of longperiod waves on LNG vessels and the details of the proposed mooring system.

Western Terminal presented a report on LNG trade simulation. The report was a computer analysis of the entire LNG transportation system for the proposed project from the time the gas is loaded at the liquefaction plants (in Indonesia and South Alaska) until it is delivered to the transmission pipeline at Point Conception. The computer analysis included a number of factors which can affect that transportation requirements and delay caused by weather and other factors.

Evidence was introduced by the staff on project reliability. In its study on berth availability and reliability, numerous factors were applied to determine whether the proposed project could maintain a long-term average throughput in excess of 1.3 Bcfd. It was concluded that "weather caused berth downtime will not seriously impair operations at Point Conception."

The staff analyzed the hindcasts of both OSI and Hollister, made certain adjustments to the data, and concluded that on an annual basis estimates of restricted availability due to wind, waves, and poor visibility range from a lower bound of 5.5 percent of the time (OSI hindcast data) to an upper extreme of 15 percent (Hollister hindcast data). Staff then presented a computer-aided analysis which indicated that given berth downtime and berth unavailability ranging from 0 to 17 percent on an annual basis the LNG transportation system could maintain a long-term average throughput in excess of 1.3 Befd.

The staff's range of acceptable berth downtime conservatively encompasses the estimate made by Western Terminal, the Waterways Experiment Station and John J. McMullen estimates made for the CCC, and the range of estimates made by the staff consultant, including the estimate based on the hindcast prepared by the Hollister witness.

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The estimate of berth downtime made by the Hollister witness (19 percent) is beyond the acceptable range estimated by the staff (1 to 17 percent), and is exclusive of downtime caused by visibility limitations. If the staff's estimate of the visibility limitation (approximately 4 percent) is added, the estimated total downtime would be 23 percent for the year estimated. A direct comparison of this estimate with the staff's acceptable range (0 to 17 percent) is not valid. The staff's range is for long-term average conditions. In contrast, the Hollister witness estimate was made for a year in which "(t)he storm frequency was somewhat above normal but not so far above as to rank as an extreme case. A number of such years would have to be contended with during the life of the LNG operation."

As indicated in the staff's report, the system could provide an average delivery of over 1.3 Bord of gas at 23 percent annual berth downtime. Further, the upper bound of the staff's range (17 percent) includes provision for years with berth unavailability equaling or exceeding 23 percent three years out of every ten years. Therefore, it is reasonable to conclude that none of the estimates would seriously impair operations at the Point Conception site.

We believe adequate evidence respecting these weather-related issues exists to support us in any determination to approve the proposed project. Some uncertainty exists, however, in the absence of actual measurement data, and precludes us from unconditionally accepting the proposition that weather-induced berth availability will not significantly affect reliable operations at Point Conception.

The record in the proceeding reflects 16 days of hearing which were devoted either all or in part to weather-related impacts on the viability of the LNG project at Point Conception. Witnesses ranging from international experts to local pilots, fishermen, and surfers presented testimony. The evidence is somewhat contradictory. Questions were raised concerning lack of information

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relating to southern swell and its potential for disrupting unloading operations at the Point Conception berth. Conflicting testimony was presented with respect to the possible dangerous effects of long-period waves on a moored LNG vessel.

Consequently, prudence dictates that we appropriately condition any permit so as to guarantee the satisfactory resolution of these weather-related uncertainties. The approval of Western Terminal's application is accompanied by a condition requiring Western Terminal to provide the Commission with two years of onsite measurement data for purposes of verifying our <u>preliminary</u> conclusion that with respect to maritime conditions Point Conception is an acceptable site for safe and reliable operations. The data shall be submitted to the Commission no later than January 15, 1980 and shall encompass the period December 1977 through December 1979.

N. <u>Geologic Hazards</u>

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The site, in varying degrees, is susceptible to slope failure, settlement and differential compaction, and liquefaction. The evidence indicates that the threat posed by soil creep, landsliding, flooding, erosion and liquefaction at Point Conception is minimal. However, the record reflects limited soils engineering data and can only be characterized as preliminary in nature. In the absence of more detailed soils engineering, testing and analysiz, we find that the problems of slope failure, settlement, and liquefaction can be reduced, when and where feasible and appropriate, by grading to competent bedrock and utilizing compacted engineering fill. The Commission further finds that given the following conclusions which are based upon existing record evidence none of the above-mentioned hazards pose significant risks to the operation of the LNG facility:

(1) Soil Creep: Creep is the imperceptibly slow and intermittent downslope movement of soil and other surficial materials. Aggresive soil creep was not recognized on the site and is not expected to be a significant problem. For the most part, the site slopes southerly at a very gentle gradient and the topography is smooth. These conditions are not conducive to destructively rapid creep.

- (2) LandsTides and Slope Failure: The large gullies, or barrancas, which have formed on the site do not presently have any landslides associated with them. In general, landslides do not appear to pose a major threat to the site. Slope failure can be expected in those areas where steep cliffs, highly fractured materials, and seasonally saturated conditions prevail. The steep sea cliffs, banks of active stream channels and steep sides of large erosional gullies are the areas in the site with the highest susceptibility to failure. Mitigation measures, other than grading the site and filling the large erosional gullies with compacted engineered fill, are generally inappropriate.
- (3) <u>Flooding and Erosion</u>: Direct effects of flooding would be scour of stream beds on the site and channel widening by bank excavation. It is anticipated that most effects of flooding will be limited to the alluvial floodplain in the western portion of the site. Adequate drainage control measures are required to minimize erosion.
- (4) Seismic Settlement and Differential Compaction: Seismic consolidation and differential compaction could occur as a result of seismic shaking of unconsolidated or semiconsolidated surficial materials. Essentially the entire site is subject to some settlement and differential compaction in its present condition. If the site is graded to bedrock, since it is denser and more compacted, the potential for settlement can be reduced. However, alluvial materials which will be present on portions of the site will still be susceptible to risks of settlement and compaction. Good quality, properly compacted engineered fill can be expected to withstand settlement and compaction better than alluvial materials.
- (5) Liquefaction: Liquefaction is a process whereby unconsolidated water saturated sediments such as silt, sand or gravel experience a sudden loss of strength and behave like a fluid. Much of the site is mantled by unconsolidated to semiconsolidated surficial materials. Ground water is present in these materials and saturated conditions can be expected during portions of the year. In those areas where granular, unconsolidated materials are saturated, liquefaction can be anticipated. This includes the alluvial flood plains, beach sands, and areas where sandy marine terrace deposits underlie the nonmarine terrace deposits. If the site is graded to bedrock, a significant reduction in the potential for liquefaction will result. However, analysis indicates that on-site terrace materials are fairly well consolidated, and thus the liquefaction potential of the materials appears to be low.

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O. Seismicity

1. Seismic - Procedural History

Seismicity proved to be the most actively contested issue of Phase I of OII 1. Only the evidence regarding wind and wave conditions produced as great a spectrum of expert testimony and exhibits as was produced during our hearings on seismic issues. While little controversy exists over the state of the empirical data base upon which our ultimate decision must rest, widelydivergent views have been expressed regarding the conclusions to which an evaluation of that data should lead us. One need only review the procedural history of our consideration of this issue to appreciate the complexity of the question before us.

Evidence on seismicity was presented by 15 witnesses over the course of 23 days of hearing. Forty-nine exhibits were introduced. Receipt of evidence fell into two distinct time periods separated by the May 4, 1978 testimony of Dr. Donald O. Asquith, on behalf of Hollister, regarding the discovery of a possible fault (Arroyo fault) at the proposed site.

At the hearings preceding the May 4 presentation, staff, applicant and the County of Santa Barbara presented witnesses supporting their respective positions on the seismic conditions at the proposed LNG terminal site. During this portion of the hearings, only the applicant presented evidence that was based upon an actual geological field study of the site. Other evidence consisted principally of review of relevant literature and evaluation of the results of applicant's geological and geotechnical investigations.

To simply recount that Hollister's May 4 presentation resulted in a subsequent enlargement of the scope of the evidence received in this proceeding would grossly understate the impact of Dr. Asquith's testimony. At a minimum, the May 4 testimony prompted the initiation of the extensive geological and geotechnical studies performed by applicant in May and June.

Dr. Asquith's prepared testimony and geological evaluation were actually submitted under date of April 28, 1978 for filing in OII 1. The evidence was received at the hearing on May 4, 1978. On May 2, in an initial response to Dr. Asquith's prepared testimony A. 57626 et al. M

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and geological evaluation, our Executive Director requested Western Terminal to-undertake geological and geotechnical investigations, including trenching, respecting the existence, nature, and extent of the postulated fault.

On-site excavation and trenching commenced immediately, with constant monitoring by both staff and intervenor geological consultants. These investigations were performed pursuant to an agreement between Western Terminal and concerned Native American groups, the expressed intent of which was to preserve archeological and cultural resources at or near the site. The results of these investigations provided the principal subject matter for our June hearings.

Hearings were held on June 12-16, 1978 in San Francisco and June 19-22 in Los Angeles. During the first week of hearing in June, it became readily apparent that the results of the May studies were not conclusive with respect to the question of whether seismic conditions at Point Conception permit the safe and reliable construction and operation of an LNG terminal at that site. On June 16, 1978, in response to a staff motion, the presiding ALJ directed Western Terminal to (1) conduct further geological and geotechnical investigations to determine the significance of the Arroyo Central fault (by this point in the proceeding it was acknowledged by all parties that a fault did in fact exist) and (2) to conduct further investigations into the significance of other identified geological anomalies at the site. The methods employed in the further investigation were to include additional trenching at the site.

The June 16, 1978 order of the presiding ALJ was necessary in light of the diverse and conflicting conclusions reached by the parties after review of the results of Western Terminal's initial trenching at the site. Differing conclusions were reached with regard to (1) the length of the fault, (2) the amount of seismicallyinduced ground displacement and, correspondingly, (3) the magnitude and associated ground motion of the earthquake that could potentially be generated by such a fault.
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Efforts of Western Terminal to comply with the June 16, 1978 order of the presiding ALJ fell prey to strong religious and cultural objections_articulated by certain concerned Native Americans. To avoid a confrontation, Western Terminal was informed by letter dated June 27, 1978 from our Executive Director that while it was imperative that certain trenching be expedited, "excavation shall not commence until the Commission staff has had an opportunity to meet with the Native Americans to discuss the adoption of reasonable mitigation measures." By letter of June 30, 1978 from our Executive Director, Western Terminal was advised that discussions between the staff and the Native Americans had not produced an agreement and that the staff still requested that "Trenches SC and SD...be excavated expeditiously." By letter of July 6, 1978, Keith McKinney, the President of Western Terminal, advised the Executive Director that Western Terminal had "not been able to respond to ... (the June 30) request in view of the opposition by certain Indian representatives and a resulting unavailability of local archaeologists." #/ By letter of July 11, 1978, the Executive Director, again to avoid a confrontation, directed Western Terminal that "no further excavation shall take place at the Point Conception site until further order of the Commission." Western Terminal complied with this directive.

On July 14, 1978 testimony and exhibits relative to final on-site geological investigations were recieved into the record of OII 1 by stipulation. Phase I of OII 1 was submitted on July 19, 1978 with the filing of final addendum briefs on seismicity.

Western Terminal and the Native Americans agreed in May 1978 that trenching would only occur when a qualified archaeologist was present.

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2. Seismic Description of the Point Conception Site

The Point Conception LNG site lies in a seismically active region that has experienced at least one and probably two major historic earthquakes. The entire coastal areas of the tectonic mobile belt of California, which includes Santa Barbara County, is seismically very active and a major earthquake can happen in any part of the belt at any time. However, in historic times major earthquakes have been associated with major faults that are known or becoming known. Thus, it is those areas which lie along or near major active or potentially active faults that are areas of higher seismicity. A large number of faults exist which could generate earthquakes producing significant, if not severe, ground shaking at the site. The most significant faults include the Santa Ynez (South Branch), Pacifico-Santa Ynez (North Branch), Hosgri, Santa Cruz Island-Dume Faults and the F-1 fault. Further, due to its proximity and recency of movement, the Arroyo Central fault which transects the site warrants our serious consideration

3. Seismic Issues

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We are faced with four principal determinations with respect to seismicity. Upon the basis of a review of regional and local geology and seismology, we must determine the location, capability, magnitude and associated ground motions of the earthquake faults which pose the predominant and most severe seismic hazards to the proposed LNG terminal at Point Conception. Based upon our assessment of the seismic hazards at Point Conception, we must determine whether the facility can be safely and reliably constructed and operated at Point Conception. If we answer this latter question in the affirmative, we must then define the acceptable seismic risk for the LNG terminal, i.e. the intensity level of earthquake manifestations at the site, usually expressed in terms of peak ground acceleration, to which the proposed facilities should be designed to function or to experience a controlled level of damage. Finally, the Commission must prescribe the appropriate seismic design criteria: to insure that the facility will safely and reliably operate in light of the defined seismic risk.

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4. Seismic Hazard - Arroyo Fault

At the outset, we can state that our determination of the predominant seismic hazard to the site must focus on impacts at the site. Since the site is elevated on sea cliffs 50 to 75 feet above the beach, the threat of tsunamis (seismic sea waves) is minimal. We, thus, turn our attention to the faults located at or near the site.

It is the position of intervenors Hollister and Bixby that the Arroyo fault constitutes the predominant seismic hazard to the proposed terminal at Point Conception. No party disputed their contention that the fault exhibits Holocene movement (movement within the last 11,000 years). Thus, under the standards employed by the NRC for construction of nuclear power plants, which Hollister and Bixby submit should be applied herein, the existence of the Arroyo fault may preclude construction of an LNG terminal at the Point Conception site.

Hollister and Bixby's reliance on NRC siting criteria is misplaced. The record simply does not support the contention that the considerations associated with the siting and location of an LNG terminal are identical to that associated with a nuclear facility. No witness supported such a proposition and we are not persuaded to adopt such standards solely on the basis of the arguments raised in Hollister's and Bixby's briefs. The fact that no long term health hazard is associated with LNG as it is with radioactive material from nuclear accident is but one of the arguments militating against wholesale adoption of NRC siting standards.

Our conclusion that the stringent NRC siting standards are inappropriate to the siting of the propsed LNG terminal should not be construed as a mitigation of the high level of conservatism to which we have committed ourselves with regard to the safety and reliability aspects of the proposed project. Implementation of NRC siting criteria is not necessarily the sole or most practical method ⁼ for insuring the safe and reliable construction and operation of an LNG facility within California. The Commission is fully cognizant that the immense dollar investment required to bring this project to A. 57626 et al.

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Hollister and Bixby contend that the mere existence of the Arroyo fault renders the site unsuitable with no need for further analysis. That contention is simply not founded in the record. Western Terminal's view that further information respecting the extent of the Arroyo Fault is not critical information necessary for a site suitability determination but merely for evaluation of design criteria is equally erroneous. In light of the Commission's earlier determination that supplemental gas supplies are required to prevent curtailment of high priority consumers, we deem it both prudent and in the interest of public health, welfare and safety to accept the staff's view of the significance of the Arroyo fault.

Staff prudently concedes that the evidence of record is insufficient to support either a conclusion that the Arroyo fault should disqualify the site or a conclusion that that fault may be disregarded save for design purposes. Staff suggests that based on <u>available data</u> the Arroyo fault is a short fault that may be a secondary fault resulting from activity on one or more significant offshore faults. Staff further contends that based on available data the Arroyo fault does not appear to be a causative fault, i.e. a fault capable of producing a 5 magnitude or greater earthquake.

We conclude that on the basis of currently available data, in the absence of subsequent evidence to the contrary, the on-site seismic investigation shows:

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1. The Arroyo Central Peature is a fault which exhibits 1-1/2 to 2-1/2 feet of displacement as shown in Arroyo Central and Trench SB. Nearly all experts, including D&M, concur that it is a fault. C

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- 2. The Arroyo Central fault displaces terrace deposits and is active with its latest mapped movement occuring between 5,000 and 8,000 years ago.
- 3. The Arroyo fault does not appear to be exposed in the sea cliff to the east of its two exposures (Arroyo Central and Trench SB) nor in the trench (SA) to the west.
- 4. The Arroyo fault appears to be a short fault which, from currently available data, may be a secondary fault resulting from activity on a more significant fault offshore. Historical records indicate that earthquakes of 7 to 7-1/2 magnitude (1812 and 1927) have occurred in the offshore area of Santa Barbara County.
- 5. Based on currently available data, the Arroyo fault does not appear to be a causative fault, or one capable of producing a 5 magnitude or greater earthquake.
- 6. The Beach fault appears to be another secondary fault associated with regional stresses and offshore causative faulting. It appears to be post-terrace deposition in age, that is, approximately 80,000 to 125,000 years old.

It is concluded that the above-identified Arroyo and Beach faults do not appear to be causative. However, there remains the problem of sufficiency of the data. The permit we issue therefore is only conditional, final authorization must await the development and submission of further seismic evidence to the Commission for its evaluation.

We will order further investigation into the significance of the Arroyo fault. Pending the results of those investigations, we must determine what other faults could consititute the predominant seismic hazard to the proposed terminal.

The Beach fault was discovered during the investigation undertaken in response to Staff's May 2, 1978 letter to Western Terminal.

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5. <u>Seismic Hazards - Other Faults Near the</u> <u>Point Conception Site</u>

Western Terminal contends that the Santa Ynez River fault, trending within 12 miles (20 km) of the proposed site, constitutes the predominant seismic hazard. Staff, pending receipt of further evidence on the Arroyo fault, submits that consideration must be given to the possibility of a major earthquake (7.5 Richter Magnitude) on either the Santa Ynez-Pacifico fault, the South Branch of the Santa Ynez fault or the offshore "F-1" fault at distances of 3-4, 5, or 3 miles (4.8-6.4, 8.0, or 4.8 km) respectively from the site. Staff contends that these near-site faults constitute the predominant seismic hazard.

Western Terminal's arguments in support of its position contain a number of fatal flaws. First is its refusal to consider any non-Holocene movement as significant. For descriptive purposes, geologists have designated certain periods of time in the past with various names. The Quaternary period represents the last 2 million years of geologic history. The Pleistocene epoch is generally considered to encompass the period between 11,000 and 2,000,000 years ago. The Holocene epoch is generally considered to encompass the past 11,000 years and can be considered to be still in progress. It is not necessarily conclusive as a time period for purposes of assessing fault activity. We concur with the contention of the other parties that movement of late Pleistocene time indicates geologically recent movement.

Western Terminal's strict utilization of the Holocene criterion has the effect of arbitrarily eliminating from consideration the South Branch of the Santa Ynez fault, a fault which all other parties in the proceeding have designated as significant for design purposes. Limited field investigation has uncovered no evidence of Holocene activity along the South Branch; however, absence of Holocene movement does not mean that movement cannot happen in the future. Furthermore, a major problem with working in the area of the Santa Ynez fault is the lack of Holocene deposits. There may be Holocene movement, but there are no surficial materials to record that movement. Since the discovery of geologic evidence often rests on the

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fortuitous location of a trench, an absence of evidence is sometimes inconclusive. Finally, trenches excavated in Alegria Canyon along the trace of the South Branch exhibit conclusive movement which occurred between 15,000 and 40,000 years ago. Utilizing most fault classification criteria, including that employed by the California Division of Mines and Geology (CDMG), such recency of movement would result in designation of the South Branch as "potentially active".

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As one witness aptly stated, "The Holocene is not sacred." (Tr. Vol. 16, p. 1825.) Of the six geologists who testified on behalf of applicant, staff and interested parties, only Dames and Moore, on behalf of Western Terminal, considered the Holocene period as an adequate record for determining a fault's activity. The preponderance of record evidence clearly indicates that the most significant geologic criterion for identifying areas of high seismicity, which is critical to the siting and design of a safe and reliable LNG operation, is the late Pleistocene period.

Another deficiency in Western Terminal's contentions with regard to the Santa Ynez River fault stems from Western Terminal's failure to establish that such a continuous fault even exists.

Western Terminal postulates that the Santa Ynez River fault splays from the Santa Ynez fault near Lake Cachuma slightly north of west along the Santa Ynez River to the Santa Rita Hills, then west along the margin of Lompoc Valley to the sea. They infer it from the generally straight baseline of the north margin of the Santa Ynez uplift, the presence of several local faults along this line, and complex folding along and south of this line. They infer that the local faults are breaks to the surface from a possibly continuous major fault at depth and that the numerous folds are its surface effects.

While the fault as described by Western Terminal may exist, its existence as a major fault is a matter of opinion among geologists.

Even more significant is the fact that there is no evidence that the fault displaces any Holocene alluvium nor Pleistocene deposits. Thus, it cannot be shown that the hypothetical Santa Ynez River fault can be classified as active or potentially active

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pursuant to any fault classification criteria. Finally, it is somewhat inconsistent to do as Western Terminal suggests and eliminate from consideration the South Branch, which admittedly manifests late Pleistocene activity, solely because there is no proof of Hollocene movement, while postulating the existence and importance of the Santa Ynez River fault which shows no evidence of either Holocene or Pleistocene activity.

We are persuaded by staff's arguments that the North and South Branches of the Santa Ynez fault as well as the F-l fault constitute the predominant seismic hazards to the proposed site. First, as we have indicated earlier, we agree with the staff that our attention must be direct to movements in the late Pleistocene period rather than solely to the Holocene epoch.

Secondly, the existence of the faults have been documented by the geological community. As depicted on most geologic maps, the Santa Ynez fault has a gently sinuous trace, 241 miles (388 km) long, from its very complicated intersection with the San Gabriel and related faults at its eastern end to the Pacific coastline at its western end. At Gaviota Pass, it bifurcates into the South Branch and the North Branch/Pacifico fault.

The North Branch splits from the Santa Ynez fault at a point south of Buellton and extends westward for about 6 miles (10 km) where it apparently dies out into an overturned anticline. About 1/2 mile (0.8 km) south of where the North Branch dies out, the Pacifico fault extends westward for 10 to 13 miles (16 to 21 km). Although it is capable of generating a major earthquake, the North Branch appears to have been inactive during Holocene time. The record did not disclose that the Pacifico fault moved in Holocene time. However because this is the largest and least studied fault in the western Santa Ynez mountains and is aligned with the main Santa Ynez fault to the east, we must consider it to be potentially _ active, especially if an earthquake is triggered on it from an earthquake on the main Santa Ynez fault. Since the Pacifico trends within 3-4 miles (7 km) of the proposed site, it is worthy of consideration because it is the largest known fault in proximity to the site.

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The South Branch of the Santa Ynez fault extends from Gaviota Pass southwest across Gaviota Canyon and the mouth of Alegria Canyon to see. At its closest point of approach, the South Branch is about 5 miles (8 km) southeast and offshore of the proposed LNG site. All investigations of the Santa Ynez fault area agree that there is evidence of late Pleistocene movement on segments of this fault.

We do not believe it is prudent to discount future seismic activity along the onshore or offshore portions of the South Branch. Late Fleistocene movement has been documented by several sources. Geomorphic evidence is very well displayed, and this information alone places the fault in the potentially active category. Additionally, there are suggestions that parts of the Santa Ynez fault system are active, such as the North Branch/Pacifico segment. The tectonic history of the Transverse Ranges is not understood well enough to allow geologists or geophysicists to determine which branch or which portion of this fault will display the next seismic activity.

The history of earthquakes in excess of magnitude 6 reveals that of those that occurred on faults which had not been previously recognized almost all occurred on faults that, because of earlier Quaternary displacement, could have been or should have been recognized. The South Branch presents a classic example. The offshore Government Point syncline which was still forming (or tectonically active) during the late Pleistocene is offset some 2500 feet at its point of intersection with the offshore extention of the South Branch. If there is an offset on the syncline which may be as young as late Pleistocene, it appears that there may have been significant offset on the South Branch of the Santa Ynez fault during late Pleistocene time.

The submission of evidence supporting the existence of the so-called "F-1" fault further substantiates our conclusions respecting the predominant seismic hazard to the site. At a minimum, the fault appears to be some 11.5 miles (19 km) in length, trends parallel to the coastline and extends within 3 miles of the proposed site.

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Since this east-west trending fault, which all parties agree evidences Holocene digplacement, may be an extension of the regional east-west trending offshore fault system that aligns with the More Ranch-Arroyo Parida fault system or the Santa Ynez South Branch, the potentially connected and thus substantial length of the system indicate the possiblity of significant offshore seismic activity.

We conclude that the Santa Ynez fault, including the North and South Branches as well as the "F-1" fault are the largest and most potentially active faults that could create an earthquake hazard to the proposed LNG terminal. We further conclude that, while assignment of magnitude is a typically subjective matter, we may, mindful of the necessity that we act most prudently, assign a 7.5 Richter magnitude, with associated maximum bedrock acceleration of .6 to .68g, to both the North and South Branches of the Santa Ynez fault and the "F-1" fault. The length and seismic history of the Santa Ynez fault support the assignment of such magnitude to the former fault. The assignment of this magnitude to the "F-1" fault is supported by the fact that the Holocene offset along that fault is at least 5 feet. (That a minimum of 5 feet of displacement exists along the F-1 fault may be inferred from the fact that the principal method employed for discovering the fault, Sparker profiling, would not have detected an offset of a lesser magnitude.) Should a displacement of that magnitude occur in one movement, the earthquake would approach a 7.5 magnitude. We reach the same conclusion with respect to the F-1 fault, if, as we have earlier postulated, the F-l fault is an extension of either the regional east-west trending offshore fault system that aligns with the More Ranch-Arroyo Parida fault system or the Santa Ynez South Branch.

6. <u>Seismic Risk</u>

Having determined the location, capability, magnitude and associated ground motion of the earthquake fault which poses the predominant and most severe <u>seismic hazard</u> to the proposed facility, we must next, based on our assessment of that seismic hazard and the potential ground manifestations that could occur at the site, determine whether the facility can be safely and reliably located at Point Conception. Should we answer that question in the affirmative.

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we must then define the appropriate <u>seismic risk</u> level for the LNG terminal, i.e., the intensity level of earthquake manifestations at the site_x usually expressed in terms of peak ground acceleration, to which the proposed facilities are to be designed.

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To determine the seismic risk level, we must analyze the seismic hazard, judge the probability and nature of the seismic occurrence, weigh its potential effect in light of issues of public safety, plant investment, gas supply reliability, and then make a policy decision as to the level of protection that should be designed into the facility. Such a policy decision should reflect the enormous financial investment involved along with the cost and inconvenience occasioned by loss of plant. Accordingly, our assessment of the appropriate seismic risk should insure with a high degree of probability that the LNG facility will maintain safe operation during and following ground shaking associated with a low probability but large magnitude earthquake.

Bixby and Hollister contend that, given the existence of the Arroyo fault, there is no acceptable level of risk for an LNG facility at Point Conception. However, as we have previously stated, <u>currently available data indicate</u> that the Arroyo Central fault is not causative, but rather a secondary rupture. If subsequent investigation reveals the fault to be causative, the increased probability of surface rupture and strong ground motion at the site could induce us to conclude that an acceptable seismic risk does not exist, rendering the site unsuitable. However, in the absence of such evidence, we reiterate our conclusion that a 7.5 magnitude earthquake on the South Branch of Santa Ynez fault with associated maximum ground accelerations of .6 to .68g or a 7.5 Magnitude earthquake on the F-l fault represents the predominant seismic hazard.

Western Terminal recommended that seismic design of the proposed LNG facilities be based on a ground surface rock acceleration of 0.4g and a thin alluvium acceleration of 0.37g. Their seismic risk analysis is premised upon definition of the Santa Ynez River Fault some 12 miles (20 km) from the site as the the predominant seismic hazard. Since we have already concluded

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that the record does not support such a conclusion, we need not comment on the validity of the methodology utilized by Western Terminal in its determination of a seismic risk level. The analysis itself, whether sound or not, is rendered irrelevant by virtue of Western-Terminal's improper identification of the seismic hazard.

Our staff based its seismic risk analysis on the premise, which we have already accepted, that the predominant seismic hazards are the North and South Branches of the Santa Ynez fault and the "F-1" fault. They contend that in light of that hazard we should adopt the following conclusions:

(1) Prudence and the public interest dictate that the LNG facility be designed to withstand and continue operation after occurrence of that earthquake which would produce an intensity of earthquake ground motion at the site that has a very high probability -- on the order of 99.5% -- of not being exceeded during the 50-year service life of the facility;

(2) To assure this high probability of plant and investment protection, the Commission should direct Western Terminal to design and construct the terminal to withstand ground motions at the site associated with the earthquake on the North and South Branch of the Santa Ynez fault as well as F-1 fault or that earthquake which has a probability of occurring one time in 10,000 years (10-4 per year);

(3) Accordingly, the LNG facilities should be designed to withstand a maximum earthquake of Richter Magnitude 7.5 using a bedrock acceleration-time history with a maximum peak acceleration of 0.6g (gravity) at the site.

We believe that in siting an LNG terminal in an active seismic region our approach to resolving seismic issues should be conservative. Consequently, we believe that the proper maximum peak acceleration standard to be employed at the site should be 0.7g rather than the 0.6g recommended by staff. We will so order.

7. <u>Seismic Design Criteria</u>

Both Western Terminal and the staff proposed seismic design criteria. The staff's presentation was based upon two levels of earthquakes and three categories of equipment. Western Terminal's initial presentation appeared less conservative and less appropriate than the staff proposal. After reviewing the staff proposal, Western Terminal submitted a proposal also utilizing two levels of earthquakes and 3 categories of equipment. Based upon the major

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change in Western Terminal's presentation and given the tardiness of the filing, the staff recommended the matter be deferred to Phase II.

Considering the financial investment involved, the loss of energy due to shut-down of plant, and the potential-but-limited hazard to public safety, it is concluded that to ensure safe and reliable operation of the LNG terminal, a level of conservatism should be incorporated into the design. Therefore, all structures, components, and systems for the proposed facility should be classified into one of three seismic categories.

Under such a seismic classification procedure, different levels of seismic performance are permitted for each category. The classification permits Western Terminal to relate the design to both safety and economy in operation. Items required to maintain the on-site LNG in a safe condition must be designed to withstand the most severe seismic environment, the Safe Shutdown Earthquake (SSE). Items required to maintain plant operation without interruption of service are designed to a lower seismic level, the Operating Basis Earthquake (OBE). Finally, items in the third category are designed to the lowest level of seismic performance. These are support items which are not needed to maintain safety, nor are they required for uninterrupted plant operation. Seismic design for this category should be based on applicable codes, such as the Uniform Building Code (UBC).

Though seismic design criteria will be the subject of detailed examination during Phase II of OII 1, it is necessary to impose the following conditions with respect to general seismic design criteria.

 All structures, components, and systems for the proposed facility should be classified into one of three seismic safety categories which are defined as follows:

Category I: This category includes all structures, components, and systems required to shutdown the facility during and following a Safe Shutdown Earthquake (SSE) and maintain the on-site LNG in a safe condition. A. 57626 et al. M



Category II: This category includes all structures, components, and systems required to permit continued safe plant operation during and following an Operating Basic Earthquake (OBE).

Category III: This category includes all structures, components, and systems not included in Categories I or II, but essential for maintaining support or normal plant operations.

- 2. A statistical assessment of the seismic hazard associated with the site should be provided, and the SSE and OBE should be defined as follows:
 - a. The SSE should be based on an evaluation of the maximum earthquake potential considering the regional and local geology and seismology and the characteristics of local subsurface materials. It should represent the earthquake which would produce the maximum earthquake ground motion at the site. When major historical earthquakes in the region cannot be associated with known fault structures, the SSE should be taken as that earthquake which would produce an intensity of earthquake ground motion at the site that has a very low probability (such as .01 to .5 percent) of being exceeded during the service life of the facility.
 - The OBE should be based on an evaluation of the earthquake potential considering the Ъ. regional and local geology and seismology, and the characteristics of local subsurface materials. The OBE should represent the maximum earthquake environment at the site for which it is economically advisable for the plant to be designed to withstand without loss of operational function. Western Terminal should be permitted to establish this level based on an economic study which considers the capital investment, the loss and inconvenience to the owner and to the public resulting from loss of plant operation, and the probability of occurrence of the OBE event during the service life of the plant. As an alternative, Western Terminal may select the earthquake which would produce an intensity of earthquake ground motion at the site that has a 10 percent probability of being exceeded during the service life of the facility.



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- 3. Regulatory Guide 1.60(NRC) response spectra, properly scaled to the peak ground accelerations recommended for the SSE and OBE shall be used in the design of Category I and II structures, components and systems.
- 4. In accordance with Appendix B of 10CFR50 (Code of Federal Regulations), a quality assurance program should be established that assures reliable performance of all Category I and II structures, components and systems in their respectivelydefined seismic environments.

The staff expressed concern regarding the potential behavior of the supporting elements of the LNG storage tank and the base anchorage system. Their concern was focused on the fact that a relatively thin base plate would be supported by 25 inches of foamglass insulation, 1 inch of sand, and a 4-inch leveling layer of concrete. The staff states that these supporting materials do not have significant tensile strength, that tensile stresses can result from high shear stresses, created by the dynamic response of the tank to seismic stress waves propagating through the foundation. Staff recommends that a very careful analysis of the seismic stress conditions that develop in these supporting materials take place including experimental tests. They further recommend that a reinforced concrete mat be employed unless the aforementioned analysis demonstrates conclusively that safety and reliability does not require its use. Insulation is provided between the inner and outer tanks and the staff recommends that Western Terminal demonstrate by appropriate analysis, or test, that the two tanks respond independently to seismic excitation, or the interaction should be considered in the analysis. These recommendations are adopted.

P. Staff's Proposed General Order on LNG Safety

As heretofore stated, we have a legislative mandate to adopt regulations governing the safety and construction of the LNG terminal. To implement that mandate we issued an order instituting investigation in OII 1 on October 18, 1977. In OII 1 we directed our staff to prepare propose standards governing the safety and construction of an LNG terminal, noting that such proposal was to be distributed by March 15, 1978. A. 57626 et al. MEB

The staff was delayed and by letter dated April 21, 1978 distributed "a draft of proposed Liquefied Natural Gas Facilities Safety Standards as Part III of General Order No. 112-C. These standards prescribe minimum standards for the design, construction, installation, inspection, testing, and the safety aspects of operation and maintenance of liquefied natural gas."

The staff invited parties to comment on the proposal by May 22, 1978. After reviewing the comments, the staff planned to revise the safety standards as a proposed exhibit and distribute the proposed exhibit by June 9, 1978. Subsequently, this date was extended to July 7, 1978, at the staff's request. This matter will be set for hearing in Phase II of this proceeding to provide opportunity for cross-examination and alternate proposals.

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XIV. TERMS AND CONDITIONS

A. <u>General Comments</u>

Comprehensive schedules of terms and conditions have been introduced and recommended by the CCC (Appendix D, hereto) and by the County (Appendix E, hereto).

This Commission is in general agreement with many of the terms recommended by the CCC and the County. However, there are major problems regarding questions of jurisdiction, monitoring, certification, and commencement of operations. A number of the recommended terms and conditions of both the CCC and the County have been worded to make commencement of construction, or commencement of operations, subject to that agency's approval of the plan or action required by that condition.

This Commission is to the extent permitted by federal law, the state's exclusive permitting agency. (Section 5551(d).) The permit the Commission is authorized to issue is "in lieu of any other permit, license, certificate, or other entitlement for use required by any agency of state or local government for the construction or operation of an LNG terminal." (Section 5581.) If terms and conditions of the permit are so worded as to require another agency's approval before construction or operation of the terminal can begin, then the Commission would cease to be the ultimate permitting authority under the Act. To establish terms and conditions that require approval of the CCC or the County would be to take the Commission's exclusive regulation authority away and give it to the CCC or the County, contrary to the general intent of the Act. Moreover, specific language in the Act makes the Commission responsible for seeing that all terms and conditions are met. Section 5637 reads in part, "The Commission shall establish a monitoring system to ensure that any terminal authorized pursuant this chapter is constructed and operated in compliance with all applicable regulations adopted and terms and conditions established pursuant to this chapter."

In our opinion, each and every term or condition which is worded in a manner that interposes another agency's approval is contrary to the specific authority and intent of the Act, and that imposition of each and every term which is so worded will result in significant curtailment of high priority natural gas requirements and that deletion or modification of the term or condition will avoid or significantly reduce such curtailment.

The Commission recognizes, however, that the CCC and the County have real and legitimate concerns with respect to seeing that the policies of their agencies, as represented in their proposed terms and conditions, are carried out. In fact, the Commission desires their advice in seeing that their concerns are properly addressed, and if possible, solved. The Commission will, therefore, adopt the following policy so as to assure specific action by the Commission and its staff to meet the needs of the CCC or the County:

In compliance with Public Utilities Code Sections 5580, 5581, 5632, 5633, and 5637 of the Act, the Commission is responsible for implementation and enforcement of all terms and conditions adopted within its permitting authority. In carrying out its assigned responsibilities, the Commission staff shall comply with the following Staff Guidelines:

- All applicable plans and specifications shall be submitted to the appropriate state and local agencies for their review and comment.
- (2) Prior to Commission approval of any plan or study, the Commission staff upon request of any appropriate state or local governmental agencies shall meet and confer with such agencies to assure a thorough and impartial review. The plan or study under review shall be modified, extended, or revised as necessary to allow for consideration of the reasonable and legitimate concerns of the agencies.

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(3) All records and information produced through the Commission Monitoring Program shall be made available for review upon request by any interested person or public agency.

- (4) The Commission staff, in consultation with all appropriate state and local government agencies, shall assure to the greatest extent possible that all engineering and construction plans are prepared in conformance with the standards of the applicable agencies.
- (5) A 30-day review period shall be provided other agencies to review and comment on plans submitted to them by the Commission. A longer review period may be granted by the Commission 1f it is feasible to do so.

In evaluating the recommended terms and conditions the Commission must consider how a heavily conditioned permit will affect the curtailment of high-priority requirements and the impact on the ability of Western Terminal to finance a terminal. Although it is anticipated that any permit issued for a major project such as an LNG terminal will contain conditions, if conditions are so onerous, vague, or overly broad that effectively they preclude financing of the project, the project will not be built. In turn, significant curtailment of high-priority requirements will occur.

The terms and conditions recommended by the CCC, if adopted by the Commission as worded by the CCC, will preclude financing of an LNG terminal as now proposed. Those terms and conditions, and their corresponding findings, create uncertainty as to whether or when construction could ever be started (Conditions 3, 4, 7, 13, 24), and once started would ever be allowed to commence operation (Conditions 1, 2, 5, 6, 9, 10, 16), depending upon criteria yet to be determined. Such conditions would thoroughly discourage potential investors and prove fatal to the financing of the project.

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If the Point Conception terminal site is to be approved as being in the public interest, conditions must not be imposed which foreclose investors of the ability to appraise the basic economics of the project or the ground rules under which it is to be built. On the contrary, a decision that the terminal is needed and is in the public interest requires positive assurances which are supportive to optimal financing, construction, and operation of the facilities. A perception by potential investors that the project may not be wanted by the regulatory agency, even though nominally approved, will be considered tantamount to outright rejection. The wording of the terms and conditions recommended by the CCC would have precisely such an effect.

The risk that a proposed condition will make financing of the project impossible is compounded by any ambiguous or economically unrealistic standards which are utilized therein. Requirements, regardless of cost, that the impact of any facet of terminal construction or operations be mitigated to the "greatest extent possible," or that construction and operation be conducted in a manner which will have the "least possible" adverse impacts, are certain to discourage, if not repel, potential investors. We will modify such terms to require mitigation only to the extent feasible, thereby allowing a reasonable degree of flexibility to consider other factors in the public interest. Without a drastic reduction of these uncertainties at the outset, investment in the project will not be forthcoming, thereby making construction and operation of an LNG terminal financially impossible.

We will adopt the following schedule of conditions to the permit granted herein to implement the foregoing and to assure that the terminal is constructed and operated in a manner which will ensure the public health, safety, and welfare. Immediately below each adopted condition is a brief discussion.

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B. Adopted Conditions to Permit

1. Existing Onshore Public Access Condition:

Western Terminal shall perform the following actions:

(1) Beach area disturbed by terminal construction activities will be restored as nearly as feasible to its original condition.

(2) Previously existing public access to or along sandy or rocky beaches will not be diminished, restricted, or adversely affected to the extent feasible and consistent with public health and safety. The Commission shall consult with the Coastal Commission in determining that this condition has been complied with to the extent feasible.

Discussion:

We adopt CCC Finding 1 insofar as it is applicable to the above Condition 1. Condition 1 allows for public access to or along sandy or rocky beaches to the extent such access existed prior to the construction of the terminal consistent with public health and safety and considering the physical presence of the facility. The Commission, rather than the CCC, will assure that Condition 1 is carried out without restricting the terminal operation start-up date which we consider critical. We understand the CCC mandate under the Coastal Act to encourage public access to California's coastline but we cannot square encouraging public access great than what currently exists near a facility that the legislature has mandated to be located in a remote area. Encouraging or developing such public use would be contrary to public health and safety in light of the legislative mandate.

2. <u>Nearshore Recreational Access</u>

Condition:

Western Terminal shall detail the impact of its operational plan on recreational activities and submit its findings to the Commission during the design review process. Terminal operations shall not unreasonably interfere with nearshore recreational activities such as boating, surfing, or skindiving. A. 57626 et al. - Alt. RDG

Discussion:

We adopt CCC Finding 2 insofar as it is applicable to the above Condition 2. Condition 2 allows for protection of public health and safety. It also allows for compliance with Sections 5580, 5581, 5633, and 5637 of the Act. The Commission, under its jurisdictional authority, will see that Condition 2 is carried out without unnecessarily and unjustifiably delaying terminal operation start-up.

Again we must point out that we do not perceive encouragement of additional nearshore recreational access to be consistent with the legislative mandate for a remote site in light of its public health and safety implications.

3. Marine Resources: Construction

Condition:

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Western Terminal shall contract for an independent study which includes the following:

(1) A survey of the marine biota within a one-mile circumference of the seawardmost part of the proposed trestle.

(2) A survey of the marine blota and existing condition of the intertidal area within one mile in each direction of the proposed trestle.

(3) A survey and modeling of the existing sediment transport system.

After completion of the above studies, Western Terminal shall submit to the Commission an offshore facilities construction plan and schedule which shall comply with the requirement that:

(1) Construction will cause the least feasible biological damage and interference with natural sand transport.

(2) Construction and placement of the trestle, berthing facilities, and seawater system (if constructed), to the extent feasible and consistent with safe offshore engineering practice, shall take place at the time of year which will cause the least biological damage.

(3) The methods of offshore construction to be used are the least environmentally damaging feasible methods. If blasting is involved, techniques such as drilling, tamping and sequencing of charges which limit fish kills must be used to the extent feasible.

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Construction of in-sea facilities shall not begin until the Commission, after consultation with the CCC, has determined that the offshore construction plan and schedule complies with this condition.

Discussion:

We adopt CCC Finding 3 insofar as it is applicable to the above Condition 3. Condition 3 allows for compliance with Sections 5580, 5581, 5633, and 5637 of the Act. The Commission maintains jurisdictional authority over any plans or studies pertaining to the construction or operation of the terminal facilities. The Commission will, as an ordinary course of action and as set forth in the policy statement above, consult with all pertinent government agencies.

Marine Resources: Seawater Intake and Discharge System 4_ Condition:

Western Terminal must submit to the Commission a plan for the design and operation of the seawater system to be used, which includes:

(1) Use of the most effective and feasible method to prevent entrainment of fish.

(2) Use of feasible alternatives to chlorinization such as mechanical, biological, or thermal anti-fouling.

(3) Provisions for the most effective and feasible method of dispersion of the cold-water plume.

(4) Use of the most effective and feasible methods of preventing biological damage caused by the operation of the seawater system.

Construction of the seawater system shall not begin until the Commission, after consultation with the CCC, has determined that the submitted plan complies with this condition and incorporates the most feasible technology for minimizing adverse effects on marine resources. '

. Discussion:

We adopt CCC Finding 4 insofar as it is applicable to the above Condition 4. The Commission maintains jurisdictional authority over all approvals for plans and studies concerning terminal facilities. "Best available technology" is replaced with "most feasible method."

5. <u>Marine Resources: Operation and Impact Monitoring</u> Condition:

Western Terminal shall contract for an independent five-year ongoing marine monitoring program to examine the effect of the seawater system to determine:

(1) The effect of the cold water discharge on marine biota.

(2) The approximate number of invertebrates and larger fish lost due to entrainment and impingement.

(3) The approximate number of eggs and larvae of fish and commercial invertebrate species lost due to mortality within the seawater system.

(4) Length of detention time and survival for those larger fish and invertebrate species commonly entrained.

(5) The distribution of species which are entrained and returned to the ocean.

(6) The relationship between species entrainment in the initial years of operation and entrainment in subsequent years, as an indication of depletion of local species due to entrainment.

The five-year marine monitoring program shall also accomplish the following:

(1) Detection of the degree of severity and rate of occurrence of water quality impacts due to changed conditions.

(2) Determination of the effects of LNG terminal operations, including movement of tankers, bunker fuel vessels, tugs, line boats, and other small craft on kelp resources.

(3) Determination of changes in sediment transport and resulting changes in marine biota.

The selection of an independent consultant and the marine monitoring program shall be approved by the Commission after consultation with the CCC. The Commission shall ensure that the marine monitoring system complies with this condition and provides for publishing of results at reasonable intervals.

Upon completion of the five-year marine monitoring program, the Commission, after consultation with the CCC, shall then determine the degree of marine monitoring that shall follow. At any time, the marine monitoring team, based upon the results of the marine monitoring, may recommend to the Commission changes in the LNG terminal operation to protect the marine resources of the area. Western Terminal after opportunity for public hearing, shall implement all such changes the Commission determines are feasible and necessary.

Discussion:

We adopt CCC Finding 5 insofar as it is applicable to the above Condition 5. Condition 5 affords the coordination of agency review. It also allows for compliance with Sections 5580, 5581, 5633, and 5637 of the Act. The language of the CCC concerning use of the seawater system should be modified. We find that the record in this case fails to support the conclusion that as a whole, a seawater vaporization system should not be utilized. The Commission maintains full jurisdictional authority over all plan and action approvals. The intention here is that the Commission will make decisions after consultation with the CCC. It is expected and understood that all other relevant agencies will be afforded review and input prior to any Commission approval as a matter of normal procedure.

6. <u>Marine Resources: Bunkering Operations</u> <u>Condition</u>:

Western Terminal shall provide an oil spill prevention and contingency plan. The plan shall be approved by the Commission prior to start-up of terminal operations, and shall provide for, at a minimum:

(1) Am environmentally protective method of oil refueling and storage.

(2) A contingency plan for effective spill containment and clean-up.

(3) A demonstration that the plan complies with all regulations of the U.S. Coast Guard, the Environmental Protection Agency, and other responsible federal and state agencies.

Discussion:

We adopt CCC Finding 6 insofar as it is applicable to the above Condition 6. Condition 6 allows for compliance with Sections 5580, 5581, and 5633 of the Act. It is expected that other interested agencies such as the Department of Fish and Game and the CCC will review and comment to the Commission on such plan. Although federal agencies such as the U.S. Coast Guard may require approval of the plan prior to marine operations, Condition 6 allows California, through the Commission, control of oil spill procedures on the state level.

7. Land Resources: Construction

Condition:

Prior to construction, Western Terminal shall contract for an independent study of the flora and fauna in the vicinity of the site, access road, and utility corridors. The study shall include, at a minimum:

(1) the location of rare or endangered plants or animals or potential supporting habitat;

(2) mapping vegetative habitats or other critical biotic features such as riparian corridors, springs, known nesting sites, and significant watershed vegetation.

Based on the results of this study, Western Terminal shall submit a construction plan to the Commission and the CCC. This plan shall provide for:

(1) Maximum protection afforded by federal law for endangered plant and animal species.

(2) A noise and dust monitoring program and requirement that construction noise and dust be kept, at a minimum.

(3) Maximum feasible protection of riparian vegetation and habitat...This shall include a prohibition of all filling and other alteration of stream beds, as well as paving or other construction within 50 feet of stream beds, unless there is no other feasible alternative. In areas of botanical significance, and to the extent it is feasible to do so, existing foliage shall be preserved and the sidecasting of soils shall be restricted. Any ground water pumping shall not be permitted which would diminish or harm existing water flows or riparian vegetation to the extent feasible.

(4) A landscaping element arrived at in cooperation with the affected county, which requires insofar as feasible a balanced cut and fill, preservation and reuse of topsoil, minimum feasible disturbance of natural vegetation and land forms, replanting with natural vegetation, and disposal of fill, if any, in the least environmentally damaging manner.

(5) A construction schedule which will, to the extent feasible, undertake to minimize damage to seasonally affected flora and fauna.

Construction shall not commence until the Commission has determined that the construction plan complies with this condition.

Discussion:

We adopt CCC Finding 7 insofar as it is applicable to the above Condition 7. It also allows for compliance with Sections 5580, 5581, and 5633 of the Act. It is expected and understood that all other relevant agencies will be afforded review and input prior to Commission approval. The indiscriminate ban on sidecasting of excess soils along the pipeline route appears to be an unwarranted expense.

8. Land Resources: Gas Pipeline Route Condition:

The approved gas pipeline from the terminal site to the point of intersection with the gas transmission system shall be routed to mitigate significant environmental impacts with a plan approved by the Commission following consultation with the CCC. The plan shall provide that:

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(1) The route shall be surveyed by the California Department of Fish and Game.

(2) Ground equipment should not be operated off the rightof-way when avoidable.

(3) Rights-of-way should be revegetated with native plant species beneficial to wildlife.

(4) In areas of botanical significance, and to the extent it is feasible to do so, existing foliage shall be preserved and the sidecasting of soil shall be restricted.

(5) Maintenance of access should be minimized, to the extent feasible, in areas of valuable wildlife habitat, such as areas within the range of the California condor.

(6) Public access to maintenance roads should be controlled to prevent abuse by off-road vehicles.

Discussion:

We adopt CCC Finding 8 insofar as it is applicable to the above Condition 8. Condition 8 appropriately designates the Commission with final approval responsibility and allows for participation in plan development by responsible agencies. A Commission decision will approve the applied for route, therefore, CCC Items (1) and (3) have been deleted since the applied for route is basically set and already parallels certain existing roads.

9. Termination of Operations

Condition:

Western Terminal shall submit to the Commission a plan providing for the removal, to the extent feasible, of in-sea or onshore components of the LNG terminal after cessation of operation. The plan shall be approved by the Commission after consultation with the CCC. Western Terminal, to the extent permitted by federal law, shall remove each terminal component unless Coastal Act policies would allow or encourage retention of that component.

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Discussion: ·

We adopt CCC Finding 9 insofar as it is applicable to the above Condition 9. Condition 9 allows for compliance with Sections

5580, 5581, and 5633 of the Act. The Commission will assure the accomplishment of planned facility removal through a decision and order following an abandonment proceeding.

10. Replacement of Lost Habitat

Condition:

Western Terminal shall provide, to the extent feasible, terrestrial and marine habitat equivalent in value to that lost, damaged, or adversely affected as a result of terminal construction and operation, including construction of utility corridors, roads, and pipelines. The habitat acquired or protected shall be approved by the Commission after consultation with the CCC.

Discussion:

We adopt CCC Finding 10 insofar as it is applicable to the above Condition 10. The CCC's Condition 10 has been altered to give jurisdiction to the Commission to review this action.

11. Water Quality

Condition:

Terminal construction and operation shall comply with the requirements of the State Water Resources Control Board and Regional Water Quality Control Board to the extent required by federal law and regulations.

Discussion

We adopt CCC Finding 11 insofar as it is applicable to the above Condition 11. Condition 11 allows for compliance with Sections 5581, 5632, and 5633 of the Act. CCC's Condition 11 has been altered to eliminate reference to the Air Resources Board. In Condition 34 we are requiring further hearings on the Air Resources Board recommendations.

12. Archaeological Resources

Condition:

Prior to construction Western Terminal shall contract for an independent survey of archaeological resources at the site and along the approved pipeline, access road, and power-line corridors. Wherever so indicated, the survey shall consist of

subsurface_testing. If archaeological resources have been, or are likely to be found at the site, construction shall not commence until the Commission, after consultation with the CCC, the State Historic Preservation Officer, and representatives of local Native American groups, has approved Western Terminal's plan for the protection of archaeological resources. Such plan shall include:

(1) Construction methods and facility configuration that do not disturb sites of historic, archaeological, or paleontological importance to the extent feasible.

(2) If avoidance of such sites is infeasible, the use of techniques which would best preserve the sites and objects found in them for future study and evaluation.

(3) Access shall be provided for Native Americans to sites of religious significance consistent with security and resource protection.

(4) To the extent feasible the religious sanctity of the site shall be protected.

(5) Fencing of cultural resources located near construction areas.

Discussion:

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We adopt CCC Finding 12 insofar as it is applicable to the above Condition 12. Condition 12 allows for compliance with Sections 5580, 5581, and 5633 of the Act. CCC Subpart (4) is addressed below in this Commission's Condition 13.

13. Commission Monitoring Program

Condition:

Western Terminal shall reimburse the Commission for all costs incurred in monitoring the construction and operation of the facilities addressed in these proceedings. Said monitoring program shall include the necessary personnel to ensure: the safe design, construction, and operation of the plant; protection of the environment as ordered in these proceedings; and the prudence of expenditures as they ultimately would affect costs to the ratepayer.

Discussion:

This condition sets up funding for effectively monitoring the cost, construction, operation, safety, and environmental constraints necessary to ensure that the LNG facilities are designed, built, and operated in the best interest of the public and the ratepayer who is the ultimate beneficiary of this project.

14. Fire Protection

Condition:

Western Terminal shall prepare a fire protection plan for the affected area. This plan shall provide measures to adequately minimize risks to life and property from fire and shall be consistent with any safety regulations adopted by the Commission pursuant to Section 5637 of the Act.

Prior to commencement of operation, the Commission, in consultation with the Santa Barbara County Fire Department, will approve Western Terminal's plan.

Discussion:

We adopt CCC Finding 16 insofar as it is applicable to the above Condition 14. However, we have substituted Commission approval for CCC approval.

15. <u>Electric Transmission Lines</u> Condition:

Basic terminal electric needs shall be met by offsite generation with adequate onsite generation available for standby and emergency use only.

Within these proceedings, there have been several alternate transmission line proposals which mitigate to varying degrees the environmental impacts attributable to Southern California Edison's preliminary design (Exhibits A-118 and A-119).

(1) An inland route utilizing existing Southern California Edison easements (Figures 19, 20, and 21 in Exhibit A-90).

(2) A combination of overhead and underground lines requiring undergrounding within the coastal zone for the applied for routing.

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(3) A routing utilizing the access road corridor.

(4)_Modification and upgrading of the existing wood-pole transmission/distribution line.

In the interest of providing necessary offsite generated power with the least overall environmental impact, Western Terminal is ordered to submit a plan for each of the foregoing alternate proposals. The plans shall include:

(1) Data on the comparative reliability, cost, and environmental consequences of each plan.

(2) Maximum feasible use of underground construction within the coastal zone.

(3) Maximum feasible use of wood-pole construction for overhead portions of the line.

(4) Use of a single-circuit three-phase line, unless Western Terminal can substantiate the need for more than one circuit.

The Commission, after consultation with the CCC and Santa Barbara County, will then determine which one of these alternate proposals will be used.

Discussion:

Imposition of CCC Condition 23 would adversely affect public health and safety. Our Condition 15 is a major departure from the CCC's Condition 23, which would require onsite generation; however, our Condition 15 retains the CCC's requirement of mitigation of the visual impact in the coastal zone.

Several alternate routes are included for further study so that, if feasible, an alternative should be developed to a multiplecircuit line on steel towers within the coastal zone. A doublecircuit line on steel towers would have a significant visual impact on Hollister Ranch and Gaviota State Park.

16. <u>Construction Period Transportation Plan</u> <u>Condition</u>:

All transportation of workers, materials, and equipment for construction activities shall be in accordance with a transportation plan approved by the Commission prior to commencement of construction.

Within these proceedings there have been three acceptable alternate routes proposed for an excess road from State Route 1 to the terminal site (see Exh. A-105, Routes 2, 3 and 4-4a respectively):

(1) an improved Hollister Ranch road from Gaviota;

(2) a coastal route from the west via Jalama Road;

(3) a northern route generally following the proposed gas pipeline corridor.

In the interest of providing adequate access with the least overall environmental impact, Western Terminal shall submit detailed transportation plans for each of these alternate routes. These plans shall include:

(1) maximum feasible use of barges and the railroad for transport of workers, materials, and equipment;

(2) maximum feasible use of off-site parking areas and the busing of workers to and from the site;

(3) maximum feasible use of modular construction;

(4) use of a gate and guardhouse where the access road joins the existing public road so as to control access;

(5) data on the comparative safety, cost and environmental consequences of each plan.

The Commission, after consultation with the CCC and Santa Barbara County, will determine which one of these routes will be used.

Discussion:

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This condition is a major departure from the CCC staff recommendation regarding jurisdiction and their choosing of the improved Hollister Road route.

The inclusion of the other alternate routes is due to recognition of the County's concern for Gaviota Beach Park and the housing of workers during construction. The use of a gate and guard at the beginning of the access road in lieu of at the LNG terminal would help ensure privacy to the existing landowners and maintain the remoteness of the area as desired by both the County and the CCC. A. 57626 et al. ALT.-RDG-IM

17. Fublic Access Condition:

Western Terminal shall submit to the Commission a plan providing limited public recreational access to the coastal area in the vicinity of the terminal site. Such access shall be consistent with protection of coastal resources, adequate terminal security, and public safety. This public access requirement may be waived if the Commission determines that necessary security or safety precautions so dictate.

Discussion:

We adopt CCC Finding 25 insofar as it is applicable to the above Condition 17. Although the Coastal Act (PRC Section 30212) is a condition applied to new coastal development and hence is one that the CCC must follow, this Commission must act under the more recent legislative mandate of Sections 5552, 5582 and 5632 which taken together must be read to mean that public presence near an LNG facility is not in the public interest and is contrary to public health and safety. Nevertheless we will require submission of a plan for future Commission consideration.

18. Partial Ingrounding of Storage Tanks

Condition:

Western Terminal shall submit to the Commission a visual impact mitigation plan which shall provide for:

(1) Partial ingrounding of LNG storage tanks in a manner such that the upper portion of each tank shall not protrude more than 50 feet above the ground level of the facility, unless Western Terminal demonstrates to the Commission satisfaction that there are significant advantages to a protrusion greater than 50 feet, taking into account such factors as operational feasibility, safety, cost, and environmental consequences.

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(2) Contouring and landscaping dikes surrounding the tanks in a manner that will help to keep the facility visually compatible with the natural land forms of the area, as well as preserving the public view.

(3) Maximum feasible compatibility of all above-ground structures with the character of the area.

(4) Painting of above-ground structures to achieve minimum visual contrast with the surrounding area to the extent permitted by safety and operational requirements.

(5) Site landscaping that provides the maximum feasible screening of plant facilities consistent with the open-space character of the area.

Construction shall not begin until the Commission, after consultation with the CCC and Santa Barbara County, has determined that the plan complies with this condition.

Discussion:

Imposition of CCC Condition 26 would adversely affect the public health and safety. CCC Condition 26 has been modified with respect to jurisdiction, certification, founding of tanks on bedrock, the protrusion of tanks more than 50 feet upon adequate showing, and mitigation of overall visual impact.

The provision of founding the tanks only on bedrock as recommended by the CCC is addressed in Condition 39.

The provision for greater than 50-foot protrusion has been included because the record herein does not support such a requirement since the 50-foot case has not been aired at the Commission hearings.

19. Kelp Harvesting

Condition:

To the extent feasible, Western Terminal shall avoid interference with kelp harvesting from Kelp Bed 32. If studies implemented under Conditions 3, 4, and 5 indicate that terminal construction or operation will decrease the amount of kelp that can be harvested under existing Department of Fish and Game leases, Western Terminal shall develop a program to minimize the decrease and to mitigate the loss suffered by the Bed 32 lessor or lessee. The Commission, after consultation with the CCC, shall approve and enforce such plan.

Discussion:

We adopt CCC Finding 28 insofar as it is applicable to the above Condition 19. This CCC staff condition has been modified in regard to jurisdiction and elimination of the CCC proposed committee. The Department of Fish and Game as the lessee should
have recourse to mitigate losses, but the placing of that Department on a committee to determine mitigation would create a conflict of interest.

20. <u>Procedures Governing Design and Construction</u> <u>Condition</u>:

The proposed facilities shall be constructed substantially in accordance with the conceptual designs described in this record, except where mitigation measures are ordered herein. Additional design and construction requirements will be adopted by the Commission in OII 1.

Discussion:

This is similar to the condition typically imposed by the Commission in granting certificates of public convenience and necessity. The condition avoids the necessity of spelling out detailed specifications.

21. Commencement of Construction

Condition:

Unless construction of the LNG terminal is commenced within 18 months after the date when all required permits and regulatory authorizations have been issued and are no longer subject to judicial review, this permit will be deemed null and void and of no further effect or force. The Commission may grant an extension of time for good cause.

Discussion:

This condition corresponds to the County's Recommendation No. 2, modified to recognize the case where all necessary permits and authorities are not yet final and effective.

22. Domestic Well-Water System

Condition:

Domestic well-water system facilities shall be designed by a California registered professional engineer in accordance with " the "California Safe Drinking Water Act" (Health and Safety Code, Section 4010, et seq.). Construction of such wells shall be in

accordance with standards set forth by the Department of Water Resources; Bulletin No. 74, "Water Well Standards: State of California."

Discussion:

This condition was requested by the County as part of its Recommendation No. 42. It has been modified to remove permitting requirements by the County. The balance of the County's Recommendation No. 22 contains specifics which will be considered during the design phase of the project.

23. Food Handling Facilities

Condition:

Food handling facilities construction, operation, and maintenance, both during plant construction, as well as after the facility is in operation, shall comply with all applicable provisions of the "California Restaurant Act" (Health and Safety Code, Section 28520 et seq.).

Discussion:

This condition responds to the County's Recommendation No. 43. 24. Sewage and Waste Water Disposal

Condition:

Sewage and waste water shall be disposed of in a sanitary manner which neither endangers the public health, degrades the groundwater supply, nor creates a public nuisance condition.

Discussion:

This condition responds to the County's Recommendation No. 44. 25. Solid Waste Disposal

Condition:

Solid waste collection and disposal, both during construction of the plant as well as during its operation, shall be in a safe, sanitary manner and shall comply with all applicable provisions of the "Solid Waste Management and Recovery Act," Government Code, Section 66700 et seq.

Discussion:

This condition responds to the County's Recommendation No. 45.

26. Disaster Plan

Condition:

An onsite disaster plan shall be prepared which includes provisions for prevention and correction of environmental health hazards resulting from possible disasters and shall address water supply, sewage disposal, food service, shelter, vector control, and refuse disposal. Said plan shall be approved by the Commission after consultation with Santa Barbara County, prior to the commencement of terminal operations.

Discussion:

This condition responds to the County's Recommendation No. 46. 27. Pipeline Review

Condition:

Prior to completion of plan and profile drawings of the gas pipeline, Western Terminal shall consult with the Santa Barbara County Transportation Department and with Kern County and San Luis Obispo County to assure coordination with existing and future road facilities. Western Terminal shall comply with all reasonable requests resulting from this consultation. All disputed requirements will be submitted to the Commission for determination.

Discussion:

This condition responds to the County's Recommendation No. 50 with Kern and San Luis Obispo Counties added. However, the County's related Recommendation No. 51, which required county encroachment permits, has been deleted as being in violation of Section 5581 of the Act.

28. Employees' Temporary Housing

Condition:

No permanent or temporary dwellings shall be built or installed on the site for residential use other than those needed for construction-related activity, such as those for foremen, supervisors, or watchmen.



Western Terminal shall report to the County of Santa Barbara County-Cities Area Planning Council information including the number of employees and their general area of residents (i.e. within a two-mile radius of the residence) and their mode of transportation to the LNG facility construction site. This data shall be provided on a quarterly basis, the first set of data following, as soon as possible, the start of construction of the LNG facility, including the installation of the pipeline and electric transmission lines if applicable, and be discontinued when the facility begins operating.

Discussion:

This condition responds to the County's request for data to ascertain the impact of the construction work force on the County.

29. Natural Gas Transmission Pipeline

PG&E and PLS shall file with the Commission all applicable engineering plans, specifications, design calculations, and any other applicable information at least 100 days prior to pipeline construction.

Discussion:

One hundred days for pipeline plan review will be required because of the magnitude of the required pipeline construction.

30. Facility Lighting

Condition:

No beam or exterior lighting originating in the facility, within the limits approved by the Coast Guard for navigational and pier lighting, shall be directed toward adjacent areas without intermediate obstruction. Night lighting of any kind shall be restricted to that required for (1) construction activities and (2) essential lighting for safety and security purposes during operations.

Discussion: .

This recommendation is adopted in order to minimize visual impacts on residents at Hollister Ranch.

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31. Notice of Proposed Offshore Work Condition:

Western Terminal shall provide, insofar as practicable, written notification to affected commercial fishermen, kelp harvesters, local marinas, and boat-launch facilities of the proposed offshore work, including but not limited to the location(s), dates, duration, and type of construction to be performed. ίV

Discussion:

This type of notice will help minimize impact on the local marine-oriented business.

32. <u>Meteorological and Oceanographic Monitoring</u> Condition:

Western Terminal shall continue its meteorologic and oceanographic monitoring program to further evaluate actual sea-state conditions at the Point Conception marine terminal area. A minimum of two years of continuous on-site measurement of seastate conditions including wind, wave, swell, current, and fog shall be recorded. After review and analysis of this data, the Commission will make a further determination as to the safety and reliability of the project's maritime operations. If deemed necessary, further conditions may be placed upon the permit in order to assure the safety and reliability of the marine operations.

This data shall be submitted to the Commission not later than January 15, 1980 and shall encompass the period December, 1977 through December, 1979.

Discussion:

A preliminary conclusion that maritime conditions at Point Conception are acceptable for safe and reliable operations is based on evidence utilizing data developed by hindcasting methods. The record evidence shows there is some uncertainty in the conclusions reached on sea-state conditions at Point Conception due to differing interpretations of the source data. Therefore, the Commission finds it prudent to guarantee the satisfactory resolution of these weather-related uncertainties by requiring onsite measurement data to verify that the proposed maritime operations at Point Conception are conducive to safety and reliability.

33. - Miscellaneous EIR Mitigation Measures Condition:

Applicant shall implement all mitigation measures in Appendix F which are referenced to Condition 33, to the extent feasible.

Discussion:

Several minor mitigation measures shown to be useful in reducing environmental impacts in the EIR and found to be feasible in this decision are not covered in the major conditions. These measures are required by Condition 33.

34. Air Quality

Condition:

Western Terminal shall implement the mitigation measures ultimately adopted after further hearings before this Commission regarding air quality requirements.

Discussion:

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Further hearings are required to consider recommended conditions of the ARB as set forth in Response Bll of volume 2 of the Final EIR.

35. Maritime Measures

Condition:

To the degree they are consistent with United States Coast Guard regulations and sound maritime practices, Western Terminal is directed to adopt and implement the maritime equipment and procedure measures delineated in Appendix F of this decision.

Discussion:

Adoption of the above-referenced measures will serve to reduce the risk associated with LNG vessel traffic to and from Point Conception.

36. Geological and Geotechnical Investigations

Condition:

Western Terminal shall undertake the further geological and geotechnical investigations outlined in ALJ Doran's June 16, 1978, order to Western Terminal. At a minimum, additional trenching to the east and west side of Arroyo Central is required to further A. 57626 et al. Alt. RDG

evaluate the significance of the fault identified as the Arroyo Pault. Additionally, two trenches on seismic line "C" as shown on Plate 1.DC of Exhibit 0-106 are required to analyze the significance of geological anomalies identified to the north of Arroyo Central. Any further trenching and investigation, as required, will be the subject of future Commission directives.

Discussion:

Currently available data indicates that the Arroyo fault is not causative but rather a secondary fault resulting from activity on one or more significant faults immediately offshore. However, the absence of definitive geological and geotechnical data precludes the Commission from conclusively affirming the proposition that an LNG facility can be reliably constructed and operated at Point Conception consistent with interests of public safety. Because an active fault has been identified within the Point Conception site - the Arroyo fault - the physical and seismic characteristics of this fault must be thoroughly evaluated to determine the suitability of the site. Given the possibility of on-site surface rupture and corresponding strong ground motions which can threaten the viability of the entire project, it is incumbent that the Commission have placed before it sufficient and detailed information upon which to make its independent judgment respecting the nature and extent of the Arroyo fault and accordingly, its impact on the issue of locating an LNG facility at Point Conception.

37. Subsurface Exploration

Condition:

Due to the recognition of secondary faults within the site, e.g. Arroyo fault, Beach fault, if subsequent investigation confirms the site's suitability, Western Terminal is directed to undertake detailed subsurface exploration to insure that no critical LNG component will be located within the distance of 100 feet (30 m.) from any fault trace.

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Discussion:

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Location of critical components at sufficient distances from existing fault traces will serve to preclude damage to such components resulting from any surface ground rupture along the traces.

38. Storage Tank Foundations

Condition:

Western Terminal is directed to place a reinforced concrete mat under the LNG storage tanks, unless a careful analysis demonstrates conclusively that it is not needed and is approved by the Commission.

Discussion:

The Commission has concern for the behavior of the supporting elements of the LNG storage tank and the base anchorage system. The concern is that a relatively thin base plate is supported on 25 in. of foamglass insulation, 1 in. of sand, and a 4-in. leveling layer of concrete. None of these supporting materials have significant tensile strength. Tensile stresses can result from high shear stresses, created by the dynamic response of the tank to seismic stress waves propagating through the foundation. A very careful analysis of the seismic stress conditions that develop in these supporting materials supported by experimental tests is required.

39. Uniform Foundation Materials

Condition:

Western Terminal is directed to site critical components such as the LNG tanks, on uniform compacted fill material or firm, unweathered bedrock, unless a careful analysis demonstrates conclusively that the measure is unnecessary and is approved by the

Commission.

Discussion:

In view of significant seismic velocity differentials between the terrace deposits and the firm bedrock taken in conjunction with the irregularity of the ancient wave-cut platform surface, the location of critical components upon soils of different density with varying settlement rates must be avoided.

40. Seismic Categories

Condition:

Western Terminal is directed to classify all structures, components and systems for the LNG facility into one of three seismic safety categories which are defined as follows:

<u>Category I</u>: This category includes all structures, components, and systems required to shut down the facility during and following a Safe Shutdown Earthquake (SSE) and maintain the on-site LNG in a safe condition. <u>Category II</u>: This category includes all structures, components, and systems required to permit continued safe

plant operation during and following an Operating Basic Earthquake (OBE).

<u>Category III</u>: This category includes all structures, components, and systems not included in Categories I or II, but essential for maintaining support or normal plant operations.

Regulatory Guide 1.60 response operator, properly scaled to the peak ground accelerations recommended for the SSE and OBE shall be used in the design of Category I and II structures, components and systems.

A quality assurance program in accordance with Appendix B of 10 CFR 50 should be established that assures reliable performance of all Category I and II structures, components and systems in their respectively-defined seismic environments.

Discussion:

The recommended seismic classification procedure simplifies design as different levels of seismic performance are permitted for each category. Also, it permits Western Terminal to relate the design to both safety and economy in operation. For example, _ items required to maintain the on-site LNG in a safe condition must be designed to withstand the most severe seismic environment, the SSE. Other items required to maintain plant operation without interruption of service are designed to a lower seismic level, the

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OBE. This level can be established by a cost trade-off study between the added cost of designing to a given OBE seismic level versus the savings in the cost of probable damage and service interruption of the facilities that are not designed to this level.

41. Critical Earthquake Intensity

Condition:

Western Terminal, in the design of critical LNG components, such as storage tanks, is directed to utilize accelerations associated with a 7.5 magnitude earthquake on the North and South Branches of the Santa Ynez fault and/or on the F-1 fault. Accordingly, Western Terminal shall design all critical components to a peak bedrock acceleration of .7 g (gravity) at the site.

Discussion:

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Prudence and the public interest dictate that the LNG facility be designed to withstand and to continue to operate after occurrence of that earthquake which would produce an intensity of earthquake ground motion at the site that has a very high probability - on the order of 99.5 percent - of not being exceeded during the 50 year service life of the facility. To assure this high probability of plant and investment protection, the Commission is directing Western Terminal to design and construct the terminal to withstand ground motion at the site associated with the earthquake on the North and South Branches of the Santa Ynez fault and/or on the F-1 fault or that earthquake which has a probability of occurring one time in 10,000 years (10-4 per year) correspondingly, a peak bedrock acceleration of .7g at the site is appropriate for design purposes.

Rejected CCC Conditions C.

The following CCC recommended terms and conditions are rejected:

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1. <u>CCC Condition 15 - Public Utilities Commission Denial</u> of Conditions.

For the reasons stated above under "General Comments," we are of the opinion that imposition of this condition will adversely affect the public health and safety. We further find that imposition of the term or condition will cause delays in commencement of terminal operations that will result in significant curtailment of high-priority natural gas requirements and that deletion or modification of this condition will avoid or significantly reduce such curtailment.

2. <u>CCC Condition 23 - Seawater Exchange System and</u> Transmission Lines.

Exhibit A-40 shows that the use of gas-fired vaporizers is undesirable from economic and energy conservation standpoints. Air pollution (mainly NO_x) produced by the base-load vaporizers, as listed in the DEIR and Exhibit A-87 would exceed the threshold level established by the EPA, requiring a Prevention of Significant Deterioration permit from EPA. This would require trade-offs, which could be very difficult to achieve in Santa Barbara County. If this condition is adopted, it would cause lengthy delays, or it could block the project completely.

This air pollution argument against gas-fired vaporizers is also applicable to onsite generation by conventional methods. The parallel condition suggested by the County for exotic methods of generation is inappropriate because these methods are not sufficiently developed. The transmission line mitigating measures specified in our Condition 15 will significantly reduce the impacts that concern these agencies.

In addition, this condition is adequately addressed by our Condition 4, Marine Resources: Seawater Intake and Discharge System, as well as our Condition 15, Electric Transmission Lines.

We are of the opinion that imposition of CCC Condition 23 will cause delays in commencement of terminal operations that will A. 57626 et al. AL.

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result in significant curtailment of high-priority natural gas requirements and that deletion of the condition will avoid or significantly reduce such curtailment.

While we reject this condition at this time we also point out to the CCC and to our staff that the further hearings, provided for in our order, to deal with the question of air quality mitigation measures are broad enough to allow CCC and ARB to present their respective recommendations and evidence with respect to CCC Condition 23.

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3. CCC Condition 27 - Surfing Breaks

The CCC concept of constructing, if necessary, an artificial reef for surfing is vague and impractical. There is no indication of whether it is feasible, where it might be placed, the cost, or what the environmental consequences of this structure might be. An alternative, the providing of surfing access in an area not presently accessible by the public, is included within our Condition 17. Western Terminal, moreover, has stated that it will not restrict nearshore recreation. Further, the proposed location of the trestle is not in the actual area "renowned" for its surfing breaks. Consequently we believe surfing opportunity in the site vicinity will be at the same level after construction as it was before and that such situation is consistent with public health and safety.

We are of the opinion that CCC Condition 27 was not based on substantial evidence considering the record as a whole.

4. CCC Condition 14 - Geologic Hazards

The operation and funding of an independent terminal design and construction review panel in addition to the funded Safety and Construction Monitoring Program of this Commission, would be unwarranted and uneconomical. It would be an unnecessary duplication of expert effort, investigation, and review. The Commission's Safety and Construction Monitoring Program will employ a permanent staff of professionals as well as utilize consultants. Our monitoring program will assure that the construc-





tion drawings and calculations are thoroughly reviewed and that the construction is adequately inspected. Furthermore, at the present time there are ongoing specific site investigations by a variety of competent professional geologists. Various government agencies and other interested parties are evaluating the geotechnical hazards that might affect the terminal.

We are of the opinion that imposition of CCC Condition 14 will cause delays in commencement of terminal operations that will result in significant curtailment of high-priority natural gas requirements and that deletion of the condition will avoid or significantly reduce such curtailment.

D. Responses to Certain Santa Barbara County Recommendations

Set forth below are specific responses to the terms and conditions recommended for adoption by the Board of Supervisors of the County.

1. <u>Recommendation 1</u>

The Commission retains all responsibility for implementing and enforcing each and every condition adopted as part of the permit.

2. Recommendation 2

Our Condition 21 should cover the County's concern for unreasonable delay in commencement of project construction.

3. Recommendation 3

Staff Guidelines (1) and (3) as detailed in our policy statement (see General Comments, above) should satisfy the County's concern for availability of information.

4. Recommendations 4 through 22 - Safety

Section 5637 of the Act requires the Commission to adopt regulations governing the safety and construction of the terminal. The Commission already has adopted regulations, General Order No. 112, governing design, construction, testing, maintenance, and operation of utility gas transmission and distribution piping systems. Section 5637 requires the Commission to establish a monitoring system to ensure that terminal construction and operation is in compliance with all applicable regulations adopted and terms and conditions established. Our current investigation, OII 1, is addressing the safety aspects of the project and considering the particulars of a Commission Monitoring Program. All the specifics concerning the safety and construction monitoring aspects of the project are expected to be formulated and detailed

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at the conclusion of the OII 1 proceeding. To specify detailed safety control measures at this time would be ill-advised and premature.

5. Recommendations 23 through 32 - Flood Control

Staff Guidelines (2) and (4) provide the opportunity for the County Flood Control Engineer to review all engineering and construction plans and to determine whether such plans conform with the County Flood Control Department's standards.

6. <u>Recommendations 33 through 38 - Fire Control</u>

Our Condition 14 should adequately cover the County's concern in this area. Staff Guidelines (1), (2), (3), and (4) will afford the County Fire Department an opportunity to review Western Terminal's fire protection plan and to correct any variance with its standards. The Commission will monitor all activities regarding the fire protection plan to ensure compliance.

7. Recommendation 41

Our Condition 7 provides for a noise monitoring program. Staff Guidelines (1), (2), (3), and (4) will afford the County the opportunity to provide input and make known its concerns prior to plan approval. The staff is required to modify to the greatest extent reasonably possible such a plan in order to include the County's recommendations and to assure that the plan is in conformance with County standards.

8. <u>Recommendation 42</u>

Our Condition 22 requires the development of a potable water supply to be in accordance with the California Safe Drinking Water Act and the Department of Water Resources - Water-Well Standards. Staff Guidelines (2) and (4) allow for additional appropriate standards to be followed, as well as modification of any plans in order to include other reasonable requirements as requested by other interested government agencies.

9. Recommendation 43

Our Condition 23 fulfills the needs of this County recommendation with the exception of allowance for Santa Barbara County approvals.

10. Recommendations 44 and 45

Our Conditions 24 and 25 incorporate the basic concerns of the County's Recommendations 44 and 45. Specifics as to the sewage and waste water facilities and as to solid waste collection and disposal methods will be determined prior to plan approval and after consultation with appropriate state and local agencies.

11. Recommendation 46

Our Condition 26 accepts the County's Recommendation 46, except that the Commission is responsible for all approvals. Staff Guidelines (1) and (2) allow for local agency review and opportunity to revise the disaster plan so that the legitimate concerns of the agency may be addressed.

12. Recommendation 47

The Commission, utilizing its Monitoring Program, will determine all necessary inspection. This does not preclude the Commission's Monitoring Program from allowing the County Health Department officials from making necessary inspections and evaluations and to report their findings to the Commission.

13. Recommendation 48

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Ingrounding of LNG storage tanks is covered in our Condition 18.

14. Recommendation 49

Our Condition 16 covers site access.

15. Recommendation 50

This has been adopted as our Condition 27. The Monitoring Program will ensure compliance by Western Terminal.

16. Recommendation 51

Access road approval rests with the Commission. The County Transportation Department will be consulted by the staff monitoring team. The County will be furnished requested data.

17. Recommendations 52 and 53

Access road conditions are covered by our Condition 16.

18. Recommendation 54

Staging areas and the parking plan are covered by our Condition 16.

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19. Recommendation 55

Safety rules applying to the terminal will be developed by the Commission in OII 1. (Also, see the response to Recommendations 4 through 22.) Our Condition 20 requires terminal design to comply with Commission rules.

20. Recommendations 56 through 64

The intent of these recommendations is covered by our Condition 7. The Commission's Construction and Safety Monitoring Program involves review of plans for the terminal. (See, also the discussion of Recommendations 23 through 32.)

21. Recommendations 65 through 68

Standards for the access road construction will be determined by the Commission's monitoring team in consultation with the County Public Works Department. It is our intent that the road be built to County standards, to the extent feasible. The procedure for accomplishing this is established by Staff Guideline (2).

22. Recommendation 69

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See the discussion under Recommendations 23 through 32.

23. Recommendation 70

All final design plans shall be submitted to the Commission for review in accordance with the Consruction and Safety Monitoring Program.

24. Recommendations 71 and 72

The intent of these recommendations is covered by our Conditions 7 and 8.

25. Recommendations 73 through 77

Our Condition 34 establishes air pollution control requirements. The Commission's monitoring team will work closely with the County Air Pollution Control District in the review of construction and operation plans.

26. Recommendation 78

Electric power for the facility will be provided by a transmission line from the initial stages of operation of the terminal A. 57626 et al. Alt. RDG

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in order to prevent significant deterioration of air quality by emissions from gas turbine generators. The impact of the transmission line will be mitigated, if possible, by a combination of undergrounding and using of wood-pole line supports. Western Terminal has been directed in our Condition 15 to study these mitigation measures and submit a plan for Commission approval.

The use of cold power systems, solar, or wind power generation of electricity is not practical at this time. These are considered supplemental energy sources that may become available for use at the LNG terminal some time in the future after additional research and development are accomplished. The terminal will require a reliable supply of electricity, available 24 hours a day, seven days a week, using proven technology. This can be most reasonably accomplished by installation of an electric transmission line and standby gas turbine generators at the terminal site.

Recommendation 78 deals with air quality among other things and should be readdressed by the County in the further hearings we order herein with respect to air quality mitigation measures. We will expect ARB, among others, to comment further on this recommendation.

27. Recommendation 80

The intent of this recommendation is covered by our Condition 10, which deals with replacement of lost habitat, and our Condition 19, which deals with commercial kelp harvesting.

28. Recommendation 81

This recommendation is covered by our Conditions 7 and 8.

29. Recommendation 82

This recommendation is covered by our Condition 16.

30. Recommendations 83 through 85

These recommendations are covered by our Condition 28.

31. Recommendation 86

See the discussion under Recommendations 23 through 32.

32. Recommendation 87

Petroleum and other spills are dealt with in our Condition 6. Our staff will consult with County personnel to ensure that County requirements are satisfied to the extent they are not preempted by EPA and Coast Guard requirements.

33. Recommendation 88

Our Condition 9 deals with decommissioning the terminal.

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34. Recommendation 89

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Removal of debris on the beach is required by our Condition 2. Our staff will see that the construction plan provides for removal of man-made junk and debris.

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35. Recommendations 90 through 92

Pipeline requirements are covered in our Conditions 8 and 27. It is not in the best interests of the ratepayers to loop the pipeline before it is required.

36. Recommendation 93

Ingrounding of the tanks is treated in our Condition 18. This should significantly reduce the visual impact of the tanks. The necessity and desirability of dense landscaping will be determined during review of terminal plans. The staff will consult with the County according to Staff Guideline (2) and consider its position prior to approving plans.

37. Recommendation 94

This recommendation is covered by our Condition 30.

38. Recommendation 95

In our opinion this condition is not within our jurisdiction. Existing law governing liability is adequate and will be administered by the courts. Western Terminal will carry adequate liability insurance.

39. Recommendations 96 through 311

LNG ship safety matters are outside the jurisdiction of the Commission. The Coast Guard is the proper agency to establish these requirements. The Commission has transmitted a copy of these recommendations to the Coast Guard for its evaluation.

40. Recommendations 112 and 113

Our Conditions 3 and 4 cover the impact of marine facilities on the environment.

41. Recommendation 114

This recommendation has been adopted as our Condition 31.

42. <u>Recommendation 115</u>

This recommendation has been rejected as counterproductive.

43. Recommendations 116 through 123 - Environmental Monitoring

These recommendations are adequately covered by our Conditions 3, 4, 5, and 7 and the Commission's Monitoring Program.

44. Recommendations 124 through 134 - Cultural Resources

Our Condition 12 covers cultural resources. Additional specific requirements will be negotiated, as required, under Staff Guidelines (1), (2), and (3).

45. Recommendation 135 - Pipeline

This recommendation is encompassed under Staff Guidelines (2) and (4).

46. Recommendations 136 and 137 - Access Road

The County's concern about the design of the access road is covered by Staff Guidelines (2) and (4). Further, our Conditions 7 and 16 consider the access road mitigation measures, as well as requiring studies for alternate routes and a transportation plan.

47. Recommendation 139

Section 5583 of the Act precludes any local government from undertaking any development which would be in nonconformance with the population density criteria of the Act or development incompatible with the operation of the terminal. Section 5582 and 5583 cover the intent of County's Recommendation 139. Insufficient information is available concerning the cost of this recommendation. Property owners have recourse to the courts.

48. Recommendation 140

The Commission is responsible for all inspection and enforcement procedures. Any contracts for consultation or independent inspection will be determined by the Commission.

49. Recommendation 141

Any contracts between the Commission and the County must be mutually agreeable. If they determine that contracts are necessary, these can be concluded under the Commission's Monitoring Program.

50. Recommendation 142

The Commission, under the Act, will decide upon any conflict-

XV. MOTIONS

A. Outstanding Motions

At the submission of each of these proceedings, several motions were still awaiting our decision. Below is our discussion and rulings on these motions. All other motions still outstanding shall be deemed denied.

B. Bixby Motion - Objection to Jurisdiction

Counsel for Bixby filed written "Notice of Objection of Jurisdiction" on October 28, 1977. On November 2, 1977, Bixby filed a "Notice of Motion to Dismiss for Lack of Jurisdiction" in the consolidated matters here before the Commission. A Memorandum of Points and Authorities in support of this motion was filed on November 2, 1977.

Additional material filed by Bixby in support of its objections to the jurisdiction of this Commission in these consolidated proceedings may be summarized as follows:

- Letter dated February 3, 1978, advising that Federal Executive Order No. 10485 would not be relied on (withdrawing the argument presented in the Memorandum of Points and Authorities filed November 2, 1977, mimeo. pages 15-22).
- 2. Supplemental Memorandum in Support of the Motion to Dismiss and Request for Official Notice filed February 24, 1978.
- 3. Second Request for Official Notice filed March 1, 1978.
- 4. Summary of Cases Inaccurately Cited, presented March 2, 1978 (see Case No. 10342, RT Vol. 30, page 3138).
- 5. Rebuttal Memorandum of the Fred H. Bixby Ranch Company in Support of Motion to Dismiss filed March 24, 1978.
- 6. Letter dated May 22, 1978 objecting to the staff's proposed LNG safety regulations in OII 1, enclosi g a Memorandum of the FERC staff in FERC Docket Nos. CP75-140 and CP75-83-2.

Oral argument was held on the Bixby motion on March 3, 1978 before ALJ Mattson. Pursuant to the ALJ's ruling setting oral argument, parties desiring to present argument were required to file briefs prior to oral argument.

Staff counsel and counsel for the applicants in Application No. 57626 filed briefs in opposition to the Bixby motion on February 24, 1978. Bixby, applicants, and staff participated in oral argument March 3, 1978.

Pursuant to submission at oral argument, applicant and staff filed their closing briefs on March 17, 1978. Bixby filed a reply brief on March 24, 1978.

1. Bixby's Contentions

We have reviewed the documents filed by Bixby. Bixby's major contentions are:

- Federal law has preempted the siting of LNG terminals and the Act is to that extent invalid.
- 2. The Commission cannot exercise the power to determine a site for an LNG terminal because the power to decide the location of an LNG terminal is exclusively a federal decision.
- 3. The Commission cannot establish safety regulations in OII 1 since regulation of facilities used to process LNG moved in interstate commerce has been specifically preempted by the Federal Natural Gas Pipeline Safety Act of 1968 (49 USC 1671 et seq.).
- 4. The Act unconstitutionally burdens interstate and foreign commerce.
- 5. The duties assigned the Commission are outside the jurisdiction set by the California constitution.

2. Discussion

a. Federal Preemption

Bixby's primary basis for asserting the unconstitutionality of the ING Terminal Act is its contention that federal law has preempted both the siting and safety regulation of ING terminals. Bixby repeatedly asserts that federal jurisdiction is "exclusive".





However, "[s]tatements concerning the 'exclusive jurisdiction' of Congress beg the only controversial question: whether Congress intended to make its jurisdiction exclusive." <u>California v. Zook</u>, (1949) 336 U.S. 725, 731.

The existence of a federal law relating to the subject matter of a state statute "poses, rather than disposes of" the preemption issue. <u>Florida Lime and Avocado Growers, Inc. v. Paul</u>, (1963) 373 U.S. 132, 141. Once this issue is posed, two further questions arise, at least one of which must be answered affirmatively in order for federal legislation to be preemptive. First, the federal and state laws must be in actual conflict; failing this, the federal law must expressly or by implication manifest Congressional intent to wholly occupy the field. We believe neither of these questions can be answered in the affirmative, and that consequently, California's LNG legislation is not preempted by federal law.

Regarding the question of actual conflict, the test under this inquiry is whether there is "such <u>actual</u> conflict between the two schemes of regulation that both cannot stand in the same area." <u>Florida Lime, supra, 373 U.S. at 141 (emphasis added). It is actual</u>, not potential or hypothetical conflict, which will invalidate a state statute. See e.g., <u>Goldstein v. California</u>, (1973) 412 U.S. 546. Even where an actual conflict can be shown to exist, a State statute will be preempted only to the extent of the conflict, since "the proper approach is to reconcile the 'operation of both statutory schemes with one another rather than holding [the State scheme] completely ousted'." <u>DeCanas v. Bica</u>, (1976) 424 U.S. 351, 357, fn. 5.^{±/}

However, petitioner has not seriously suggested that an actual conflict exists between the California and federal laws. Those laws do not expressly make compliance with both impossible, and neither California nor the federal government has definitively and conclusively applied those laws to the present applications.

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The severability clause found in Section 5593 of the LNG Terminal Act constitutes State statutory recognition of this principle.

The DOE Administrator's Final Opinion and Order, issued December 30, 1977, conditionally approving the Oxnard site, is expressly <u>not</u> exclusive approval of that site alone. Largely because of insufficient evidence on the record, Point Conception could not be considered in this Opinion (Opinion at 41). However, the Opinion clearly states:

"DOE's decision today approving Oxnard does not preclude anyone from pursuing an LNG project (including this one) sited at Point Conception. DOE is not disapproving any alternative site." (Opinion p. 42)

More importantly, the Opinion clearly states DOE's intention to give full force and effect to California's LNG Terminal Act. The Opinion states at page 38:

"...the DOE has determined it has the authority to take into account the procedures established in the California legislation for state consideration of an appropriate site, and we choose to exercise that authority...."

Moreover:

"In the circumstances of this case, and at least at this stage of the proceeding, California should have an opportunity to decide whether or not the operation of an LNG facility at Oxnard is acceptable to it as a means of facilitating the import and distribution of that gas to its citizens. Thus, pursuant to the Terminal Act, as well as any other applicable California legislation (present or future), California will have the opportunity to weigh and evaluate the safety and environmental characteristics of [sic] LNG site, taking into account the projected need for gas and supply thereof." (Opinion, p. 40)

The Opinion makes clear that its conditional approval of Oxnard does not necessarily exclude Point Conception or any proposed site, in part because of the policy expressed in the President's National Energy Plan which favors siting an LNG terminal away from densely populated areas, and in part because of the population density criteria and consolidated site selection process established by the LNG Terminal Act:



PacIndonesia LNG Company, DOE/ERA Opinion No. 1. (Mimeo, Docket No. 77-001-LNG) (December 30, 1977), hereinafter DOE Final Opinion and Order, or Opinion.

"The California site screening process now under way may, by July 31, 1978, the deadline fixed by California law, produce a site that is also acceptable, or even preferable to Oxnard. The DOE will cooperate with the State to settle on a mutually acceptable site by that date. Unless that effort fails, the DOE finds no cause to exercise its authority under Section 3 of the Natural Gas Act in disregard of the legitimate interests of the State of California to participate in the site selection process." (Opinion, p. 8.)

DOE quite clearly recognizes that it does not automatically preempt California:

"Since it is clear...that DOE is afforded a degree of latitude in asserting its jurisdiction over 'Section 7 type' issues such as siting in an import case, it follows that DOE has discretion in such cases to determine whether and the extent to which a state has a legitimate interest in the siting issues and should be deferred to in whole or in part to resolve those issues." (Footnote omitted; Opinion, p. 39.)

Actual conflict is therefore simply not a basis for asserting federal preemption.

The test for the second inquiry, regarding Congressional intent to occupy the field, was well stated by the Supreme Court in <u>Florida</u> <u>Lime, supra</u>. In the absence of an irreconcilable conflict, the settled rule, in deference to a State's legislative exercise of its traditional police powers, is:

"...not to decree such a federal displacement 'unless that was the clear and manifest purpose of Congress.' <u>Rice v. Santa Fe Elevator Corp.</u>, 331 U.S. 218, 230, 67 S.Ct. 1146, 1152, 91 L.Ed. 1447. In other words, we are not to conclude that Congress legislated the ouster of this California statute...in the absence of an unambiguous congressional mandate to that effect." 373 U.S. at 146-147 (emphasis added).

An examination of the relevant federal statutes and the case law interpreting them demonstrates no "clear and manifest purpose of Congress" to preempt State regulation, even concerning matters within the State's traditional police powers.

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Bixby repeatedly states that federal regulation of all sales or transportation of gas in interstate or foreign commerce is exclusive. We agree that California cannot approve these transactions; Bixby has pointed to nothing in the California statute that would alter this conclusion. Rather, Bixby assumes that the exclusive federal jurisdiction over transportation or sales necessarily gives the federal government exclusive jurisdiction over the siting of an LNG terminal, without presenting any rationale supporting the elimination of this distinction. We agree with the staff that Bixby's argument presupposes that references in the legislative history of the statute, the language of the statute itself, and the cases interpreting the Natural Gas Act, which all deal with aspects of sales or transfers of natural gas, must be read to include the very different and distinct concerns related to siting and constructing a terminal. We also believe that Bixby's "exclusive federal jurisdiction" argument is unfounded; we find no evidence that either Congress or the courts have intended sales, transfers, or transportation in interstate commerce to include siting concerns.

The United States Supreme Court has clearly held that the Gas Act is not preemptive of the entire field of regulation of natural gas. In <u>Panhandle Eastern Pipe Line Co. v. Public</u> <u>Service Commission of Indiana</u>, (1947) 332 U.S. 507, the Court upheld a State regulatory commission's assertion of authority over certain sales of gas being transported through an interstate pipeline. After a lengthy review of the legislative history, the Court concluded:

"The Act, though extending federal regulation, had no purpose or effect to cut down state power. On the contrary, perhaps its primary purpose was to aid in making state regulation effective, by adding the weight of federal regulation to supplement and reinforce it in the gap created by the prior decisions. The Act was drawn with meticulous regard for the continued exercise of state power, not to handicap or dilute it in any way." 332 U.S. at 517-518 (emphasis added; citations omitted).

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To the pipeline company's assertion of total federal preemption, the Court replied:

"It would be an exceedingly incongruous result if a statute so motivated, designed and shaped to bring about more effective regulation, and particularly more effective state regulation, were construed in the teeth of those objects, and the import of its wording as well, to cut down regulatory power and to do so in a manner making the states less capable of regulation than before the statute's adoption. Yet this, in effect, is what appellant asks us to do. For the essence of its position, apart from standing directly on the commerce clause, is that Congress by enacting the Natural Gas Act has 'occupied the field,' i.e. the entire field open to federal regulation... The exact opposite is the fact. Congress, it is true, occupied a field. But it was meticulous to take in only territory which this Court had held the states could not reach." (332 U.S. at 519)

The Supreme Court's interpretation of Congressional intent was even more clear in a second <u>Panhandle Eastern</u> decision. There the Court stated:

"Without entering upon another review of its legislative history, (footnote omitted) suffice it to say that the Natural Gas Act did not envisage federal regulation of the entire natural gas field to the limit of constitutional power. Rather it contemplated the exercise of federal power as specified in the Act, particularly in that interstate segment which the states were powerless to regulate because of the Commerce Clause of the Federal Constitution (footnote omitted). The jurisdiction of the Federal Power Commission was to complement that of the state regulatory bodies (footnotes omitted.)" (Federal Power Commission v. Panhandle Eastern Pipe Line <u>Company</u>, 337 U.S. 498, 502-503.)

The alleged "manifest purpose of Congress" to totally preempt all aspects of natural gas regulation also does not appear in the relevant sections of the Natural Gas Act or the cases interpreting them.

Bixby first argues that Section 3 of the Natural Gas Act preempts State regulation. Section 3 gives the FPC (now the DOE) the authority to grant or deny an application to import or export natural gas. Nothing in the language of Section 3 refers to site selection or construction of facilities. At the same time, the LNG Terminal Act is to regulate site selection and construction of

a terminal. It does not purport to regulate imports or exports. Bixby nowhere has presented an analysis of why "importation" is equivalent to "siting and construction." Bixby's case for preemption under Section 3 appears to rest entirely upon the leading case of <u>Distrigas Corporation v. Federal Power Commission</u>, (D.C. Cir. 1974) 495 F.2d 1057. However, we are persuaded that <u>Distrigas</u> and its progeny, including the aforereferenced DOE Opinion, affirmatively demonstrate that Section 3 does not preempt State siting legislation.

The <u>Distrigas</u> case arose when the FPC attempted to assert jurisdiction over Distrigas' ING terminal facilities <u>after</u> having initially determined that the facilities were exempt from federal regulation. Briefly summarized the <u>Distrigas</u> decision held that the authority of the FPC to impose conditions over importation of natural gas is broad enough that the FPC could, <u>in its discretion</u>, attach to an import permit terms and conditions relating to facilities. The Court found that the FPC did not automatically preempt state regulation, but did have discretionary regulatory power over such facilities under Section 3, which could be exercised by imposing facility-related conditions on permit authorization. 495 F.2d at 1064. The Court stressed the "elastic" nature of Section 3 jurisdiction:

"Under Section 3, the Commission's authority over imports of natural gas is at once plenary and elastic. It may <u>authorize imports</u>, as it did in Opinion 613, <u>subject to</u> <u>no conditions whatever as to facilities and subsequent use;</u> it may deny import authorization altogether. So long as its conclusion is reasonable...the Commission may also and quite properly adopt a position somewhere between these two poles, granting import authority but subjecting it to 'terms and conditions' that it finds 'necessary or appropriate' to the public interest." 495 F.2d at 1064. (Emphasis added.)

Thus, the "plenary" Section 3 jurisdiction to impose regulation is discretionary, and does not in itself compel a finding of preemption.~

Of equal significance is the standard put forth by the <u>Distrigas</u> Court by which the PPC should decide whether to exercise its discretion to impose conditions on facilities: the FPC should consider

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whether "such regulation cannot or will not, as a practical matter, be imposed by the states...." 495 F.2d at 1064.

In the present case, DOE's Final Opinion has expressed that agency's determination not to preempt California's siting jurisdiction:

"(Q) The authorizations granted herein will not take effect as to any facility, or operation of any part of any facility, until all necessary Federal, state and local authorization as to that part of the facility, or operation thereof, have been secured, <u>including the</u> <u>appropriate authorization from the California Public</u> <u>Utility Commission under the State's Liquified Natural</u> <u>Gas Terminal Act of 1977...." (Emphasis added.)</u> DOE Final Opinion and Order, pp. 62-63.

This express condition is significant evidence that no federal preemption is present, and substantiates our view, expressed earlier, that DOE's statements in the body of the opinion relating to siting and construction of a terminal indicate DOE's firm intention to defer to California on these matters. (See this Decision, pp DOE Final Opinion and Order, pp. 38-42.) Section 3 of the Natural Gas Act thus provides no basis for finding federal preemption.

Bixby also argues that Section 7 of the Natural Gas Act preempts California's LNG terminal siting legislation. This argument is apparently based on language in Section 7(c) stating that no "interstate" gas facilities shall be constructed without a certificate of public convenience and necessity from the federal government. From this, Bixby asserts that the federal government has exclusive siting jurisdiction.

However, the existence <u>vel non</u> of a federal permit requirement is not indicative, in itself, of the extent of any federal preemption. In a case closely analogous to the present one, the California Supreme Court held that the State's power to impose reasonable regulatory conditions includes the power to determine the siting of a federally certificated facility. <u>Northern California Ass'n. to</u> = <u>Preserve Bodega Head and Harbor, Inc. v. Public Utilities Commission</u> (1964) 61 C.2d 126, 133. In that case, the Court affirmed the

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authority of this Commission to pass upon the site of a federally certificated nuclear power plant. The Court rejected a claim that the Atomic Energy Act preempted such state regulation.

The language of Section 7 supports this analysis. Similar to the implied authority of Section 3, Section 7 explicitly recognizes that the federal agency has the <u>discretionary</u> authority to impose terms and conditions on interstate facilities. This authority is not mandatory, and in the presence of reasonable state regulation, the federal agency can choose to not exercise it.

Moreover, as with its argument under Section 3, Bixby completely fails to address the issue of whether matters related to siting and construction are logically and legally included within "sale for resale in interstate commerce." This type of issue was crucial in all of the cases Bixby cites for preemption. None of those cases has held that the holder of a Section 7 certificate was exempt from reasonable state regulation."

When the nature of the LNG terminal and the purpose of the LNG Terminal Act are closely examined, it becomes clear that the State regulation is reasonable, valid, and comports with the Congressional scheme. The LNG terminal is a huge facility costing hundreds of millions of dollars, and will have an impact on the environment for many years to come. Every federal environmental law enacted in recent years includes either an intent to have state input into the federal decision making process, or a direct requirement for state permits.

- Bixby has cited cases (e.g., New York State Natural Gas Corp. v. Town of Elma (W.D.N.Y. (1960) 182 F.Supp. 1) in which a local authority unsuccessfully attempted to prohibit federally authorized construction. Those cases are inapplicable because they involved an actual (rather than hypothetical) and direct conflict between local and federal jurisdictions. Bixby cites no cases which say that a State may not subject federally authorized construction to reasonable and harmonious regulation.
- See the National Environmental Policy Act (NEPA), 42 U.S.C. \$4332; Coastal Zone Management Act (CZMA), 16 U.S.C. \$1451; Federal Water Pollution Control Act, 33 U.S.C. \$1151; Clean Air Act, 42 U.S.C. \$1857; Estuarine Act of 1968, 16 U.S.C. \$1221; Deepwater Ports Act of 1974, 33 U.S.C. \$1501.

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Even if Section 7 were to be found preemptive of all state regulation based on its police powers, Bixby's argument must fail because it erroneously relies on purely hypothetical factual outcomes.

First, Bixby assumes that because the ING Terminal Act contemplates receipt of gas from Indonesia and south Alaska, the proposed terminal will in fact receive Alaskan gas. However, the applicants' proposal before the FERC in the <u>Pac Alaska</u> proceeding has not even reached the Initial Decision stage. If the application is not approved, no "interstate" gas would be involved, and the allegedly preemptive provisions of Section 7 would be wholly inapplicable.

Secondly, Bixby assumes that if a Section 7 order is issued, it will <u>not</u> contain an express requirement for a California permit. Particularly in view of FPC precedent and the DOE's final <u>PacIndonesia</u> Opinion imposing just such a condition, this assumption is unwarranted. Moreover, an order containing such a condition clearly is not preemptive.

Since Bixby's constitutional argument is founded upon hypothetical fact situations, it cannot be assessed unless and until these hypotheses are borne out. If any of them are not, Bixby's argument fails. Certainly at the present time, this constitutional attack cannot be sustained.

We are persuaded that Bixby's assertion of total preemption over siting and construction of an LNG terminal has never been recognized, either by Congress or the courts. Without some showing that these matters fall within what Congress intended as transportation or sale for resale in interstate and foreign commerce, Bixby's argument based on the Natural Gas Act fails.

b. Federal Preemption-Pipeline Safety Act

Bixby further argues that the federal Pipeline Safety Act, which imposes mandatory minimum safety standards on the interstate transportation of natural gas by pipeline, necessarily preempts state regulation of LNG terminal siting and construction. We disagree.

First, it is unclear whether the Pipeline Safety Act covers an LNG regasification terminal in California at all. This act only regulates interstate transportation, or "pipeline", facilities. "Pipeline facilities" are defined as including:

"...without limitation, new and existing pipe rightsof-way and any equipment facility, or building used in the transportation of gas or the treatment of gas during the course of transportation <u>but 'rights-of-way' as used</u> in this chapter does not authorize the secretary to prescribe the location or routing of any pipeline facility. (Emphasis added; 49 U.S.C. 1671(4).)

It is questionable whether the LNG terminal at issue is such an interstate facility. Further, whether interstate or not, the Act may not cover an LNG terminal. The pipeline Safety Act was written prior to the development of LNG facilities and was concerned with interstate pipelines. An LNG terminal is not a pipeline, in any sense of the word. It involves storage, transportation, and processing of gas. Such a facility necessarily requires different regulations than does a pipeline. A bald conclusion that the Pipeline Safety Act governs the siting of this type of facility is thus unwarranted.*/

Moreover, even if the Pipeline Safety Act covers the California LNG terminal, it is preemptive, if at all, only of safety regulations applying to the facility. But under §5613(a), "safety" (risk to life and property) is only one factor to consider

Petitioner simply assumes that "interstate transmission facilities" are involved. This would hardly be the case even if the proposed terminal processed gas which had travelled in interstate commerce. The Court in Tenneco Inc. v. Public Service Commission of West Virginia, (4th Cir. 1973) 489 F.2d 334, 336, pointed out that the Pipeline Safety Act has preempted safety regulation of "interstate transmission of gas by pipeline." (Emphasis added.) In the instant case, no interstate transmission "by pipeline" is even proposed.

in evaluating and ranking potential sites. All of the other concerns relating to site selection, which are primarily environmental factors, are not preempted. Bixby fails to recognize this distinction. Its argument merely assumes that because the Pipeline Safety Act regulates actual operation and construction of an interstate gas transportation facility, the Act also regulates all aspects of <u>siting</u>.

Concerning the proposed pipeline which is to be built from the proposed LNG terminal, the question of safety preemption turns on whether the pipeline is interstate or intrastate. This is because Congress, while preempting safety regulation for interstate pipeline facilities, specified that "[a]ny State agency may adopt additional or more stringent standards for intrastate pipeline transportation if such standards are compatible with the Federal minimum standards." (49 U.S.C. §1672(b)).

At page 9 of their application to the PUC under the LNG Terminal Act, the applicants state that the proposed pipeline to be built under that Act would stretch from the proposed terminal at Point Conception, California to Gosford, California. It would therefore appear that the proposed pipeline is an intrastate pipeline expressly subject to state regulation. Indeed, no federal certification for this pipeline has been applied for; the applicants, and everyone else, have proceeded on the basis that the only pipeline involved would be solely intrastate.

Except for Bixby's mere assertion to the contrary, all of the evidence before this Commission, based upon facts as they presently exist, indicates that the proposed pipeline is "intrastate." We must therefore conclude that state regulation of this pipeline is not preempted by the Pipeline Safety Act.

c. Burden on Interstate Commerce

At pages 2223 of its Memorandum, Bixby contends that "[a]ny limitation imposed by the State of California upon siting of an LNG facility and the condition of population density of the locale is invalid as an undue burden on interstate and foreign commerce."

It is difficult to understand the basis for Bixby's assertion, because Bixby fails completely to identify the "burden" the ING Terminal Act would impose on interstate commerce. Apparently, California's assertion of jurisdiction is enough. Bixby also mentions "the condition of population density criteria of the locale," but again fails to explain why this condition, which is a valid expression of California's authority to regulate under its police power, poses enough of a "burden" to invalidate California's statute.

Even if the LNG Terminal Act were found to impose some as yet unidentified burden upon interstate commerce, and it is a rare state regulation which will not have <u>some</u> impact on such commerce, the inquiry is not over. Only an "undue" burden is impermissible. The U.S. Supreme Court has definitively stated the test to be applied:

"Although the criteria for determining the validity of state statutes affecting interstate commerce have been variously stated, the general rule that emerges can be phrased as follows: Where the statute regulates even-handedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits. <u>Huron Cement Co.</u> <u>v. Detroit</u>, 362 U.S. 440, 443, 80 S.Ct. 813, 4 L.Ed.2d 852. If a legitimate local purpose is found, then the question becomes one of degree. And the extent of the the burden that will be tolerated will of course depend on the nature of the local interest involved, and on whether it could be promoted as well with a lesser impact on interstate activities." Pike v. Bruce Church, Inc., (1970) 397 U.S. 137, 142. (See also Great Atlantic & Pacific Tea Company, Inc. v. Cottrell, (1976) 424 U.S. 366, 371-372.)

An important aspect of this analysis is the fact that the ING Terminal Act imposes site selection criteria based on environmental and safety grounds. As stated previously, these are exactly the types of considerations contemplated and even required by NEPA and the Coastal Zone Management Act. Furthermore, the permitting authority of the ING Terminal Act is a valid exercise by California of its police power.

Several of the cases cited by Bixby utilized the balancing test discussed above in assessing whether or not zoning ordinances-another exercise of police power--created undue burdens on interstate commerce. For purposes of this analysis, we find the courts' rationales, and not the outcome of the cases, to be most important. Por example, in New York Natural Gas Corp. v. Town of Elma, W.D.N.Y. 1960) 182 F.Supp. 1, 5, the court found that absent an undue burden on interstate commerce, there is room for local authorities to enact zoning ordinances under the state's police power. Bixby also relies heavily on Transcontinental Gas Pipe Line Corp. v. Hackensack Meadowlands Development Commission (3d Cir. 1972) 464 F.2d 1358, as an example of zoning which impermissibly interferred with interstate commerce. However, that case involved an extreme fact situation where facilities were already built and where local authorities were attempting to prohibit any and all new construction at or near the site. While the court struck such a zoning ordinance down, it reaffirmed states' (and local governments') authority to impose reasonable restrictions on interstate commerce through the use of zoning ordinances and the police power.

Applying the rules of law set forth in the above cases, we must weigh the burdens imposed by California's siting legislation against the state's interest, including the environmental and other risks inherent in such a project as the proposed LNG terminal. Here, the burdens are small. The site selection alternative study and state input are already requirements under both NEPA and the Coastal Zone Management Act. Since no facility has been built, and no final inexorable federal decision has yet been reached on acceptable federal locations for a facility, no undue interference with interstate commerce can possibly exist. On the other hand, California's interest is clear and direct. The terminal, proposed to be located on the coast, is a very large facility costing approximately 500 million dollars. Its cogeneration potential may attract industry. Its projected life is at least 20 to 25 years, during which it will receive at least two supertankers each week. Moreover, it will significantly alter its surrounding environment, including the temperature of the ocean around it. Safety problems,

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while great, are as yet poorly understood. It <u>is</u> known, however, that an accident, while not probable, could kill thousands of people. Furthermore, the presence of the facility presents California with a 20-25 year gas supply which will have a major impact upon the state in many different ways. Given all of these factors, California can, and has, validly exercised its police power without creating an undue burden on interstate commerce. In fact, the LNG Terminal Act may even facilitate interstate commerce because of its integrated, expedited siting procedure.

d. State Constitutional Authority

Bixby further contends that the duties assigned to the Commission by the LNG Terminal Act are outside the jurisdiction set by the California Constitution. We must disagree with this contention.

While Bixby recognizes this Commission's authority granted by Article XII, Sections 4 and 6, Bixby has failed to mention, much less discuss, Article XII, Section 5, which states in relevant part:

"The Legislature has <u>plenary power</u>, unlimited by the other provisions of this constitution but consistent with this article, to confer additional authority and jurisdiction upon the Commission...." (Emphasis added.)

The California Supreme Court has consistently interpreted this power to be of very broad scope. As long as the legislatively granted authority is "cognate and germane" to matters surrounding the regulation of public utilities, the Court will not invalidate the legislation. <u>Pacific Telephone and Telegraph v. Eshleman</u>, (1913) 166 C. 640. The Court in that case expressly rejected a claim that the Commission's power was limited to supervising and regulating public utilities, thereby declaring that "cognate and germane" was a far-reaching concept. This holding has never been overturned.

The Legislature's broad power to expand this Commission's authority over nonpublic utility businesses (see, for example, the Highway Carriers Act, Pub. Util. Code §§3501 <u>et seq</u>.) and in a limited way over publicly-owned utilities (the Los Angeles Metropolitan Transit Authority and the Bay Area Rapid Transit District)
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has consistently been upheld by the Court. See Los Angeles Metropolitan Transit Authority v. PUC, (1963) 59 C.2d 863; and discussion in <u>Richfield Oil Corporation v. PUC</u>, (1960) 54 C.2d 419, 434.

The only question presented here is whether the LNG Terminal Act is "cognate and germane" to matters relating to the regulation of public utilities. We find this question must be answered in the affirmative. Even without the LNG Terminal Act, this Commission would have jurisdiction over the rates charged by California gas corporations and the adequacy of their service. See California Constitution, Article XII, Section 1-9, particularly Section 6. Moreover, Cal.Pub.Util. Code Section 1001 requires that:

"No railroad corporation whose railroad is operated primarily by electric energy, street railroad corporation, gas corporation, electrical corporation, telegraph corporation, telephone corporation, water corporation or sewer corporation shall begin the construction of a street railroad, or of a line, plant, or system, or of any extension thereof, without having first obtained from the Commission a certificate that the present or future public convenience and necessity require or will require such construction...." #/

The additional authority <u>conferred directly by the Legislature</u> over the procedure for permitting a site for the LNG terminal facility is quite clearly related to and an extension of this Commission's already existing authority over intrastate gas rates, adequacy of service, and siting and construction of any gas plant. Moreover, in recognition of the possibility of serious future shortages of natural gas, the Legislature's primary purpose for enacting the LNG Terminal Act was to expedite the siting process, in part by giving siting authority to the state agency most directly responsible for all other state regulatory aspects of the LNG project. Pub.Util. Code §5551. Any argument that the LNG Terminal Act is not "cognate and germane" to matters concerning regulation of public utilities simply cannot stand.

Pub. Util. Code Sections 221 and 222 define "gas plant" and "gas corporation".

C. Bixby Motion to Reopen the Proceeding

Bixby; citing Rule 84 of the Commission's Rules of Practice and Procedure, filed a motion on May 30, 1978 to have the portion of these proceedings dealing with the anticipated berth availability and the design of the marine facilities at the proposed Point Conception LNG terminal reopened. Bixby requested that additional evidence be taken respecting the validity of estimates of adverse wind and wave conditions which have been put into the record by Western Terminal in support of the reliability and design of its proposed project.

Bixby states that the LNG terminal which Western Terminal desires to construct on the California coast is designed to provide a dependable supply of natural gas for high priority uses, including residential and commercial space heating. It is therefore important that the terminal be able to continue operating and to provide a reliable supply of natural gas at all times—and especially during periods of peak demand. Bixby reiterates its contention that the project design must assure the terminal's ability to receive LNG from carrier ships on an almost constant basis during even the most severe wind and wave conditions which can be expected to occur over the 20-year life of the project.

This motion is a repetition of a similar motion previously made by Bixby and denied by ALJ Doran on May 4, 1978. The Bixby motion which was denied on May 4, 1978 sought to require Western Terminal to produce additional witnesses and all documents falling within several general categories, all of which related to the studies of a Western Terminal consultant, OSI, concerning wind and wave conditions at Point Conception. Although the instant motion does not expressly request the same relief, it is apparent that it is, in fact, a repetition of the previous motion.

Rule 84 requires that a motion to reopen a proceeding "shall specify the facts claimed to constitute grounds in justification thereof, including material changes of fact or of law alleged to A. 57626 et al. IM *

have occurred since the conclusion of the hearing." (Emphasis added.) The primary purpose of Rule 84 is to permit the reopening of a proceeding when new developments have occurred after submission. Bixby's motion does not cite any such developments. This alone constitutes grounds for denial of the motion.

Rule 84 also requires a party moving to reopen a submitted proceeding to provide, in its motion, "a brief statement of the proposed additional evidence ..." it contends should be added to the record. The motion contains only a very general statement that OII 1 should be reopened "so that additional evidence can be taken respecting the validity of estimates of adverse wind and wave conditions which have been put into the record by Applicants in support of the reliability and design of their proposed project." A further flaw in Bixby's motion is its failure to provide specific information concerning the nature of the additional evidence and its relevance.

Further, the present filing states that Bixby premised its May 4 motion and this motion on the belief that the OSI studies were the foundation of Western Terminal's analysis of project reliability. However, Western Terminal did not directly rely on the OSI studies for its analysis of project reliability.

Western Terminal filed a response on June 28, 1978 opposing the motion of Bixby to reopen OII 1 to take further evidence on wind and wave conditions at Point Conception. The response points out that Delft Hydraulics Laboratory's study of optimum berth orientation, which utilized the questioned OSI data, reached conclusions concerning "downtime" at the berth due to wind and wave conditions and the percentage of time that the berth is available to receive vessels on an annual basis. It was <u>not</u> a statement of project reliability or an analysis of the entire LNG transportation = system, a concept which considers many factors other than wind and wave conditions.

Accordingly, Bixby's motion to reopen the proceeding for receipt of additional evidence respecting wind and wave conditions at Point Conception is deficient in both law and fact. The motion

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fails to allege the occurrence of any "material changes in fact or law" since the submission of this issue. Further, Bixby misapprehends the relevance and significance of the OSI testimony, data which was utilized to determine optimum berth orientation and not as direct support for Western Terminal's analysis of project reliability. For the above-mentioned reasons, Bixby's motion to reopen the proceedings is denied.

D. Motion of the Indian Center of Santa Barbara - Compliance To CEQA of Request for Trenching at Point Conception.

On July 3, 1978, intervenor Indian Center of Santa Barbara, Inc. ("Indian Center"), filed a motion in the OII 1 proceeding pursuant to Rule 17.1(e)(1) of the Commission's Rules of Practice and Procedure. The motion requested the Commission to determine whether certain trenching and excavation work on the Point Conception site involved a "project" under the California Environmental Quality Act ("CEQA") and sought a stay of further excavation work pending a hearing on the motion. The Indian Center's supporting Points and Authorities filed July 7 also requested that the Commission prepare an EIR on the trenching and excavation activity before such work continued at the site, although the Center did not specifically request that relief in its moving papers.

On July 5, 1978, the California Native American Heritage Commission ("NAHC"), represented by the Attorney General, filed a brief purportedly as an "Interested Party" joining in the Indian Center's motion.— This brief described the requested relief in part as a Motion for Rehearing on the Commission's order requiring further trenching. However, as the request for relief is styled, the basic contention is that trenching and excavation to ascertain the existence of possible earthquake faults at the Point Conception site will irreparably damage property which has religious significance to Native Americans and has archaeological and historical importance both to Native Americans and to all Californians.

On July 27, 1978, the Commission received a copy of the findings made by the NAHC relating to the proposed LNG terminal at Little Cojo Bay near Point Conception. Their findings relating to the archaeological and cultural resources and the religious importance of this area to Native Americans are similar to those impacts identified in the Final EIR. Pursuant to the NAHC's comments on the Draft EIR, the Commission has prepared a study of the ethnohistory of this area for the Final EIR.

The controversy concerning the trenching began shortly after May 2, 1978, when, in response to evidence of the existence of a possible fault at the site submitted by intervenor Hollister Ranch Owners' Association, the Commission requested Western Terminal to perform certain trenching and excavation work by June 2, 1978 to determine the nature, extent, and capability of the apparent fault. Western Terminal already had done some trenching at the site when concerned Native Americans began to protest the excavation activities.

As a result of subsequent negotiations, Western Terminal and the Indian Center, as well as representatives of various Native American groups, signed an agreement dated May 14, 1978, permitting trenching work to continue with the implementation of certain mitigation measures, including monitoring by an archaeologist and other interested persons. Western Terminal completed excavation of two trenches and, on June 9, 1978, submitted to the Commission a report by their geotechnical consultants (Dames and Moore) discussing the results of the on-site investigation. No further trenching activity has been performed at the site to date.

On June 12, additional hearings in the OII 1 proceeding began and continued through June 22 to consider the results of the trenching and the possible need for additional excavation. Anticipating a Commission request for additional trenching, on June 12, Western Terminal obtained a grading permit from the Santa Barbara County Department of Public Works authorizing further trenching at the site. On June 16, Administrative Law Judge Doran granted permission to undertake renewed trenching, which the Commission requested by letter of the same date to Western Terminal (Exhibit "A" to Indian Center's Motion).

The Indian Center meanwhile had appealed the issuance of the grading permit to the Santa Barbara County Board of Supervisors which denied the appeal on June 19. On June 20, the Center therefore petitioned the Santa Barbara County Superior Court for a writ of mandate compelling the County to seek environmental review by the County Department of Environmental Resources prior to any



further trenching. At the same time, the Indian Center moved the Court for a temporary stay of any further on-site geotechnical investigation pending a hearing as to whether the grading permit was granted unlawfully absent approval of the Department of Environmental Resources. The Court granted a temporary stay, but after a hearing on June 23, dissolved the stay order and denied the petition for a writ of mandate, on grounds that the sole permitting authority and forum for environmental review was this Commission.

On June 27, 1978 the Commission wrote to Western Terminal advising that no further excavation could commence until the Commission staff had met with Native American representatives to discuss adoption of measures to mitigate the impact of the trenching on cultural resources (Exhibit "B" to Indian Center's Motion). The meeting took place on June 28, 1978 but failed to resolve the problems concerning the additional trenching.

On June 29, 1978 the Commission received a mailgram from NAHC requesting a stay of further trenching pending the outcome of a NAHC meeting scheduled for July 8. On June 30, the Commission advised Western Terminal by letter that no new agreement with the Native Americans had been reached, but urged that additional trenching following certain mitigation measures specified in the letter, or those set forth in the May 14, 1978 agreement with the Indian Center, be undertaken. Thereafter, the Indian Center, joined by NAHC, filed the instant Motion.

On July 6, 1978, Western Terminal wrote to the Commission stating that in view of opposition by Native American representatives and unavailability of archaeologists to implement the mitigation measures, the company would defer further trenching activity. The Commission responded by letter of July 11 prohibiting any excavation at the site until further order of the Commission.

As appears from the foregoing summary of recent events, it does not appear necessary to address the merits of the instant Motion at this juncture. The only trenching that has taken place to date is the excavation of Trenches Nos. 1 and 2 referred to in and approved or ratified by the May 14, 1978 agreement between

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the Indian Center and Western Terminal. The Commission's letter of July 11, 1978 prohibited additional trenching until further order of the Commission and, as a practical matter, implemented at least a portion of the relief sought by this Motion. Moreover, contemporaneously with the authorization to perform additional trenching set forth in today's Order, we have issued and certified the Final EIR. For these reasons, we believe that the matters raised by the Motions are effectively moot.

The Indian Center contends that the trenching activities constitute a "project" within the meaning of CEQA and for which an EIR must be prepared. NAHC extends this argument to encompass within the definition of "project" the Administrative Law Judge's Order of June 16 directing Western Terminal to excavate additional trenches beyond the two completed pursuant to the May 14, 1978 agreement with the Indian Center. We need not reach these issues, however, since the Final EIR certified today amply considers the environmental impact of excavation and related activities at the terminal site within the larger context of construction of the LNG facility.

The Final EIR discusses earth-moving activities, including trenching to perform the subject geotechnical investigations, at pages 1-9 and 3-1 to 3-3. In addition, response to Comment El79 addresses this subject. The EIR also covers archaeological, historical, and religious resources at the site and the impact of the project, including various types of construction activity, such as soil testing by backhoes, leveling of the earth surface, and trenching, on these resources. (See Technical Report 8, "Cultural Resources" (especially pages 14-16 and 84-86), and the Final EIR text at pages 1-17 and 3-41 to 3-43.)

While we respect NAHC's expression of concern in this matter . by the filing of its brief joining in the Indian Center's Motion purportedly as an "Interested Party," we must question NAHC's = standing to do so. The procedure for an interested person becoming a party to a proceeding before this Commission without formal intervention is set forth in Rule 54 of our Rules of Practice and



Secondly, questions of procedural compliance aside, we do not believe that NAHC is empowered under its statutory mandate to seek the relief requested herein. Public Resources Code Sections 5097.9 <u>et seq</u>., the statute creating NAHC, provides for the bringing of an action to prevent irreparable damage to Native American sacred, ceremonial, or religious sites <u>located on public property</u>. (Section 5097.94(g).) NAHC's powers with regard to <u>private</u> land are limited to consultative and information-gathering functions. (Sections 5097.95(a),(b),(c),(h).) The site of the LNG terminal and subject trenching activities is privately owned land, and therefore, NAHC has no power to act under Public Resources Code Section 5097.94(g) or to join in the Indian Center's Motion.

For all of the above reasons, we must deny the instant motion.

#/ Rule 54 provides:

"Participation Without Intervention. In an investigation or application proceeding, or in such a proceeding when heard on a consolidated record with a complaint proceeding, an appearance may be entered at the hearing without filing a pleading, if no affirmative relief is sought, if there is full disclosure of the persons or entities in whose behalf the appearance is to be entered, if the interest of such persons or entities in the proceeding and the position intended to be taken are stated fairly, and if the contentions will be reasonably pertinent to the issues already presented and any right to broaden them unduly is disclaimed.

A person or entity in whose behalf an appearance is entered in this manner becomes a party to and may participate in the proceeding to the degree indicated by the presiding officer."

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XVI. NEED FOR AMENDED APPLICATION IN THE EVENT FINAL PERMIT

As fully discussed above, the Commission believes that the evidence of record to date justifies the issuance of a <u>conditional</u> <u>permit</u> to construct and operate an LNG terminal at the Point Conception (Little Cojo Bay) site. However, our above discussion clearly indicates that further investigations and hearings are necessary before the Commission would be in a position to issue a <u>final permit</u> for the Point Conception site. As a result of these further investigations and hearings regarding the Point Conception site, it may be determined that actual construction of an LNG terminal at Point Conception may not be feasible. For example, if further excavation at the Point Conception site produces convincing evidence that causative faults exist at the site which would make construction of an LNG terminal at Point Conception either impossible or prohibitively expensive, this Commission would not allow an LNG terminal to be constructed at Point Conception.

Thus, while we today grant a <u>conditional permit</u> for the construction of an LNG terminal at Point Conception, we would be fundamentally remiss in our responsibilities, if we were to fail to address possible solutions to the problems that would be created by our inability to issue a <u>final permit</u> for Point Conception. Our conclusions with regard to the need for supplemental gas supplies are <u>unconditional</u>. We consider the need for an LNG terminal in this state by 1983 to be an irrefutable fact. Therefore, we place Western Terminal on notice that if the further studies and investigations ordered herein result in a determination that a final permit for construction of an LNG terminal at Point Conception cannot be issued, we will order Western Terminal to amend its application before this Commission and the appropriate federal agencies (ERA and/or FERC) to include those alternate sites which would allow for the receipt of LNG to California at the earliest possible date.

This-Commission will also urge all relevent federal agencies to participate with this Commission (including the possibility of joint hearings) to process the amended application as expeditiously as possible. [] Our actions are based on the fact that our

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paramount objective must be to insure the timely construction of an LNG terminal whether that construction is authorized and mandated by the Liquefied Natural Gas Terminal Act of 1977 or some other state or federal law.

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XVII. FINDINGS AND CONCLUSIONS

Based upon the evidence presented in Applications Nos. 57626 and 57792, Case No. 10342, and OII 1, this Commission makes the findings and conclusions which follow.

Findings

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1. In compliance with Sections 5600 and 5601 of the Act, Western LNG Terminal Associates (Western Terminal) submitted Application No. 57626 on October 14, 1977 for a permit to construct and operate an LNG receiving terminal near Point Conception on the Santa Barbara County coast.

2. The estimated baseload natural gas supplies available to California gas utilities are as set forth in Appendix B.

3. Commission Pl through P4 gas requirements, when satisfied, maintain employment, essential residential consumption levels, and air quality.

4. The estimated gas customer requirements by customer class (end-use priority) are as set forth in Appendix C.

5. Supply-requirement relationships, absent supplemental gas supplies, are set forth at Tables 5, 6 and 7 of this decision. These tables are based on cold weather, normal weather and warm weather years, respectively.

6. Supply-requirements relationships, including baseload supplemental supplies, are set forth at Tables 10, 11 and 12 of this decision. The tables are based on cold weather, normal weather and warm weather years, respectively.

7. California cannot reasonably rely on synthetic natural gas, liquefied petroleum gas, or Elk Hills gas as baseload supplies between now and 1990.

8. <u>Baseload</u> supplemental supply projects for California include Canadian "bubble gas" (gas surplus to the needs of Canada). Mexican gas from the Reforma area of southeastern Mexico, LNG from Algeria as part of the El Paso Algeria II project. Indonesian LNG. South Alaskan LNG, and Alaska North Slope gas.

9. California cannot reasonably rely on receipt of supplemental gas Supplies from Canada, Algeria, Mexico or the North Slope of Alaska to substitute for supplies of LNG from Indonesia and South Alaska.

10. California cannot reasonably rely on the gas which is temporarily surplus to the needs of other areas as a substitute for supplies of LNG from Indonesia or South Alaska.

11. The estimated costs of traditional gas supplies to California are set forth at Table 8 (page 72) of the decision.

12. The estimated costs of potential baseload supplemental gas supplies are set forth at Table 9 (page 73) of the decision.

13. The estimated costs of LNG from Indonesia and South Alaska are comparable with the costs of traditional supplies to California at the projected date of deliveries of the Indonesian and South Alaska LNG.

14. Curtailment of natural gas service to Priority 4 customers has commenced in southern California. Without any baseload supplemental gas supplies, gas service to southern California P2B, P3 and P4 customers will be curtailed by 1981 (under cold-year conditions), by 1983 (under normal weather conditions) and by 1984 (under warm year conditions).

15. Full curtailment of California P3 and P4 gas customers will require capital investment in alternate fuel facilities of over \$200 million, direct loss of 90,000 jobs, and over \$116 million in increased operation costs.

16. Supplemental gas supplies are needed to provide long-term baseload gas supply to California. The proposed importation of 500 MMcf/d for 20 years from Indonesia will provide gas needed to meet California gas requirements by 1983.

17. The proposed importation of LNG from South Alaska will provide long-term baseload gas supply needed to meet California gas requirements by 1984 and 1985.

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18. Curtailment of service to P3 through P5 customers will adversely affect air quality in the San Francisco Bay and Los Angeles areas, and delay air pollution abatement programs.

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19. The past federal allocation policy has been to allocate declining gas supply equally to utilities, based on customer priority. Gas diverted by federal authorities to meet national emergency conditions has subsequently been replaced without disadvantage to California utilities.

20. California utilities and this Commission participate in federal allocation and pricing proceedings. Such participation asserts the right of this state to fair and equal treatment under federal allocation and pricing policies. The acquisition of higher cost new gas supplies has not, under past federal policy, resulted in loss of existing gas supply.

21. The need to protect high priority gas customers in southern California by transfers of gas from northern California requires an increase in intertie capacity at an estimated cost of \$5 million.

22. Pacific Gas and Electric Company (PG&E) and Pacific Lighting Service Company (PLS) should file an application for a certificate of public convenience and necessity for a new pipeline required to increase the ability to transfer gas supplies between northern and southern California. Such a pipeline could substantially increase high priority gas customer protection from the interruption of gas service.

23. PG&E should be required to divert its P5 gas to the system of Southern California Gas Company (SoCal), in order to protect SoCal's P2B, P3 and P4 customers from curtailment. SoCal should be required to pay back these volumes with P5 gas when available to SoCal.

24. Both PG&E and SoCal submitted contingency plans in the event of both short- and long-term interruptions of LNG gas supply. These plans, in conjunction with the requirements set forth in the decision, will be sufficient to protect California gas customers against undue supply interruptions.

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25. Fertamina, the Indonesian state oil company, has had the contractual right to cancel the LNG gas sales agreement since October 6, 1977.

26. The Alaskan gas producers have had the contractual right to terminate their sales agreements since July 1, 1978.

27. The preliminary design for the Point Conception LNG terminal is based upon existing and proven technology.

28. The preliminary design information submitted in the application is sufficient for the LNG permitting and environmental review process.

29. The construction cost estimates submitted by Western Terminal are representative of order-of-magnitude costs expected to be incurred for the project in terms of mid-1977 dollars.

30. The preliminary terminal design will require modification during the design stage of the project to include mitigation measures required by the conditions of this decision.

31. It is necessary for Western Terminal to submit to the Commission, prior to commencement of construction, updated cost estimates for the project.

32. The cost monitoring plan of the staff, as described herein, is reasonable for the Point Conception project and fully meets the requirements of Section 5638 of the Act.

33. The safety and construction monitoring plan of the staff, as described herein and subject to refinement in Phase II of OII 1, is reasonable for the Point Conception project and meets the requirements of Section 5637 of the Act.

34. The safety and construction monitoring plan as submitted by the staff will be expanded to include monitoring of environmental terms and conditions to be adopted as part of this permit.

35. The cost of establishing and implementing the monitoring "program is most appropriately borne by Western Terminal.

36. The costs of designing and constructing the proposed terminal are, to the extent they are prudently incurred, in the best interest of the ratepayers; however, the action hereinafter taken is not to be considered as indicative of amounts to be included in future proceedings for the purpose of determining just and reasonable rates.

37. Western Terminal and its sponsors (PLC and PG&E) have the ability to finance the PacIndonesia and PacAlaska projects including the Point Conception terminal.

38. Project financing, as proposed, is in the public interest.

39. Delay of a decision to issue a permit for an LNG terminal will lead to a risk of loss of gas supply contracts for gas from Indonesia and south Alaska.

40. Delay due to selection of a site, other than the applied for site, will lead to the risk of loss of the LNG gas supply contracts.

41. Delay due to selection of a site, other than the applied for site, would greatly increase the capital cost of the project and thereby would place an unjustifiable burden on the ratepayer or may even preclude financing of the project.

42. Selection of a site, other than the applied for site, will lead, at a minimum, to a two-to-four year delay before a terminal at any one of the alternate sites could be operational.

43. Severe environmental impacts would arise at Rattlesnake Canyon due to construction of a massive breakwater, blasting of offshore pinnacles, greater throughput of seawater for vaporization, and the inability to avoid significant cultural resources.

44. The project, as proposed, would have a significant impact on air quality.

45. Mitigation measures which substantially reduce the air quality impact of the project are feasible.

46. Further hearings are necessary to establish the extent to which air quality mitigation is necessary and feasible.

47. The project, as proposed, would have a significant impact $^{-2}$ on marine biology due to fish and plankton entrainment. An uncertain level of impact would result from the discharge of chlorinated organic compounds with the cooled seawater. In addition, commercial utilization of kelp and fish at the site would be hindered.

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48. Rish entrainment can probably be mitigated through the use of a "caisson type" seawater intake system.

49. No feasible method exists for mitigating plankton entrainment.

50. The impact on kelp associated resources can be largely mitigated by minimizing the size of any safety-related exclusion zone and by considering kelp harvesting and fishing needs in planning terminal operations.

51. Impacts caused by the discharge of chlorinated compounds can be reduced by the use of anti-fouling coatings and scheduled maintenance.

52. Significant terrestrial biology impacts will result from the construction of the proposed pipeline and access road. Minor impacts on terrestrial biology will result from the use of terminal site acreage.

53. Terrestrial impacts due to the construction of the pipeline can be minimized by realigning the route to avoid rare or endangered species and sensitive habitats.

54. Terrestrial impacts caused by the construction of an access road can be minimized by choosing an alternative route which does not require major fill in the coastal ravines.

55. Terminal site impacts can be mitigated by acquiring habitat of equivalent value and maintaining it in a natural state.

56. This project will sharply contrast with the undeveloped setting of the region. The powerline and access road as proposed will impact views from the coastal terrace and Gaviota State Park.

57. Visual impact of terminal structures can be reduced by camouflage painting, proper landscaping, and by partial inground-ing of the tanks.

58. Visual impacts of powerlines can be reduced with careful = alignment, use of existing wood poles, or undergrounding.

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59. Visual impacts of the access road can be reduced by using the 25-MPH Hollister Ranch road alternative or other alternatives to be studied.

60. The project will conflict with existing land use trends toward recreational and low density residential uses.

61. Construction activities will bring a significant temporary in-migrant population to Santa Barbara County and place additional demands on the housing market. Residential development on ranches adjacent to the site will be adversely affected by the project.

62. There are known archaeological sites that will be affected or, in some cases, destroyed by the proposed terminal, pipeline and access road. Development of the site will adversely affect access to a small portion of the Point Conception area for Native Americans who place religious significance on the vicinity.

63. Significant archaeological sites at the terminal site can be largely avoided by shifting the location of project facilities 1500 feet eastward.

64. The proposed pipeline route can be realigned to avoid significant archaeological resources.

65. Impacts of the access road on archaeological resources can be reduced by using the 25 MPH Hollister Ranch road alternative.

66. Adverse environmental impacts of lesser significance will occur in the areas of topography and soils, hydrology, noise, marine traffic, public services, induced development, and onshore transportation.

67. Various mitigation measures required in the conditions discussed in Section XIV will substantially reduce many of these environmental impacts.

68. Further study is required to determine the access route having the least adverse environmental impact.

69. Further study is required to determine the powerline configuration having the least adverse environmental impact.

70. The proposed pipeline corridor has the least adverse environmental impact.

71. The project's impact on safety is minimal and acceptable.

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72. The development of the Point Conception site does not appear to be sufficient incentive to attract industry to such a remote location.

73. The project will consume significant quantities of electricity, however its net energy impact will be a major increase in gas supply to California.

74. Western Terminal's marine operations plan shows that no marine vessel transporting LNG will be required or permitted to pass within one mile of an area of population density of ten persons per square mile nor within four miles of a population density of 60 persons per square mile.

75. Staff's proposal to require Western Terminal to construct the LNG storage tanks on bedrock seems prudent but requires further evaluation.

76. Western Terminal's plans for the construction, operation and maintenance of a 34-inch pipeline from the proposed LNG terminal at Point Conception to Gosford, California, indicate that Western Terminal will construct, operate and maintain that pipeline in accordance with the provisions of General Order No. 112-C.

77. The staff's recommended site approach routes for LNG vessels to the degree they are consistent with sound maritime practice, should be adopted.

78. Subject to Finding No. 77, the staff's recommended maritime equipment and procedure requirements will reduce the risk associated with LNG vessel traffic in the Santa Barbara Channel and should be adopted.

79. The probability of an accident involving ten or more casualties at the proposed site is approximately one chance in 100 million years at existing population levels.

80. The probability of an accident involving one or more casualties at the proposed site is one chance in 1 million years with the existing population level.

81. Western Terminal's security plan, when implemented as proposed, will provide greater security than at other LNG facilities, will approach that employed at nuclear plants and Department of Defense installations, and will serve to deter and protect against sabotage attacks. A. 57626 et al. ALT.-RDG-IM

82. Western Terminal will obtain liability insurance covering third party property damage and personal injuries in an amount not less than \$50 million per occurrence.

83. Western Terminal will require that each LNG vessel which is used in the proposed project carry protection and indemnity insurance of not less than \$50 million per occurrence.

84. Western Terminal's insurance plan is adequate to protect the public in the event of personal or property damage resulting from terminal operations. But Western Terminal's ultimate liability in the event of a mishap could exceed the \$50 million policy limits.

85. The probability of an airplane penetrating a critical LNG system at the proposed site is approximately one chance per 20,000 years for LNG pipelines, one chance per 100,000 years for the LNG tank roof and one occurrence per 1,666,700 years for the LNG tank sidewall.

86. The probability of a tank, pipe or tanker being penetrated by a meteorite is approximately one chance per 10 million years.

87. The average annual probability of one or more missile fragments penetrating an LNG storage tank, pipeline or LNG tanker is less than one chance in 333,300 years in 1980 and declines to less than one chance in 2,500,000 years by 1987.

88. For purposes of determining the reliability of the proposed LNG transportation system berthing will be precluded if any of the following conditions exist: waves of six feet or greater, winds of twenty-five knots or greater or visibility of one mile or less.

89. While evidence of record does not support a finding that long-period swell activity could seriously impair operations at Point Conception, further on-site observations are appropriate and should be ordered.

90. Based on available data optimum berth orientation at Point Conception appears to be within the sector of 225° to 255°.

91. While annual weather related downtime at Point Conception may exceed 17% during some years, <u>average</u> annual related downtime will fall within the range of 0% to 17% during the life of the project.

92. The projected level of weather related berth downtime is acceptable-and will not seriously impair the project's ability to deliver the contract quantities.

93., The threat posed by soil creep, landsliding, flooding, erosion and liquefaction at Point Conception is minimal.

94. While we find that a high degree of conservatism is appropriate in the design, construction and operation of an LNG facility, the strict application of NRC siting criteria to those activities is inappropriate.

95. The geologic criterion for identifying areas of high seismicity, which is critical to the siting and design of a safe and reliable LNG facility, shall include activity in the late Pleistocene period.

96. The Arroyo fault is an active fault. Further geological and geotechnical investigation is required prior to any conclusive determination of the nature and length of the fault, and the associated potential magnitude and ground acceleration of the fault.

97. Currently available evidence indicates that the Arroyo fault is not causative, i.e. capable of generating a 5.0 magnitude or greater earthquake; but rather it is a secondary rupture resulting from seismic activity on a nearby significant offshore fault.

98. Pending receipt of further geologic and geotechnical information, we may conclude that the predominant seismic hazards to the Point Conception site are the North and South Branches of the Santa Ynez fault as well as the F-1 fault.

99. There exists the possibility of a 7.5 magnitude earthquake, with associated bedrock accelerations of .6 g to .68 g, occurring on either the North and South Branches of the Santa Ynez fault as well as on the F-l fault at distances of 3 to 4, 5, or 3 miles respectively from the site.

100. Prudence and the public interest dictate that the LNG facility be designed to withstand and continue operation after occurrence of that earthquake which would produce an intensity of earthquake ground motion at the site that has a very high probability—on the order of 99.55—of not being exceeded during the 50-year service life of the facility.

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101. To assure a high level of plant safety and investment protection, Western Terminal should be directed to design and construct portions of the terminal to withstand ground motions at the site associated with an earthquake on the North and South Branches of the Santa Ynez fault as well as F-1 fault or that earthquake which has a probability of occurring one time in 10,000 years (10^{-4} per year).

102. Caution dictates that the critical components of the LNG facility should be designed to withstand a maximum earthquake of Richter Magnitude 7.5 using a bedrock acceleration-time history with a maximum peak acceleration of 0.7 g (gravity) at the site.

103. Utilization of two levels of earthquakes and three categories of equipment for purposes of seismic design incorporates a prudent level of conservatism into design and allows for safe and reliable operation of the LNG terminal.

104. Regulatory Guide 1.60 response spectra, properly scaled to the peak ground accelerations recommended for the SSE and OBE, should be used in the design of Category I and II structures, components and systems.

105. In accordance with Appendix B of 10 CFR 50, a quality assurance program should be established that assures reliable performance of all Categories I and II structures, components and systems in their respectively-defined seismic environments.

106. A reinforced concrete mat should be placed under the LNG storage tanks, unless careful analysis proves it unnecessary.

107. Western Terminal should demonstrate by appropriate analysis or test that the inner and outer LNG storage tanks respond independently to seismic excitation or that the potential for their interaction has been considered in design.

108. The only trenches which have been excavated at the site are Trench No. 1 and Trench No. 2 referred to in the May 14, 1978 agreement between the Indian Center and Western Terminal.

109. No further excavation or earthmoving activities have been undertaken at the site to date.

110. NAHC did not enter an appearance at the hearings in OII 1 or any related proceeding. A. 57626 et al. ALT.-RDG-IM

111. The Point Conception site is the only site where an LNG terminal could be constructed and operational in sufficient time to prevent curtailment of high priority requirements for natural gas, thereby maintaining employment, essential residential consumption levels, and air quality.

112. Point Conception is the only feasible site for which a permit can be granted that will allow the securing of the Indonesian and South Alaskan gas supplies.

113. At the time operation of the terminal commences, Western Terminal's proposed site at Point Conception will fully comply with the population density requirements of the Act.

114. Subject to the terms and conditions of this decision, it is consistent with public health, safety, and welfare to construct and operate a terminal at Point Conception.

115. Subject to the LNG safety standards to be adopted in OII 1, it is consistent with public health, safety, and welfare to construct and operate an LNG facility at Point Conception.

116. Present and future public convenience and necessity will require the construction and operation of the proposed gas transmission pipeline from the Point Conception terminal facility to Gosford in Kern County.

117. It is not feasible to complete construction and commence operations of a terminal at Camp Pendleton, Rattlesnake Canyon, or Deer Canyon in sufficient time to prevent significant curtailment of high priority requirements for natural gas as defined by the Act.

118. A terminal at the Camp Pendleton site would not be consistent with public health, safety, and welfare because it would conflict with military operations, does not qualify under population density requirements of the Act, is near areas of extensive public recreational use, and may preclude the operation of the existing nuclear facility at San Onofre. A terminal at the Deer Canyon site

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would not be consistent with public health, safety and welfare because it is inconsistent with the remoteness criteria required by Section 5552 of the Act, in that the public parks boardering the site would put transient public users in close proximity to a terminal. Also, the cost of constructing a terminal at Deer Canyon is exorbitantly expensive. A. 57626 et al. ALT.-RDG-IM

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119. A terminal at the Rattlesnake Canyon site would not be consistent with public health, safety, and welfare because of the hostile marine environment, the excessive capital cost of construction, the potential preclusion of the operations of a nuclear facility at Diablo Canyon and because it does not meet the legislative mandate of remoteness spelled out in Sections 5550 et seq.

· 120. Impacts caused by the placement of an LNG terminal at Point Conception are necessary and acceptable in order to locate the terminal in a "remote" location as required by the Act.

121. The construction and operation of the proposed facility will not produce an unreasonable burden on natural resources, aesthetics of the area in which the proposed facilities are to be located, air and water quality in the vicinity, parks, recreational, and scenic areas, wildlife and vegetation, historic sites, archaeological sites, or community values.

122. The overall level of environmental impacts associated with this project are moderate in comparison with other energy related projects of similar value.

123. The benefits of the project outweigh its adverse environmental impacts.

124. The procedures used to prepare the EIR were in compliance with CEQA and the State EIR Guidelines.

125. The Draft EIR was prepared in compliance with the requirements of CEQA and the State EIR Guidelines.

126. The Final EIR is adequate and meets the requirements of CEQA and the State EIR Guidelines.

127. The terms and conditions recommended to this Commission by Santa Barbara County (Appendix E) should be accepted, modified, or rejected, to the extent indicated in Section XIV of this decision.

128. In the event a final permit cannot be issued for the construction and operation of an LNG terminal at Point Conception, Western Terminal should be required to amend its application before this Commission and the appropriate federal agencies to include those alternate sites which would allow for the receipt of LNG to California at the earliest possible date.



Conclusions of Law

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1. Conditions Nos. 1 through 12, 15, 16, 24, 25, and 26 recommended by the CCC in its final report to this Commission are contrary to the general intent of the Act. Each of these conditions will cause delay in commencement of terminal operations that will result in significant curtailment of high priority natural gas requirements and deletion or modification of each such term or condition will avoid or significantly reduce such curtailment.

2. Conditions Nos. 9, 10, 11, 14, 23, 25, 26, and 27 recommended by the CCC in its final report to this Commission are not based on substantial evidence, considering the record as a whole, and deletion or modification of each such term or condition is required.

3. Condition No. 13 recommended by the CCC in its final report to the Commission is contrary to the specific language of Section 5637 that requires the Commission to establish a monitoring program to ensure that the LNG terminal is constructed and operated in compliance with all applicable regulations adopted and terms and conditions established. Modification of this condition is required.

4. Condition No. 28 recommended by the CCC in its final report to the Commission is contrary to specific language in Section 5637 of the Act and modification of this condition is therefore required.

5. Each and every condition recommended by the CCC in its final report to this Commission which requires approval by the CCC or some other agency prior to the commencement of construction or operation is contrary to the general intent of the Act to make this Commission the exclusive permitting authority for the applied for LNG terminal.

6. Congress has not intended to grant federal agencies exclusive jurisdiction pertaining to the siting, construction and operation of the proposed LNG terminal.

7. There is no manifest Congressional intent to preempt harmonious state regulations pertaining to the siting, construction, and operation of the proposed LNG terminal.

8. There is no actual conflict between existing federal laws and the LNG Terminal Act of 1977.

9. By enacting the Natural Gas Act, Congress intended no manifest purpose to preempt harmonious state regulation of siting, construction, and operation of the proposed LNG terminal.

10. The Pipeline Safety Act does not preempt state laws regulating LNG terminal siting and construction.

ll. The LNG Terminal Act of 1977 is not preempted by federal law.

12. The LNG Terminal Act of 1977 places no undue burden on interstate commerce.

13. The duties assigned the Commission under the LNG Terminal Act of 1977 are cognate and germane to the Commission's responsibilities to regulate public utility gas companies.

14. The Commission has the jurisdiction to permit the siting, construction and operation of an LNG terminal in California.

15. Bixby's motion to reopen the proceedings in OII 1 presents no new factual allegations or material changes of fact or law and should be denied.

16. Bixby's motion to reopen the proceedings in OII 1 to present additional evidence is without merit and should be denied.

17. The Commission has complied with CEQA with regard to additional trenching by issuing a final EIR which covers trenching and related earthmoving activities.

18. The Santa Barbara Indian Center's Motion should be denied as moot.

19. NAHC lacks standing to appear and join in the Indian Center's motion.

20. The Commission certifies that the Final EIR has been completed in compliance with CEQA and the Guidelines, and that the Commission has reviewed and considered the information contained in the EIR.

Because of the urgency nature of the Act and the necessity for conducting hearings relating to the conditions set forth in the decision, this decision should be effective immediately.

XVIII. INTERIM ORDER

IT IS ORDERED that:

- 1. Pursuant to the Liquefied Natural Gas Terminal Act of 1977:
 - a. Western LNG Terminal Associates (Western Terminal) is granted a conditional permit authorizing it to construct and operate a liquefied natural gas terminal at Little Cojo near Point Conception in Santa Barbara County, California.
 - b. Pacific Gas and Electric Company (PG&E) and Pacific Lighting Service Company (PLS) are granted a permit to construct and operate a pipeline and appurtenances thereto necessary for the transmission of the regasified liquefied natural gas from the metering station at the outlet of the terminal over a ll2-mile route to an existing pipeline near Gosford in Kern County, California.

2. Pursuant to Section 1001 of the Public Utilities Code, PG&E and PLS are granted a conditional certificate of public convenience and necessity to construct and operate the pipeline described in Ordering Paragraph 1.b.

3. The certificate herein granted is subject to the following provision of law:

> The Commission shall have no power to authorize the capitalization of this certificate of public convenience and necessity or the right to ewn, operate, or enjoy such certificate of public convenience and necessity in excess of the amount (exclusive of any tax or annual charge) actually paid to the State as the consideration for the issuance of such certificate of public convenience and necessity or right.

4. The authorizations granted in Ordering Paragraphs 1 and 2 are subject to the terms and conditions adopted in Section XIV of this decision.

5. The Commission staff is directed to establish cost, environmental, and safety and construction monitoring programs for the terminal and pipeline construction authorized herein.

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6. Western Terminal shall reimburse the Commission for all costs incurred that relate to these proceedings after July 31, 1978, and for all costs incurred in establishing and implementing the monitoring programs described above.

7. Western Terminal shall submit to the Commission, prior to commencement of construction, updated cost estimates for the total project.

8. PG&E and PLS shall, within 180 days after the effective date of this order, modify existing interties on their respective systems to provide a capability of diverting to the SoCal system from the PG&E system on a best efforts basis <u>up to</u> 500 MMcf/d.

9. PG&E, and PLS, shall, within 180 days after the effective date of this order, file an application with this Commission for a certificate of public convenience and necessity for a north-south pipeline system having the capability of delivering up to 100 billion cubic feet annually.

10. PG&E and SoCal shall, within 90 days after the effective date of this order, modify the mutual assistance agreement required by Decision No. 85189 (to protect Pl and P2A service statewide) to provide for best-efforts delivery of P5 natural gas from one system to alleviate any curtailment of P2B, P3 and P4 customers on the other system and to provide for repayment with P5 gas to the extent such P5 gas is available.

11. The motion of the Fred H. Bixby Ranch Company to set aside submission and reopen the proceedings for additional evidence on wind and wave conditions at Point Conception is denied.

12. The motion of Fred H. Bixby Ranch Company to dismiss these consolidated proceedings for lack of jurisdiction is denied.

13. The motion of the Santa Barbara Indian Center to require the preparation of an environmental impact report prior to additional trenching at the site is denied.

14. To the degree permitted by federal law, Western Terminal shall design, construct, and operate the facility in compliance with relevant Commission safety standards to be adopted in OII 1.

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- Establish the extent to which air quality 8. mitigation measures are necessary and feasible.
- Evaluate the environmental and economic Ъ. impacts of the alternate access roads and select the appropriate route.
- Evaluate the seawater alternatives c. heretofore discussed and select the appropriate system.
- d. . Determine the environmental and economic impacts of alternate electric transmission line routes proposed and select the most appropriate route.

16. Further hearings will be held in Phase II of this proceeding on the issues of (1) Western Terminal's proposed changes in seismic design criteria, (2) the staff's proposed general order on liquefied natural gas safety standards, (3) refinement of the staff's proposed safety and construction monitoring plan, (4) additional seismic evidence required by Conditions 36 and 37, and (5) additional wind and wave evidence required by Condition 32.

The Executive Director of the Commission is directed to 17. file a Notice of Determination for the project, with contents as set forth in Appendix G to this decision, with the Secretary for Resources.

18. In the event a final permit cannot be issued for construction and operation of an LNG terminal at Point Conception, Western Terminal shall submit an amended application to this Commission and all appropriate federal agencies which shall include those alternate sites which would provide for receipt of LNG to California at the earliest possible date.

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The effective date of this order shall be the date hereof. Dated at _____ San Francisco _, California, this <u>3/al</u> day or JULY , 1978. het Book

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OII #1 C. 10342 A. 57626, A. 57792 D. 89177

RICHARD D. GRAVELLE, Commissioner, Concurring:

I concur. ;

It is my firm hope that today's action by the Commission does not ultimately become a vain attempt to provide an essential commodity for the health and welfare of the people of California.

I am not optimistic, however, that we have accomplished anything worthwhile. S.B. 1081 (The Act) was structured, in its critical formative stages, as much by those who, devoid of any 🐃 record, had already made up their minds that supplemental gas. supplies in the form of LNG were unacceptable for California, as it was by those who desired that the final decision be based upon an evidentiary record to establish the facts of the matter. Those who in 1977 claimed the clairvoyant ability to perceive California's energy needs in the mid 1980's shaped The Act so that Point Conception would be the only viable site that might be accepted under the statute. Point Conception was their choice because of their belief that there were so many known or potential problems with the site that they felt confident no facility could be constructed there in time to keep the Indonesian and South Alaskan contracts open - and that there was a great likelihood that no facility would ever be sited there.

The Act <u>mandates</u> a remote site and spells out specific criteria defining what qualifies as remote. At the time of its enactment, Western Terminal had only one choice to make for its application; Point Conception.

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The California Coastal Commission (CCC) was given the inherently inconsistent task (for an agency with its statutory responsibility) of nominating sites other than that selected by Western Terminal. I commend the effort of the CCC. Its labors, necessarily conducted in a self-destruct atmosphere, produced as good a selection of alternative sites as could be achieved by any person or entity. But what in fact do we have, bearing in mind the mandate of remoteness?

Horno Canyon, which clearly falls outside the statutory definition of remoteness, is jealously guarded by its owner, the U. S. Government, and is located in close proximity to a nuclear facility which the Nuclear Regulatory Commission tells us might cause the closure of the generating plant.

Rattlesnake Canyon, a site while not clearly outside the specific permanent population criteria of the act cannot in any way be said to meet the legislative mandate of remoteness because of the heavy transient population existing within two miles of the site, also facing the same NRC problem that plagues Horno Canyon, and one which would do massive ecological damage through breakwater construction and sea bottom disruption.

Deer Canyon, another site located between two state parks with a trestle carrying LNG passing over U. S. Highway 1 (This is remote?), where earth movement of massive proportions are required, and where the naval commander of Point Mugu urged that a facility there would interfere with missile firing.

We are left with Point Conception. Remote it is. Other problems exist there, however, that could and indeed may result

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in what I fear most. The facility may never be built. It would be repetitive to state here the problems with Point Conception that are chronicled elsewhere in this decision.

Why has this proceeding, this issue, taken on such importance that it involves the myriad interests that have appeared before us and before the federal regulatory bodies that also address the subject of LNG. Because the subject is one that is basic to the future well-being of every Californian through the next two decades. California is a gas dependent state. It is also a growing state with a vibrant economy that gobbles energy in increasing quantities in spite of successful and continuing efforts at conservation and alternate energy development.

Some, those who manipulated the Act included, believe that stopping LNG development will force a lifestyle change upon our citizens that they perceive to be beneficial. These are not the ones who bear the responsibility for seeing that California is able to meet its energy needs in the future, their interests lie elsewhere. As one Commissioner, with the obligation to see that the general population and the economy, which is sometimes. its slave and sometimes its master, will be able to meet their energy needs in the future, I do not feel the privilege of doing less than examine those needs in the light of recent history. Two consecutive years of drought did this state great damage. Two consecutive years of cold weather could do worse. WE NEED LNG! WE NEED ALL THE GAS WE CAN GET! Certainly, there are constraints on procurement. Safety, price and environmental impact are all possible deterrents. That is why we are dealing with a regulated business. Public protection in the way of safety, price and

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environmental impacts are legitimate roles of government, but to work effectively we cannot expect either industry or the regulatory bodies to play with a stacked deck. The Act was such a deck.

I sincerely hope that in spite of the handicap we will be able to enjoy the use of LNG in California by 1983.

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San Francisco, California July 31, 1978

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A.57626 et al. - D.89177 AUTHORIZATION FOR LNG TERMINAL AT POINT CONCEPTION

COMMISSIONER WILLIAM SYMONS, JR., CONCURRING in Part

In these times when so frequently the nay-sayers gain the high ground and kill important new energy projects, one after the other, today's CPUC action is a refreshing change.

Our review was extensive but not endless. Our conclusion grants Western LNG Terminal Associates the go-ahead for a rational project to bring needed natural gas to the California market.

Sufficient energy must be available to California if our people are to prosper. Therefore, it is critical that reasonable supply projects not be blocked by state government.

Several portions of the 308-page Discussion are objectionable. However most of the Findings of Fact, the Conclusions of Law, and the Ordering Paragraphs are narrowly written; they can be accepted.

I specifically concur with the provisions necessary to authorize applicant's LNG Terminal Project. These are Findings of Fact numbered 1 through 20 and 24 through 127; Conclusions of Law numbered 1 through 20; and Ordering Paragraphs numbered 1 through 7 and 11 through 17.

I do have serious objections to the following:

I. <u>The Incredible and Forlorn "Commission Energy Policy"</u> I was startled to read pages 36 and 85 through 87a which outlines a new energy policy for California. Where it came from, I do not know. The Commission makes a brazen proclamation that henceforth it is California's goal to burn natural gas in every way, including boiler fuel for electric generation!

Today's order asserts that California will be hostile not only to "turning" to coal, but also "turning" to oil. (P. 86) The new CPUC position is a two-part Pollyanna program: it (1) selects natural gas as "... the interim period primary energy source for this state ..." (p. 86) which will carry us over into (2) "... an economy which depends largely on solar and other clean, renewable energy sources ..." (p. 85). The "interim" selection of natural gas as the fuel-of-choice to burn for electric generation is incredible. This action flies in the face of a strong national policy (1) to save natural gas for higher priority uses and (2) to promote our nation's nuclear and coal options for electrical generation. Additionally, the CPUC's disqualification of coal and oil because of "air pollution" contradicts directly the pronouncements of other major California state agencies. It was only on January 6, 1978 that Tom Quinn, Chairman of the California Air Resources Board went on record as saying

"... it is our conclusion that a coal-fired power plant can be constructed in southern California. ... This can be accomplished without damaging air quality and in full compliance with all local, state and federal air protection laws & regulations." $\underline{l}/$

Further, in February of 1978 the California Energy Commission reported to the State Legislature that future plans for oil-fired and coalfired electrical generation plants were "... environmentally acceptable and feasible as well as economically attractive." $\frac{2}{}$

Is the CPUC dreaming? This LNG project, even at peak operation, will only supply 1/3 of our state's gas requirements. Where are we going to obtain the gas surplus necessary to meet our rising electrical generation requirements? Just speculating about what consumers will be charged for electricity generated from high-priced imported LNG should cause anyone to wake up with a jolt.

And what about the second part of this policy--the future--the new policy places all the state's eggs in one basket labeled "solar and other clean, renewable energy sources ..." Come down to earth! Anyone who appreciates the magnitude of our energy needs through the end of this century, and (aside from hydro-power) who knows the miniscule contribution that is possible from these Commissiondesignated "sources" during the same time period, must see that the Commission's Energy Policy is unrealistic, empty-handed bombast.

<u>l</u>/ Letter of Mr. Tom Quinn, Chairman, Air Resources Board to Mr. Richard Maullin, Chairman, Energy Resources Conservation and Development Commission, p. 1, dated January 6, 1978.

^{2/ &}quot;Report to the Legislature: AB 1852 - Alternatives to a Sundesert Nuclear Project," Docket No. 77-NL-1, California Energy Resources Conservation and Development Commission, p. x, February 1978.
Can the Commission truthfully discuss the options that Californians have open to them, weigh possible alternatives, and completely fail to consider nuclear power?

This decision beats its breast for federal concessions to allow California to burn unlimited supplies of natural gas for electric generation. What is the justification? Well, California must avoid air pollution, and we need more electricity. However, the decision fails to mention how the CPUC, less than four months ago, killed the Sundesert Nuclear Power Project which promised safe, beneficial generation of needed electric power for southern California totally air-pollution free.

With such shortcomings in the CPUC's analysis, it is no wonder the resulting energy policy is bankrupt. The CPUC totally fails to provide the people of California with a sound energy policy for the future.

II. The Unjustified Scheme for Sending Northern California Gas to the South. Findings 21, 22, and 23, as well as Ordering Paragraphs 8, 9, and 10, relate not to the LNG siting decision, but to the transfer of gas supplies from Northern to Southern California.

Under the new directive in today's order, the curtailment by Southern California Gas Company of its users with a priority as low as P-4 is enough to trigger massive north-south diversions of gas.

Any justification for compelling such a north-south transfer is totally missing from today's decision. The mandate is not to protect production, for we have already required P-4 customers to install back-up alternate fuel capability for cases of curtailment. The decision fails to measure the economic and environmental harm that diverse communities in this state will suffer under this policy. I cannot condone such a directive.

III. <u>Income Tax Discussion and Regard for Federal Authorities</u>. Concerning the tax discussion on page 118a the Commission should remember that federal tax collections and credits operate in accordance with the expressed will of Congress. It is federal law, not the CPUC, which sets the standards for participation and

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eligibility for optional tax treatment. Where Congress specifically conditions eligibility upon free election of options by a utility taxpayer, without coercion from any state utility commission, it is a mistake for the CPUC to act like a bull in a china shop. If threatening or coercive language on our part should lose eligibility for the utility, the loser is not the utility but the California customers who stand to bear the ultimate cost.

The tax discussion on page 118a is without basis in the record, gratuitous and unfortunate. Actions like this by the CPUC have already imperiled our state's largest communications utility. Pacific Telephone is presently faced with loss of eligibility which means that this communications system, and ultimately its ratepayers, could lose the benefit of nearly one billion dollars in tax deferments. We should return to this matter in subsequent phases of this project and consider the issue with more care.

San Francisco, California July 31, 1978

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The accelerated ING terminal site approval process just completed by the State was designed to assure that a reliable gas supply would be available at a time to be determined during the process. The action of this commission will have the opposite effect.

The results of the investigations carried out in the ten months since the effective date of SB 1081 are inconclusive on all matters.

Gas is needed between 1982 and 1986. Taking the most optimistic prediction of traditional gas supplies and the most optimistic prediction of gas needs, we will run out of gas for California's 5.9 million residential customers by 1986. It will cost at least one to two thousand dollars apiece for those 5.9 million customers to convert to <u>any</u> other energy source — solar or electricity generated by any means. In addition air pollution, at least in the Los Angeles Basin, and probably downwind from San Francisco, is literally killing people. Burning coal or oil in industrial facilities can only exacerbate the situation. To accept the "no gas" alternative is quite simply not a responsible governmental decision.

The Federal government controls new gas supplies that California needs to augment our diminishing supplies from traditional sources. But at this time not only have no Federal decisions been made, but there is no indication to California what the Federal government may decide. In fact, it is within the power of the Federal government to strangle both the economy of California and literally the people of California through its power to control gas supplies to the State.

The statute gave the Coastal Commission responsibility to locate a site, but barred that body from considering on off-shore site and required that Point Conception, regardless of its merits, be considered in the final ranking. The statute requires the PUC to adopt the Coastal Commission priority unless we find that significant gas curtailments would result. Yet, the statute did not allow enough time for this commission to consider any other site but Point Conception. Suitable sites are sharply limited by the severity of weather, wind, current, and rough coastal topography in the central and northern parts of the coast and by the density of population on the temperate southern coast. Nevertheless, five potential sites were identified by the Coastal Commission. Las Varas was later eliminated when an active carthquake fault was discovered on it.

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It is apparent from the data developed by both commissions that every site onshore is plagued by safety hazards os seismic and wind/ wave/weather conditions and with serious conflicts with fish and wildlife resources, cultural and recreational needs. Many of these problems would be reduced or removed by the selection of an appropriate offshore site. However, the statute specifically requires that the first site <u>must</u> be onshore. This shortsighted policy has now delayed and will continue to delay a viable operating ING facility in California.

But while the Coastal Commission was considering these five sites, the Public Utilities Commission was considering the only one before us - Point Conception.

Point Conception has unusually valuable fish and wildlife resources which would be seriously damaged by the project, as shown in the record. The rocky reef-filled near shore area is extraordinarily rich in marine life and supports substantial commercial and recreational fisheries. Kelp Bed 32, in the area of the project, is the most productive commercial kelp bed in the state.

Point Conception itself is sacred to the California Chumash Tribe and has been declared by the NAHC as a site which "has had religious and spiritual significance since time immemorial." A feasible alternative site exists at Pendleton which such resources would not be irreparably damaged. This is clear in the Coastal Commission record.

Continuously, since 1835, Point Conception has been known to mariners as the "Cape Horn of the Pacific." This strong phrase is still used today in the <u>Pacific Coast Pilot</u>, the official U.S. Govemment document advising mariners of all nations. Gales of 70 knots, lasting three days and nights, have been frequently described over the years. The Point is the meeting place of two strong opposing coastal currents, resulting in turbulent and unpredictable sea conditions as well as very rich marine life. Wave heights are infamous among both fishermen and surfers. But despite official publications and record of 200 years of Pacific Coast navigation, there appears to be too little evidence <u>in the record</u> for the PUC staff to either verify or reject this information.

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Is this the place to locate a major industrial seaport for vessels 1,000 feet long, drawing only 35 feet and carrying a highly flammable cargo weighing much less than water? These ships act like gigantic sails, difficult to maneuver by all maritime standards. To provide reliable gas supply of 1.3 billion cubic feet per day, 190 of these vessels must be unloaded each year. How can a port with weather and sea conditions like this be expected to allow reliable delivery? Would a breakwater help? We don't know because construction of a breakwater was never considered. Why? Because the applicants say they don't need one and this commission did not have enough evidence in the record of wind and sea conditions to challenge that contention. So the proposed order requires a two-year study before construction can begin. But, the time frame set forth in the order allows only one year before start of construction.

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Point Conception is located in the most tectonically active portion of the California coast. The Point itself is surrounded by major active faults 12 miles to the north, 5 miles to the east, and 3 miles to the south. Seismic events of 7.5 magnitude or greater have occurred in the offshore area twice within the last 175 years. Action on these faults is thrusting the block of land on which the site is located upward and inward, warping and cracking its surface. Four active earthquake faults are visible on the surface of the site itself. These faults were not seen by the applincant's geologists. One was identified in studies on the site in April 1978 by other geologists; the applicant and our consultant then detected the others. These facts are in the record.

Is this the area in which to locate a major industrial seaport for a highly flammable cargo, which must be transported in a massive cryogenic pipeline from the ship on a trestle nearly a mile long, constructed on a highly seismic sea bottom to three cryogenic tanks 240 feet in diameter and 145 feet high? Will such an assortment of interconnected structures survive an earthquake and perhaps a tsumani of even half the 50 foot tidal wave associated with the earthquake of 1812? Will this be a reliable source of gas supply for California?

And, what will all this cost the gas users — the citizens of California? Make no mistake, this is a bill which will be paid by the public. What will it cost to make the structures earthquake resistant, if that is possible? There is no answer in the record. What will it cost to build a dock and trestle to withstand the forces of wind, sea, earthquake and tsumanis? There is no answer in the record. And even if all these questions are answered satisfactorily and expeditiously, the earliest possible date for completion is 1984 on the showing in the record.

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But what if some or all of these questions are answered negatively? We will have no LNG terminal in 1985. We will have wasted another two years trying to put bandaids on a marginal project.

The statute requires that the PUC accept the site priority ranking determined and approved by the Coastal Commission, unless we find:

". . . with respect to each higher ranked site that it is not feasible to complete construction and commence operations of the terminal at such higher ranked site in sufficient time to prevent significant curtailment of high priority requirements for natural gas and that approval of the lower ranked site will significantly reduce such curtailment."

The priority ranking places Camp Pendleton and Rattlesnake Canyon before Point Conception. We have virtually no evidence in the record on which to make a finding that Point Conception could be built before either of the other two sites. The record contains statements to that effect, but no proof. Camp Pendleton is located in an area of tranquil weather and sea conditions, technically known as "the doldrums." The seismicity of the area is known to be of both a different type and frequency than is found on the central coast. Its marine resources would not be severely affected by the project. It may be much less timeconsuming and much less disruptive of other resources to locate a terminal there. It may result in a much more reliable gas supply at a much lower cost than any other site. But we don't know that <u>because there</u> <u>is no evidence in the record</u>.

The order says it would take until 1987 to complete a terminal at Camp Pendleton. But it includes an undersea pipeline, the need for which has been no more clearly established than the lack of need for a breakwater at Point Conception. If that pipeline is not needed, the completion date would be 1985. If a breakwater is needed at Point Conception the completion of the project is unlikely to occur at all.

The <u>only</u> substantive reason given for rejecting the Coastal Commission's first choice — Camp Pendleton — is that the property belongs to the United States Government which will not release it and would not allow consideration of it in the EIR. Who is the United States Government which owns 50% of the land in California? It is <u>our</u> government. California is 10% of the population of the United States. It has the equivalent economic value to the seventh wealthiest nation on earth. It has 45 representatives in the Congress of the United States. It is the largest industrial state in the nation.

Should the interests of the State of California be dismissed as nothing? Can we accept that the decision not to release 120 of the 125,000 acres at Camp Pendleton is insurmountable?

The answer is "NO"! The decisions of a single bureaucracy, no matter how unwilling to bend, are much more susceptible of reversal than the decisions of nature.

Another binding portion of the statute we are acting under states: "The Commission shall not issue a permit for construction and operation at any site unless it finds that to do so is consistent with public health, safety and welfare . . . "

It is clear from the record that such a determination cannot be made on Point Conception. It is not clear from the record that such a determination could not be made on Camp Pendleton.

I believe that natural gas <u>is</u> important for California; that we do need a reliable gas port. Nature itself has excluded Point Conception. The very least that this commission should do is take action to begin the process of authorizing another site at Camp Pendleton by directing the applicant to amend its application to include Camp Pendleton. At least more years would not then be wasted while Point Conception excludes itself.

CLAIRE T. DEDRICK Commissioner

San Francisco, California July 31, 1978 -5-

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Association; Vaughan, Paul & Lyons, by John G. Lyons, Attorney at Law. for California Fertilizer Association; Philip W. Marking, Attorney at Law, for Santa Barbara Citizens for Environmental Defense; <u>Philip R. Mann, Attorney at Law, for Solar Turbines</u> International; Baker & Botts, by John P. Mathis, Attorney at Law, and R. F. Smith, for Union Carbide Corporation; Pettit, Evers & Martin, by <u>Susan Paulus</u>, Attorney at Law, for Owens-Corning Fiberglas; J. W. Whitsett and Curtis L. Coleman, by <u>Linda T.</u> Phillips, Attorney at Law, for South Coast Air Quality Management District; Ervin Poka, for Nissho-Iwai American Corporation; C. Suzanne Reed, for Governor's Office of Planning and Research; Kenneth M. Robinson, Attorney at Law, for Kaiser Steel Corporation; Robert W. Russell, by Manuel Kroman, for Department of Public Utilities & Transportation, City of Los Angeles; Mark W. Russo, for Friends of the Earth; Latham & Watkins, by Barry A. Sanders, Attorney at Law, and Thomas R. Rice, for Applied Decision Analysis, Inc.; Andrew Segal, for San Diego Air Pollution Control District; John W. Witt, City Attorney, by William S. Shaffran, Attorney at Law, for City of San Diego; Edward Goebel, Attorney at Law, for Toward Utility Rate Normalization; Sylvia M. Siegel, for Toward Utility Rate Normalization, Consumer Federation of California, Consumer Cooperative of Berkeley, and San Francisco Consumer Action Downey, Brand, Seymour & Rohwer, by Philip A. Stohr, Attorney at Law, for General Motors Corporation; Glen J. Sullivan, Attorney at Law, for California Farm Bureau Federation; Robert R. Talley, for Western Division, Naval Facilities Engineering Command, U.S. Navy; Allen B. Wagner, Attorney at Lew, for University of California; Herbert A. Waterman, David Long, and W. Harney Wilson, Attorneys at Law, for Southern Pacific Transportation Company; Joseph Weinstein, for California Coastal Commission; Joan Werner and Brad Williams, for San Diego County Integrated Planning Office; Robert James Whitacre, for American Surfing Association; Burt Wilson, for Campaign Against Utility Service Exploitation; David Woodworth, for Surfer Magazine; and Marc McGinnes, Attorney at Law, for Santa Barbara Indian Center, Inc. مر میر مر مراجع ا

Commission Staff: Lionel B. Wilson, James Squeri, Thomas Grant, Anne Mester, and Randolph W. Deutsch, Attorneys at Law, Edmund Texeira, Don King, and Raymond J. Czahar.

Texeira, Don King, and Raymond J. Czahar.

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APPENDIX A Page I of 2 LIST OF APPEARANCES Applicants and respondents: <u>Malcolm H. Furbush</u>, Robert Ohlbach, Peter W. Hanschen, Bernard J. Della Santa, Kermit R. Kubitz, and Harry W. Long, Jr., Attorneys at Law, for Pacific Gas and Electric Company; Jonel C. Hill, Attorney at Law, for Pacific Lighting Service Company; Thomas D. Clarke and James P. Greene, Attorneys at Law, for Western LNG Terminal Associates; and Jane C. L. Goichman and John P. Meck, Attorneys at Law, for Western LNG Terminal Associates and Pacific Lighting Service Company.

Respondents: Gordon Pearce, C. Edward Gibson, <u>Vincent P. Master</u>, Jr., Stephen A. Edwards, and Barton M. Myerson, Attorneys at Law, and Chickering & Gregory, by <u>David R. Pigott</u>, Shand L. Green, and Dennis V. Swanson, Attorneys at Law, for San Diego Gas & Electric Company; and John H. Craig, J. C. Hill, and E. R. Island, Attorneys at Law, for Southern California Gas Company.

Interested Parties: <u>George H. Allen</u>, Attorney at Law, for Hollister Ranch Owners Association; <u>C. William Altman</u>, Attorney at Law, for Santa Barbara County; George Gilmour, Jonathan Blees, and Dion Grueneich, Attorneys at Law, for California Energy Resources Conservation and Development Commission; <u>Samuel Blitman</u>, for himself; Brobeck, Phleger & Harrison, by Gordon E. Davis and William H. Booth, Attorneys at Law, for California Manufacturers Association; Fulop, Rolston, Burns & McKittrick, by <u>Marvin G. Burns</u>, K. Phillip Knierim. and Kenneth K. Blev. for Fred H. Bixby Ranch K. Phillip Knierim, and Kenneth K. Bley, for Fred H. Bixby Ranch Company; <u>Stephen Chesnoff</u>, Attorney at Law, for J. C. Penney; <u>Vernon E. Cullum</u>, for City of Long Beach; <u>Norbert H. Dall</u>, for the <u>Sierra Club</u>; <u>James M. Doyle</u>, for California Department of Parks and Recreation; <u>John L. Geesman</u>, Attorney at Law, Barry Epstein, and Jerry Simmons, for California Citizen Action Group; <u>Malcolm H.</u> Furbush and Gilbert L. Harrick, Attorneys at Law, for Pacific Gas ING Terminal Company; Beardsley, Hufstedler & Kemble, by Burton J. Gindler, Attorney at Law, for Kelco Company; Lt. Commander John L. Hair, for the United States Coast Guard; Rollin E. Woodbury, Robert J. Cahall, <u>Dennis G. Monge</u>, and Carol B. Henningson, Attorneys at Law, for Southern California Edison Company; <u>Jimmie</u> Jones, for International Union of Operating Engineers - Local #12; Thomas D. Kampas, for himself; Garard Kapuscik, for Ventura County Concerned Citizens Committee, Inc.; Tom Knox, Attorney at Law, for California Retailers Association; Graham & James, by Boris H. Lakusta, David J. Marchant, and Jerry J. Suich, Attorneys at Law, for Collier Carbon & Chemical Corporation; Henry F. Lippitt, 2nd, Attorney at Law, for California Gas Producers

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PASE LOAD SUPPLIES

Base Case Supply *

(blaick)

Year	Northern <u>California</u>		Southern <u>California</u>	
	RECORDED	· · · ·	,	
1972 1973 1974 1975 1976	2774 2695 2352 2319 2282		2679 2566 2398 2252 2132	•
	ESTIMATED	en (m. 1997) 2000 - Santa Santa 1997 - Santa Santa Itala	an a	,
1977 1973 1979 1980 1931 1982 1983 1984 1985 1986 1987 1983 1989 1989	2213 2060 1966 1876 1804 1741 1700 1663 1653 1453 1140 1125 1076 922		2058 1928 1765 1636 1527 1448 1396 1337 1287 1236 1169 1131 1022 1034	

* Base Case Supplies include supplies from traditional sources plus expected supplemental gas from solid waste conversion, the Rocky Mountains and Federal offshore California.

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BASE LOAD SUPPLIES

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Potential Supplemental Supplies *

(MMcfd)

NORTHERN CALIFORNIA

Year	Prudhoe <u>Bay</u>	<u>Mexico</u>	<u>Algeria</u> (MMcid)	<u>Indonesia</u>	<u>So. Alaska</u>	Canadian " <u>Bubble Gas</u> "
1979 1980 1982 1982 1988 1988 1988 1988 1988 1988	200 200 200 200 200 200 200	1 59 756 90 119 129 129 124 134	175 174 185 209 211 215 230	250 250 250 250 250 250 250 250	100 200 200 200 200 200 200	
1070		. 7	SOUTHER	N CALIFORNIA		
1988234567890 19888888890 19888888890	400 400 400 400 400 400 400	42 160 1928 237 2450 265 265 262	307 313 311 296 291 285 269	250 250 250 250 250 250 250 250 250	100 200 200 200 200 200 200	2_J 215 215 215 215 215 215 215 215 215

* Does not include short-term supplements that may be acquired from gas supplies temporarily surplus to the needs of others.

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Normal Weather Tehr

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1701	1,045	254	203	236	1638
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1981	1.462	143	309	113	2:032
1982	1.479	141	309	112	2 0.2
1023	1 1.94	11.2	100	112	2 545
1.1	2 63.2	71.0	200	175	2,000
1925	7 470	5 1 C	200		2,009
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1986	1,553	148	3.07	5.1.5	2,123
1937	2,577	14.5	306	115	2.716
1.903	1.602	11.23	3:1	114	2.172
2.29	1.626	142	305	176	2.10-
2.00	5 (#		23 A.		~ + 4.7 /

Note: M2P, P3 and P4 requirements are the estimated fuel requirements of customers connected to the utilities' systems as of the end of 1976 as adjusted for the transfer of P2A (temporary) customers and the elimination of cement plant requirements.

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NATURAL GAS REQUIREMENTS

Cold Wrather Year

(MMcfd)

Year :	73.4522	: P2B	P3	÷ 74	: Total :	
· · ·	Northern Californic					
1977 1978 1979 1980	1,112 1,115 1,125 1,119	154 154 154 154	184 164 203 203	21,2 242 242 236	1,692 1,695 1,721, 1,712	
1981 1982 1983 1984 1985	1,130 1,141 1,153 1,172 1,188	154 154 154 154 154	203 203 203 203 203 203	236 236 236 236 236 236	1,723 1,734 1,746 1,765 1,781	
1985 1987 1988 1989 1989	1,204 1,221 1,239 1,255 1,279	1.54 154 154 154 154	203 203 203 203 203	236 236 236 236 236	1,797 1,814 1,832 1,847 1,872	
		Southern California				
1977 1978 1979 1980	1,559 1,566 1,574 1,581	148 148 148 148	281 313 313 309	114 113 113 113	2,102 2,140 2,148 2,151	
1981 1902 1983 1984 1985	1,600 1,619 1,639 1,653 1,677	778 778 778 778 778 778	309 309 308 308 308	213 213 214 214 215 215	2,170 2,189 2,209 2,229 2,227	
1986 1987 1988 1989 1990	1,703 1,730 1,756 1,783 1,809	178 178 178 178 178	307 306 306 305 305	116 217 217 217 217 217 217 217 217 217 217	2,273 2,299 2,326 2,352 2,378	

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NATURAL CAS REQUIREMENTS

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Warm Weather Year

(Mcfd)

- <u>rear</u>	: P1+P2A	: P28	- 23	P/			
				<u> </u>	- Total :		
	Northern California						
1977 1978	928 927	154 157	184	242	1,508		
1979	932	154	203	242	1,507		
1980	922	154	203	236	1,531		
1981 1982	929 025	154	203	236	1.522		
1983	725 075	154	203	236	1,528		
198/	956	104	203	. 236	1,535		
1985	968	154	202	236	1,549		
	,	~/4	205	236	1,561		
1986	981	154	203	236	1.591		
1000	994	154	203	236	1-587		
1020 1020	1,008	154	203	236	1,601		
1990	1.0/1	154	203	236	1,612		
,		274	203	236	1,634		
		South	ern Cali	fornia			
1977	1,290	140	281	רר.	1 000		
1978	1,291	148	313	113	1 PK5		
1979	1,292	248	313	113	1.866		
7990	1,293	248	309	113	1,863		
1981	1,307	148	309	712	1 000		
1982	1,320	148	309	ĨĨŠ	1,890		
1987	1,334	148	308	2.2.4	1,904		
1985	1 261	118	308	115	1,918		
-, -,	یلرن نے و بند	كليك	307	115	1,931		
1986	1,383	148	307	115	1 952		
1987	1,405	148	306	115	1.971		
1980	1,427	341	306	226	1,997		
1990		148	305	116	2,018		
	** 9 ** (**	CHAR C	305	116	2.040		

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FINAL REPORT EVALUATING AND RANKING LNG TERMINAL SITES

SUMMARY.

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On May 24, 1978, the California Coastal Commission adopted the following ranking of potential LNG terminal sites:

1. HORNO CANYON on Camp Pendleton in San Diego County where a terminal would have the least adverse impacts on coastal resources.

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- 2. RATTLESNAKE CANYON in San Luis Obispo County.
- 3. LITTLE COJO near Point Conception in Santa Barbara County:
- 4. DEER CANYON in Ventura County where a terminal would have the most overall adverse impact on coastal resources.

The Commission eliminated a fifth site, at LAS VARAS in Santa Barbara County (Figure 1), due to the recently confirmed presence of a small active earthquake fault passing through the site. A similar fault has been identified at the LITTLE COJO site, which is nevertheless retained in the ranking because the LNG Terminal Act of 1977 requires that the Commission rank the site selected by Western LNG Terminal Associates in its application to the Public Utilities Commission (PUC).

The Commission also adopted thirty-one terms and conditions designed to minimize adverse LNG terminal impacts, at any of the sites, on recreation, natural resources, public views and other resources protected by the policies of the California Coastal Act of 1976. The Commission is required to submit a site ranking with recommended conditions to the PUC by May 31, 1978. The PUC must then reach a decision on whether a permit should be granted for construction and operation of an LNG terminal at one of the sites by July 31, 1978.

It has been difficult to identify possible onshore LNG terminal sites on the 1,100 mile long California coast. The Commission evaluated 82 possible sites, including 18 nominated by the public, and retained only five as potentially feasible sites for further study and ranking. Adverse wind, wave and fog conditions, nearby urban areas, earthquake faults and rugged land ruled out most of the coast for siting potentially hazardous LNG terminal operations. Seismic evaluations of the five sites resulted in discovering small active surface faults at two of them, and such faults may be found at the other sites after additional evaluation.

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LNG Terminal Sites Retained for Final Ranking



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Deer Canyon







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The Commission contracted with a number of consultants to assist in technical evaluations of the sites, and correspondence has been received on the site ranking from many federal and state agencies, environmental groups, surfers, property owners, Western LNG Terminal Associates and other interested parties. The Commission held four public hearings in April near the sites to be ranked and received testimony from more than 150 groups and individuals. A final public hearing on this report was held in Los Angeles on May 15, 1978. The process established by the LNG Terminal Act for identifying, evaluating, and ranking sites by the Coastal Commission has been an open public process. The record contains over 2000 letters and reports commenting on all aspects of the site ranking process.

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II. TERMINAL SITE RANKING AND FINDINGS

A. Site Ranking

The Coastal Commission adopts the following ranking for possible LNG terminal sites. The sites are ranked in order, starting with the site where LNG terminal construction and operation would have the least adverse impacts on resources protected by the policies of the California Coastal Act of 1976 and ending with the site having the most adverse impacts:

- 1. HORNO CANYON on Camp Pendleton in San Diego County
- 2. RATTLESNAKE CANYON in San Luis Obispo County

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- 3. LITTLE COJO near Point Conception in Santa Barbara County
- 4. DEER CANYON in Ventura County

The Commission removes the LAS VARAS site in Santa Barbara County from the ranking due to the recently confirmed presence of a small but active earthquake fault on the site. A similar fault has been detected on the LITTLE COJO site, and the Public Utilities Commission and federal Department of Energy may not be able to approve this site given this seismic problem. However, because this site was selected by the applicant Western LNG Terminal Associates and must be ranked by the Commission, it is retained in the ranking, recognizing that it too may be eliminated from the ranking by the PUC or Department of Energy.

B. Findings on Site Rankings

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The Commission adopts the following findings and declarations:

1. The Coastal Commission Has a Limited Role in the LNG Project Decision. The LNG Terminal Act of 1977 deleted the Coastal Commission's permit authority over the construction and operation of California's first LNG terminal. Under the California Coastal Act of 1976, the Coastal Commission had the authority to approve or deny an application for an LNG terminal on the California coast. The LNG Terminal Act replaced the Commission's permitting authority with a more limited role, to determine by ranking, which possible LNG terminal sites would have the least adverse impacts on the objectives of the Coastal Act and to submit that ranking to the Public Utilities Commission (PUC). That Commission has the exclusive state authority to make the decision on whether to approve an LNG project, based on overall consideration of the public health, safety, and welfare. The LNG Terminal Act does not allow the Coastal Commission to make a finding that an LNG terminal is not needed or adversely affects public welfare and therefore should not be permitted.

The Commission recognizes that the project has national energy policy implications, and that the level of gas supply affects the State's

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economy and environment. In reaching its final decision on the location of an LNG terminal, the PUC is the State agency which will weigh these other factors, and will represent the State of California in the federal proceedings on this project.

2. An LNG Terminal at Any Site Will Cause Serious Impacts to Coastal Resources. The Commission finds that after an evaluation of 82 potential LNG terminal sites along the 1,100 mile long California coast and after intensive evaluations of five of those sites, there is no possible remote onshore terminal site that would not cause major adverse impacts to natural marine and wildlife resources, public recreation areas, and other resources protected by the California Coastal Act of 1976. Conditions imposed on the construction and operation of a terminal at each site would help reduce, but will not eliminate, these adverse impacts. The marine environ-ment in these remote coastal areas will be disturbed by massive construction activities, including trenching, blasting, and pile driving. Regular LNG tanker maneuverings, fuel oil deliveries, and tug and line boat activity will continuously intrude noise and activity into areas used by sea birds and mammals, including the California grey whales. Onshore, because all sites are remote and relatively undisturbed, an LNG terminal will alter the character of the area and disturb valuable wildlife populations. The Commission urges the Public Utilities Commission to give these adverse impacts heavy weight in its decision whether to approve the proposed ENG project.

3. The Safety of LNG Operations Remains Uncertain. Section 5552 of the LNG Terminal Act of 1977 states in part:

"The Legislature further finds and declares that current uncertainties about the safety of liquefied natural gas require that the single terminal authorized by this chapter be located at a site remote from human population in order to provide the maximum possible protection to the public against the possibility of accident."

To implement this policy, the Act limits the population density within one and four miles of a terminal authorized under the Act. To further minimize risks from LNG terminal operations, the Act also requires the Public Utilities Commission to adopt regulations governing the safety and construction of an LNG terminal and to consult with the Division of Industrial Safety and the Energy Commission. At the federal level, the Department of Energy requires an LNG terminal operator to submit and receive approval of a Final Safety Analysis Report prior to operation of the terminal, and safety requirements of the U.S. Coast Guard, the Office of Pipeline Safety Operations, the Occupational Health and Safety Administration, and other federal agencies must also be met.

The Commission therefore finds that the major state consideration of the safety factors in LNG terminal siting, design, and operation has been addressed in the legislation and assigned to the PUC. Since the safety of LNG terminal and tanker operations is not within the Commission's legislative jurisdiction, only limited study was made of these safety issues and the possible consequences of LNG accidents to people, property and natural resources. However, the Commission has serious concerns about the adequacy of measures to prevent and to cope with LNG accidents and about the research undertaken so far to predict the consequences of LNG spills, fires, and vapor cloud dispersion (see Staff Notes). The Commission recognizes a decision on transporting LNG to California cannot wait until the completion of long term

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research projects on LNG risks. The Commission therefore urges the PUC and Department of Energy, if they approve a terminal, to develop stringent safety regulations and a monitoring program to ensure that LNG risks to people and property are minimized, regardless of the "remoteness" of the terminal location. In addition, the Commission urges the Coast Guard to institute a program to inspect the LNG vessels for structural integrity and other safety risks for the life of the vessel.

4. The Basis for the Site Ranking Is the Heavy Weighting of Coastal Act Policies on Recreation, Public Access, Protection of Natural Resources, and Minimizing Adverse Development Impacts. The LNG Terminal Act requires the Commission to base its site ranking on findings applying the policies, goals, and objectives of Chapter 3 of the Coastal Act. Most of these policies provide for the protection and enhancement of public recreation opportunities and public access to and along the coast, for the protection of valuable marine and wildlife resources, and for minimizing adverse impacts of coastal developments on public views and the character of coastal areas. The Commission has given greatest weight to these policies in ranking the sites. Less weight has been given to the Coastal Act policies providing for consideration of terminal cost and safety differences at the sites. Although the LNG Terminal Act restricts the number of permanent residents and workers in the terminal area, the Commission finds that visitors, campers, and travelers within four miles of an LNG terminal and, to a lesser extent, people and property beyond four miles may also be at risk from LNG accidents. Therefore the "remoteness" of the sites from transients, permanent populations, and nuclear power plants has been considered in the site ranking.

5. Seismic Safety Considerations.

a. <u>Seismic Siting Criteria</u>. In December the Commission published criteria for evaluating possible sites for an LNG terminal. The seismic criterion stated that no site would be retained for the ranking if it were on or within 50 feet of an active earthquake fault. Public comment emphasized that this standard was not conservative enough. Although Nuclear Regulatory Commission seismic criteria for nuclear power plant siti. ; are not directly applicable to LNG terminals, for purposes of comparison, "he NRC does not license nuclear power plants that lie upon or are in close proximity to "capable" earthquake faults. These are defined as those wi. movement within the last 35,000 years or multiple movements within 500,000 years. The NRC generally considers as not suitable sites located within five miles of a surface capable fault longer than 1,000 feet. Draft regulations of the Department of Transportation's Office of Pipeline Safety Operations would also prohibit LNG terminal siting near a capable fault.

b. Seismic Safety Considerations Remove LAS VARAS from the Ranking. The Commission authorized its geologic consultants to trench the Las Varas site (Figures 4 and 5) to investigate a questionable surface feature. The trenches at that site confirmed the presence of a small thrust fault that apparently has moved approximately three feet at some time within the past 30,000 to 50,000 years. LNG storage tanks and other critical components at a terminal would be in close proximity to this relatively youthful fault (Figure 5). There is a very good possibility of similar and related geologic features on the site. Because of the possibility of future surface faulting at this site, and in spite of the low probability of a failure. the Commission has removed Las Varas from further consideration as an LNG terminal site to minimize risks to persons and property. This action is consistent with the siting criteria published in December:





Figure 5

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The removal of Las Varas from the ranking is done even though the Commission's own consultants believe that design features can minimize risks due to surface faulting. The Commission believes that it is not prudent to locate such a large and potentially hazardous industrial facility on a site with known recent faulting.

c. Little Cojo Must Be Ranked Despite Seismic Problems. Recent information presented by geologists employed by the Hollister Ranch, and confirmed by the Commission's consultants, indicates that the Little Cojo (Point Conception) site has a fault (Figure 11) similar to that found at Las Varas. Applying the same reasoning and caution which caused the Commission to remove Las Varas would also mean eliminating the Little Cojo site from further evaulation. However, the Liquefied Natural Gas Terminal Act of 1977 precludes that action. Since it is the applied-for site, it must be ranked by the Coastal Commission. If it were not for the requirements of the legislation, that specific site would no longer be considered.

Both the PUC and the federal Department of Energy (DOE) have requested Western LNG Terminal Associates to further evaluate the seismic hazards at the Little Cojo site. It is possible, after more evaluation, terminal design work, and possibly shifting the site away from the fault within the same siting area, that Western LNG Terminal Associates could convince the PUC and DOE that licensing a terminal at Little Cojo would be acceptable.

It is also possible that more detailed seismic evaluations, including trenching, at one of the other three sites, if approved, will discover small faults similar to those found at Las Varas and Little Cojo. If these common faults in California coastal areas are also discovered at other sites, and if there is an overriding need for an LNG terminal site, all the sites, including Las Varas and Little Cojo, should be reevaluated to select the one upon which design features can minimize the risks. However, authorization to construct an LNG terminal on a site with an active surface fault nearby would be a significant departure from currently accepted regulatory practice.

6. Adding Facilities to a Terminal. The Commission's maritime consultants indicate that if an approved terminal reaches the maximum gas delivery rate authorized under the LNG Terminal Act, 1.3 billion cubic feet per day, additions may be needed to the terminal to increase the reliability of LNG tanker berthing and unloading (see Staff Notes). Possible additions that might be considered would include a fourth LNG storage tank, second berth, or a breakwater to protect the berthing area. In this site ranking, the Commission is considering a breakwater only at the Rattlesnake Canyon site, and a breakwater at other sites, particularly Little Cojo, would lower the ranking of such site.

The three options for improving gas supply reliability that involve terminal additions are not part of any application. There is no clear State regulatory process for approving such additions after a permit is granted under the LNG Terminal Act of 1977. If proposals are made in the future to add facilities to a terminal, all alternatives and their degree of environmental damage should be evaluated. The Commission urges the legislature and the PUC to develop a review and approval process for terminal additions, and the Commission should have a major role in selecting an alternative and developing terms and conditions.

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7. Horno Canyon on Camp Pendleton is Ranked First. The Commission ranks the Horno Canyon site on Camp Pendleton (Figures 6 and 7) first among the four sites because construction and operation of an LNG terminal there would have the least adverse effects on the objectives of Chapter 3 of the California Coastal Act of 1976. The basis for this ranking is that a Horno Canyon LNG terminal would have low adverse impacts on public access, recreation, and natural resources and would not be inconsistent with most of the development policies of the Act. It is ranked first despite statements from the Navy and Marine Corps that the site would not be available for an LNG terminal, because the military does not necessarily exercise final control over the use of federal property. Federal property is not subject to state authorized eminent domain proceedings. Consideration of national energy priorities and a federal LNG terminal siting policy to locate such terminals where they will be least damaging to the environment, however, could cause other officials in the executive branch, including the President, to make the land available.

The Commission recognizes that under both the federal Coastal Zone Management Act and the California Coastal Act the Commission does not regulate lands on the coast in federal ownership. However, the LNG Terminal Act of 1977 expressly states that the Commission shall study, evaluate, and rank "potential onshore sites for an LNG terminal" (Section 5611) and that "onshore" is defined as "any location on the mainland of California landward of the mean high tide line" (Section 5565). Thus the Act requires an evaluation of all potential sites regardless of site ownership, even though use of federal lands for a terminal would have to be a federal decision. Given the small number of feasible sites remaining after an evaluation of 82 sites, this has turned out to be a prudent legislative directive.

<u>Public Access and Recreation</u>. A Horno Canyon terminal would have more adverse impacts on coastal recreation and public access than a Rattlesnake Canyon or Little Cojo terminal and less adverse impacts than a terminal at Deer Canyon.

<u>Public Access</u>. The Horno Canyon site is owned and used by the U. Marines and is not open to the public. Visitors can reach it by walking south along the beach from San Onofre State Park, which extends to about mile from the site, but Marine patrols prevent public use. Recommended conditions 1 and 18 would, at a minimum, preserve the existing public access in the area, and perhaps increase it.

<u>Recreation</u>. The terminal's 8700-foot long trestle would degrade the recreation experience for some visitors at San Onofre State Park, but the most heavily used area of the park, popular for surfing, is five miles from the site and is divided by the large San Onofre Nuclear Power Plant. Boating from Oceanside and San Clemente is popular in the area, and tanker operations could result in some restrictions on boating near the terminal. The Department of Parks and Recreation indicates that only a Rattlesnake Canyon terminal, of the other three sites, would cause less adverse recreation impacts than a Horno Canyon terminal. In fact, the Department did express hope that someday this last major block of undeveloped coastal property in Southern California, Camp Pendleton, might be a park (Exhibit 00502). Given the site's present use and lack of access, however, the Commission finds a Horno Canyon terminal would have a low adverse effect on public recreation opportunities if recommended conditions are imposed by the PUC.



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Figure 6



Figure 7

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Marine Environment and Land Resources.

<u>Marine Resources</u>. A Horno Canyon LNG terminal would have the least adverse impacts on marine resources protected by the policies of Article 4. Chapter 3 of the Coastal Act. The lack of suitable offshore rock or reef bottom prevents the offshore area from supporting more than intermittent kelp beds of comparatively low importance. Although the area supports very good commercial and sport fisheries, most of the species which are fished are not dependent on nearshore features, such as Kelp beds or rocky reef areas, that would be affected by terminal construction and operation. The fishing catch per unit of effort is low. Therefore the Department of Fish than at the other three sites (April 17, 1978 letter from Charles Fullerton to the Coastal Commission).

Land Resources. The onshore wildlife resources of the site, which consist of a natural coastal sage scrub community and are of low diversity and abundance, are common to the general area. Military activities, mainly vehicle travel over the site, have affected the scrub communities. The site is not presently inhabited by any rare or endangered species of animals or plants, although it is probably visited by the California brown pelican, an endangered species, and the white-tailed kite, a fully protected species. The area is of relatively low importance to marine bird and mammal facilities would have the least adverse impact on wildlife species of special concern than any other site.

Archaeological Resources. The State Historic Preservation Office indicates no cultural and archaeological resources are known to exist at the site (Exhibit 00774).

Land Use and Development Policies. The Camp Pendleton Marine Corps Base has helped to limit urban expansion into the largest remaining undeveloped coastal area in southern California. The Commission believes that open space is a desirable use of this 10% miles coastline and its conclusions on the siting of an LNG terminal should not be viewed as encouraging other kinds of development. The requirements of the LNG Terminal Act could have the effect of limiting possible future development within four miles of the site. The 100-acre site constitutes less than .1% of the Camp Pendleton ... Marine Corps Base and is not used for military operations. Testimony by representatives of the U.S. Navy and Marine Corps indicates that a Horno Canyon LNG terminal would, however, conflict with amphibious military training exercises considered necessary to maintain national defense preparedness (see Staff Notes). The nearest beach at which amphibious landings take place is less than 2 miles south of the site, but the Navy indicates vessel maneuvers take place where the LNG terminal trestle would be located. In addition, the Marines operate airplane flight paths over the site. Therefore, if an LNG terminal is located at this Camp Pendleton site, vessel and aircraft maneuvering areas would probably have to be changed.

Public Services. The Horno Canyon site comes closest, given the population restrictions in the LNG Terminal Act, to meeting the coastal policy of locating new industrial development in areas of existing industrial facilities. The site is readily accessible by an existing highway and railroad, and public services, including emergency medical facilities, are nearby. Adequate electrical transmission lines are within a few thousand feet of the site.

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<u>Alteration of Natural Landforms</u>. Little landform alteration would be required to prepare the fairly level site, although some minimal offsite disposal of dirt may be necessary.

Offshore construction would not require any reef removal or breakwater construction.

<u>Public Views</u>. The relatively undeveloped and open stretch of coast between the San Onofre Nuclear Power Plant and Oceanside provides a comparatively uninterrupted sweeping view of the ocean to the west and rolling hills to the east along heavily traveled Interstate 5. It provides visual relief from the highly developed Orange County and San Diego County coastal areas and, of the four sites, is viewed by the most people. Immediately adjacent to the southern boundary of the site is a scenic viewpoint on 15. A Horno Canyon terminal would intrude a major industrial facility in the middle of this stretch of coast. A terminal would be less visually incompatible with the imposition of condition 18, which requires partially undergrounded LNG storage tanks, but the 8,700-foot long trestel would be visible from much of the San Diego County coastal areas.

Weighing the different impacts on views to and along the coast at the different sites is complicated and subjective. While the view along Camp Pendleton's coastal terrace provides a sweeping vista for Interstate 5 drivers, the terrace itself is generally flat and not spectacular. By contrast, the view of the coastal terrace at Little Cojo is spectacular, with bays and curving bluffs along the shore, and ravines dropping to sandy beaches from the steep canyons of the Santa Ynez Mountains. However this Little Cojo view can be seen only by fortunate residents and visitors to the private Hollister and Bixby Ranches and those who can reach the offshore area by Loat, while the Camp Pendleton view is seen by 60 to 80,000 drivers a day.

<u>Remoteness</u>. The risks to population concentrations associated with a Horno Canyon terminal seem roughly comparable to terminals at the other sites except at Little Cojo, the most distant site from urban areas. The nearest permanent population concentrations to Horno Canyon are at least ten miles away at Oceanside and San Clemente. Some Marine barracks may have to be relocated to meet population density standards within four miles of the site. As with the Rattlesnake Canyon site, and unlike the other two sites, a nuclear power plant is about five miles north of the site (see Staff Notc .

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The Horno Canyon site provides the opportunity for LNG tanker traffic to travel outside the Santa Barbara Channel shipping Tanes should the Coast Guard determine that such a route provides greater safety.

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Cost. The Public Utilities Commission indicates that construction costs at Horno Canyon would be comparable to those at Little Cojo, which is currently estimated as costing about \$475.5 million. Terminal construction at both sites would cost about \$250-300 million less than at Rattlesnake and Deer Canyons. The Horno Canyon cost would be comparatively low because the site is on a level coastal terrace and no breakwater would be required.

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8. Rattlesnake Canyon is Ranked Second. The Commission finds that the Rattlesnake Canyon site (Figures 8 and 9) would have the second least adverse impacts on the objectives of Chapter 3 Coastal Act policies. The basis for this ranking is that construction and operation of an LNG terminal at Rattlesnake Canyon would have the least adverse impacts on public access and recreation and would not be inconsistent with most of the development policies of the Act. It is ranked second, below Horno Canyon, primarily because of the adverse impacts on natural marine and wildlife resources, which are more diverse and abundant than at Horno Canyon and Deer Canyon, but less than at Little Cojo. Other adverse factors contributing to the second place ranking include major alteration of the offshore reef area by construction of a breakwater, an increased construction cost, according to the PUC, of about \$350 million above the Horno Canyon cost, potential damage to archaeological resources, and the generally more severe fog, wind, and wave conditions. If the PUC approves this site instead of the first ranked Horno Canyon site, there would be an overall moderate increase in adverse impacts on Coastal Act objectives.

<u>Public Access and Recreation</u>. The Commission finds that adverse impacts of a Rattlesnake Canyon terminal on public access and recreation would be the least significant of the four sites.

Public Access. Public access to the area is prohibited by a PG&E guard station which provides security for the Diablo Canyon Nuclear Power Plant. While the other three sites have sandy beaches at the base of bluffs, the shore below the bluffs at this site is steep and rocky, without a beach, and inaccessible.

<u>Recreation</u>. The Department of Parks and Recreation concludes that, of the four sites, this site would be the least disruptive of existing park units and proposed development and acquisition. Montano de Oro State Park is 5½ miles north of the site, and Avila Beach State Park is about 2 miles southeast. The terminal would not be visible from either park or otherwise affect their use, with the exception of increased construction traffic on the Avila Road.

Marine_Environment and Land Resources.

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<u>Marine Resources</u>. The Department of Fish and Game concludes, and the Commission finds, that marine resources at Rattlesnake Canyon are very sensitive, second only to those at Little Cojo. The nearshore environment supports diverse and abundant marine life, although the repopulation of the area by the sea otter has depleted historic abalone and sea urchin fisheries. Some kelp is present, and the site area supports commercial and sport fisheries for finfish, especially rockfish. The area is important to marine birds and mammals since nesting and resting areas for cormorants, sea lions, and harbor seals are nearby, and these would be disturbed by construction activities and tanker operations offshore.



Figure



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Land Resources. The Department of Fish and Game concludes that adverse impacts on natural resources of a terminal at this site would be more significant, in general, than at Horno Canyon and Deer Canyon, and less significant than at Little Cojo. Onshore, the site itself is being cultivated for barley and snow peas, but a good riparian community of plants and animals along Pecho Creek would be unavoidably altered by construction. Introducing industrial activity onto this section of terrace in front of the grazed but relatively undeveloped Irish Hills would disturb the valuable long-term wildlife resources.

While condition 7 would minimize disturbance to natural resources at this site, the major disturbance is due to the intrusion of industrial activity, with bright lights, noise, and equipment movements which cannot be prevented.

Archaeological Resources. The State Office of Historic Preservation considers this site the least preferred, because at least four Chumash archaeological sites listed on the National Register of Historic Places and a possible prehistoric period ceremonial shrine are located on the site (Exhibit 00774). This factor contributes to ranking this site below Horno Canyon, but it does not contribute in a major way to making it less adverse than Little Cojo or Deer Canyon, since those sites also have archaeological resources, though of somewhat less significance.

Land Use and Development Policies.

<u>Churacter of the Area</u>. The Rattlesnake Canyon site is on an isolated coastal terrace which is currently in agricultural use. Development plans have bee, discussed to take advantage of the scenic quality of the area. The character of this stretch of coast, however, has been altered by the construction of the Diablo Canyon nuclear power plant about four miles north of the site and the connecting transmission lines and access road.

<u>Public Services</u>. The availability of roads, utilities, and other facilities is a factor contributing to ranking Rattlesnake Canyon above Little Cojo and Deer Canyon. The coastal terrace area has already experienced a major construction project, the Diablo Canyon Nuclear Power Plant, and a barge terminal, heavy duty road, electric transmission line corridor, security fences, and other facilities are already in place to serve the site.

Alteration of Natural Landforms. Construction of a large 6,700-foot long breakwater offshore the site would be a significant alteration to the rocky nearshore area. The rock breakwater would go over Santa Rosa Reef to Westdahl Rock, and some blasting and removal of offshore rocks and reefs may be needed to insure safety for LNG tanker maneuvering. After construction, however, the Department of Fish and Game indicates that the effect of the breakwater on kelp, fish, and invertebrates would not be adverse, since the breakwater would provide substrate habitat for these organisms. Therefore the breakwater would be a major physical landform alteration but not necessarily a major natural resources habitat alteration; thus, this factor does not contribute to changing the second-place ranking of this site.

Construction onshore at the site itself would be possible with a nearly balanced cut and fill approach, minimizing the need for off-site removal of dirt by trucks.

<u>Public Views</u>. The site is not visible to the public because it is in the PG&E restricted area on the other side of the Irish Hills from Port San Luis and Avila Beach. This contributes to a high ranking for the site, although the trestle, breakwater, and LNG tanker operations would be visible from ten or more miles away at Pismo Beach and the recreation areas along the south half of San Luis Obispo Bay.

<u>Remoteness</u>. The site is similar in remoteness and potential risks to people and property as the Deer and Horno Canyon sites and less remote than Little Cojo. The Rattlesnake Canyon site itself is somewhat shielded from Port San Luis and Avila Beach by the Irish Hills, but San Luis Obispo Bay would have no such protection from an accident at the berthing facility. The number of people potentially at risk, including permanent residents and workers, visitors, campers, and recreators, seems roughly similar to the number around Deer and Horno Canyons, so this factor does not have a large impact on this site's ranking. As at Horno Canyon, a nuclear power plant is about four miles north of the site, and the Nuclear Regulatory Commission would have to find that LNG terminal operations at Rattlesnake Canyon pose acceptable risks to safe nuclear plant operation before permitting this major PG&E investment to produce electricity from nuclear reactions (see Staff Notes).

The LNG tanker route would not come within about 10 miles of populated areas, and the vessel traffic in the site area is relatively light_

Cost. Due to the need to construct a \$175 million breakwater and a long cryogenic pipeline, the total construction cost of a terminal at this site, about \$880 million according to the PUC, would be higher than that at Little Cojo or Horno Canyon and similar to that at Deer Canyon, where large amounts of earth would have to be moved to prepare the site.

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9. Little Cojo near Point Conception is Ranked Third.

The Commission finds that, of the four sites, the Little Cojo site (Figures 10 and 11) would have the third least adverse effects on the objectives of Charter 3 Coastal Act policies. This ranking does not take into account the recently confirmed presence of a potentially active earthquake fault on the site, because this fact would have caused the Commission to eliminate the site from consideration, as it does with Las Varas. But the LNG Terminal Act requires that the Little Cojo site be ranked. The basis for ranking this site third is that construction and operation of an LNG terminal at Little Cojo would have the most significant adverse impacts of the four sites on natural resources and the comparatively unspoiled character of a unique and remote coastal area especially

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valued by surfers and fishermen. The views along this long, broad coastal terrace are spectacular. Little Cojo is ranked below Rattlesnake Canyon because it is more inconsistent with Coastal Act development policies and would have a greater adverse impact on natural resources. Little Cojo ranks above Deer Canyon primarily because Deer Canyon would affect far more recreational users of the area and the landform alteration would be significantly greater.

With conditions 23 through 28 which prohibit a seawater intake system and electric transmission lines at the site, require partial ingrounding of storage tanks, and provide for public access to the area, the overall adverse impacts of a terminal at this site would be moderately more severe than at the higher ranked Rattlesnake Canyon site, but slightly less severe than the lower ranked Deer Canyon site. If. the PUC does not impose the specific conditions recommended for a terminal at Little Cojo, Little Cojo would be ranked fourth, with moderately more adverse impacts on Coastal Act objectives than Deer Canyon, which would then be ranked third.

Public Access and Recreation.

Public Access. Onshore public access to the site area is prevented by the locked gate policies of the Bixby and Hollister Ranches. Surfers, divers and fishermen reach the waters in front of the site using boats launched at Gaviota State Beach or elsewhere. If this site is selected for an LNG terminal, condition 25 would provide new public access to the area, and to that extent would further the Coastal Act objective of promoting public access to coastal areas.

<u>Recreation</u>. The Commission has received testimony and hundreds of letters from all over California and the world urging protection of the special surfing breaks off the Hollister Ranch. A "point" break" at the west end of Little Cojo Bay is rated a "classic" break and one of the four best breaks in California, according to the Western Surfing Association. The construction of a trestle at this site and vessel operations would not necessarily prevent or directly interfere with surfing at Little Cojo, and if such interference does take place it would be substantially mitigated by condition 27 requiring construction of equivalent surfing breaks. But the presence of the 4600-foot long trestle would degrade the remote character of the Ranch surfing experience.

The area is also popular with sport and commercial fishermen, divers, and boaters. Heavy construction traffic could adversely affect Gaviota Beach State Park, where the Hollister access road connects to US 101.

Marine Environment and Land Resources.

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Marine Resources. The Department of Fish and Game identifies the Point Conception marine environment as the most sensitive of the four sites because cold northerly waters and warmer southerly waters meet and mix there. Therefore the area is considered the limit for the ranges of 14 species of fish and 20 species of invertebrates, making the marine resources highly diverse. In addition, marine resources are particularly abundant in the area due to the upwelling of nutrient-laden colder waters. Commercial fishermen from Santa A.57626 et al. /km

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Figure 10



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Barbara testified that the waters off Little Cojo provide one of their most productive fishing grounds. The largest and most productive kelp bed off California, bed #32, extends along the site. The kelp is commercially harvested under a 20-year lease from the Department of Fish and Game and also serves as a rich habitat for associated marine life. The area near the site, relatively undisturbed by human activity, is very important to marine birds and mammals. It is believed to be used as a staging area by California grey whales during their migrations along the California coast. Adverse impacts of terminal construction and operation at this site would be minimized by the imposition of conditions 23 and 28 prohibiting seawater LNG vaporizers and reducing damage to the kelp resource, but major adverse impacts would still be associated with the intrusion of industrial activity into the nearshore area, including tanker, tug, and line boat maneuvering, shipping fuel oil to the site, and lights and vehicles on the trestle.

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Land Resources. The wildlife resources of the site itself. which is currently used for cattle grazing, are not significant, but because the large area around and inland of the site is relatively undeveloped and remote, the area in general, and particularly the foothills and canyons of the Santa Ynez Mountains, are important wildlife habitat. The area is especially valuable for birds, as large numbers of doublecrested cormorants, black brants, and pink-footed shearwaters are observed near the site. The intrusion of large scale industrial activity into this remote site would, according to Fish and Game, cause greater damage to wildlife populations than would terminals at the three other sites.

Archaeological Resources. The State Historic Preservation Officer has stated that valuable Chumash archaeological resources are found in the site area. The proposed terminal site has been moved by the applicant to avoid some of these archaeological sites.

Land Use and Development Policies.

Character of the Area. A Little Cojo terminal would unavoidably be a major intrusion of an industrial facility and industrial activity on a unique area highly valued for natural resources. The entire stretch of coast from Gaviota around Point Conception to Jalama is the last major semi-wild coast left in Southern California. Its magnificent views and abundant wildlife make it a unique coastal expanse, lacking only in greater public use and enjoyment of the area. Hollister Ranch to the east has been subdivided into large parcels of approximately 100 acres. The lack of more extensive residential and commercial development for more than ten miles around the site and lack of public access has preserved this coastal area in a lightly developed state. Small-scale development near the site includes an unused oil storage tank and a buoy type marine oil terminal in Little Cojo Bay, and the Southern Pacific Railroad tracks along the top of the bluffs.

Public Services. As the most remote site. Little Cojo is also the most inconsistent with Coastal Act policies favoring locations near existing public services. The existing Hollister Ranch road would have to be substantially upgraded to handle construction workers

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and equipment, the natural gas pipeline would have to pass through. sensitive areas in new rights of way, and emergency services in the event of an accident are at least an hour away. The adverse impacts would be decreased by conditions 23 and 24, requiring onsite electricity generation to avoid new electric transmission lines and minimizing alterations caused by upgrading the Hollister Ranch road to the site.

Alteration of Natural Landforms. The alteration of natural landforms at the site would be minimal since the site is a comparatively level terrace. A breakwater at this site has not been proposed by the applicant, and the Commission has relied on the lack of a breakwater in ranking Little Cojo third. If a breakwater were a required feature of this site, the Commission would rank it fourth, after Deer Canyon.

· Public Views. Since the public does not have easy access to the Point Conception area, a site at Little Cojo will not visually impact many people. On extremely clear days, however, the terminal and trestle would be visible from the Santa Barbara Channel coastline.

Remoteness. The Little Cojo site is by far the most remote from population concentrations, with the Santa Barbara area about 40 miles to the east and areas to the north shielded by the steep Santa Ynez Mountains. There are a few Hollister Ranch residents within four miles of the site, and there are no campers, travelers or other transients within ten miler except for occasional nearshore surfers, divers, boaters, and fishermen. The LNG tanker routes would also be the furthest from population concentrations, barely entering the Santa Barbara Channel, while tankers to Deer and Horno Canyons would traverse the entire Channel, and, at Rattlesnake Canyon, the outer part of San Luis Obispo Bay.

Lost. A Little Cojo terminal, estimated to cost about \$475 million. would be comparable to one at Horno Canyon and less than one at Rattlesnake or Deer Canyons.

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10. Deer Canyon is Ranked Fourth.

The Commission finds that an LNG terminal at Deer Canyon would have the most adverse impacts on Coastal Act policies of the four sites, and therefore ranks it last. The basis for this ranking is that the Deer Canyon site is inconsistent with Coastal Act development policies and is in a coastal area heavily used for recreation. The site is only slightly more objectionable than the third-ranked Little Cojo site, primarily because of the extensive land form alteration and the interference with public use of the coast. The only favorable aspects to having a terminal at this site is its minimal view impact by being located in a canyon and its less significant and valuable natural resources.

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Public Access and Recreation.

<u>Public Access</u>. The Commission finds that of all four sites. Deer Canyon is the most inconsistent with Coastal Act policies protecting public use and enjoyment of the coast. Public access and recreational opportunities in the general area include two heavilyvisited state parks, several camps, and the Pacific Coast Highway. Although the site itself is privately owned, public access to the inland canyon is possible for hiking and the beach is easily accessible just off the shoulder of the highway. It is part of a recreation area in the Santa Monica Mountains of increasing importance to the heavily populated Southern California urban areas. The construction traffic would cause heavy traffic conflicts on the narrow Pacific Coast Highway during times of peak use, and the construction noise and lights and activities would degrade the outdoor experience of the approximately two thousand children who use camps nearby during the summer and on weekends.

<u>Recreation</u>. Point Mugu Beach State Park extends to within 1½ miles and Leo Carillo Beach State Park to within 2½ miles of the entrance to Deer Canyon. A terminal at this site would not directly impact the parks, but it would intrude on the recreational experience in an area presently untouched by industrial development. These impacts would be mitigated if the PUC imposes condition 31 requiring dedication of added coastal land for public use. The offshore area is used by sport fishermen, boater, and divers. The site is part of the proposed Santa Monica Mountains National Park.

Marine Environment and Land Resources.

<u>Marine Resources</u>. The marine resources offshore of the Deer Canyon site are judged by the Department of Fish and Game to be of less significance than the Little Cojo and Rattlesnake Canyon sites, but more significant than Horno Canyon. Offshore there is scattered kelp, and the area supports significant commercial and sport fisheries and recreational diving, but the fisheries are not dependent on nearshore kelp or reefs. The waters have been designated an Area of Special Biological Significance by the State Water Resources Control Board, but the Department of Fish and Game indicates that the marine resources at this site, while valuable, are less significant than those at Little Cojo or Rattlesnake Canyon. The site is along the migratory routes of California grey whales and some marine birds.

Land Resources. The wildlife and plants in Deer Canyon are more diverse and abundant than those at the other three sites since it is a coastal creek habitat that is relatively undisturbed. On the one hand, the presence of such wildlife and marine resources near the heavily populated Los Angeles area and the growing Oxnard Plain communities gives special value to these resources. On the other hand, the disturbance from the heavily traveled Pacific Coast Highway and popular parks and the approach of the residential development of northern Malibu detracts from the long-term significance of these wildlife populations. Therefore the Commission finds the adverse impacts on natural resources of a terminal at Deer Canyon would be moderate.

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Figure 13

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Archaeological Resources. A Deer Canyon LNG terminal would have adverse impacts on archaeological resources. The Office of Historic Preservation indicates there may be at least eight Chumash archaeological sites in the site area and eight more nearby and that these resources are somewhat less significant than those at Little Cojo and Rattlesnake Canyon.

Land and Development Policies.

<u>Character of Area.</u> Deer Canyon is part of the closest undeveloped coastal area to the Los Angeles urban area. Although residential development of the greater Malibu area now extends to about four miles from the site, there is no industrial development on this mountainous stretch of the coast.

<u>Public Services</u>. A terminal at the Deer Canyon site would be inconsistent with Coastal Act policies favoring Tocations near existing development. Although road access exists, Highway I would be severely disrupted during the construction period. Electrical transmission lines would be brought in over the Santa Monica Mountains in new rights-of-way and emergency services are a long distance away.

Alteration of Natural Landforms. Preparing this site for construction would be a major earthmoving job involving filling the Canyon bottom areas with material cut from the ridges and canyon slopes. With condition 30, the extent of this earthmoving in the Canyon would be minimized, but even if it is fifteen million cubic yards to be filled and cut, the now natural canyon and small intermittent creek would be massively altered. Nevertheless, the Commission generally tries to minimize even small grading associated with building single family homes in the scenic Santa Monica Mountains, and this massive alteration contributes to the low fourth place ranking for this site.

<u>Public Views</u>. This stretch of the Pacific Coast Highway has special scenic value, since the Santa Monica Mountains drop down to the oc. - here and there are many unobstructed views of the sea. The trestle and iroad and cryogenic pipeline would cross over or under the Pacific Coast Highway, which can be heavily used on weekends and holidays for recreat. I driving. The terminal site itself would be sheltered inside the Canyon, but the trestle and associated activities would be noticeable from Point Mugu Beach State Park to the west and Leo Carrillo Beach State Park and the County line surfing area to the east.

<u>Remoteness</u>. The site compares to Horno and Rattlesnake Canyons in the number of people potentially at risk from LNG accidents. Such populations would include campers at the children's camps and State Parks and travelers on Pacific Coast Highway. Tankers to the site would traverse the Santa Barbara Channel.

Cost. Due to the large amount of earth moving required to prepare this site, terminal construction costs would be about \$250 million higher than at the Little Cojo or Horno Canyon terminals. While this factor is given less weight by the Commission, it contributes to the low fourth place ranking for Deer Canyon.



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11. Summary of Differences between Ranked Sites.

The Commission finds that a simple numerical ranking of the four possible LNG terminal sites does not adequately indicate the differences in coastal resource impacts between the sites. Although the Public Utilities Commission may select a lower ranked site only if it determines that to do otherwise would result in significant natural gas curtailments in California, the Coastal Commission believes the public and other state and federal agencies should be aware of how much more desirable one site is over another.

Based on its evaluation of the four ranked sites, as conditioned, the Commission finds that the differences between the Horno Canyon, Rattlesnake Canyon, and Little Cojo sites are not minor or small.

The <u>Horno Canyon</u> site is on the Camp Pendleton Marine Corps Base and public use of the area is prevented by Marine patrols. The marine and terrestrial resources are not unique and are ranked the least significant by the Department of Fish and Game. There are no known archaeological resources in the area. The site is readily accessible by an existing highway and railroad, and public services are nearby. Little landform alteration would be required since the site is nearly level. The principal effect of a facility at this location would be upon the scenic quality of this last remaining large open space between urbanizing San Diego and Orange Counties. Overall, construction and operation of a terminal at this site would cause the least adverse impacts on the resources protected by the Coastal Act.

The Rattlesnake Canyon site is also unavailable to the public due to security measures for the Diablo Canyon nuclear power plant and is also readily accessible by an existing road, with public services nearby. In other respects, however, the Rattlesnake Canyon site would be significantly worse than siting an LNG terminal at Horno Canyon. The marine resources at Rattlesnake Canyon are very rich and abundant, and breakwater construction would (at least temporarily) disturb this habitat. The effect of the seawater system on the marine biota is greatly reduced by the Commission's condition that warm discharge water from the nuclear power plant be used. Making use of the nuclear discharge water, however, requires a long pipeline which would add to the disturbance of the terrestrial wildlife. Therefore the impact on natural resources is much greater at Rattlesnake Canyon than at Horno Canyon. Unlike the Horno Canyon site, valuable arcaheological resources are found at Rattlesnake Canyon which would be difficult to avoid during construction. The Rattlesanke Canyon site is not served by rail, and equipment would have to be brought in by barge to Port San Luis and on Avila Road. These impacts contribute to the Commission's finding that considerably more adverse impacts will occur at the Rattlesnake Canyon site than at first-ranked Horno Canyon.

The <u>Little Cojo</u> site has many of the same disadvantages as Rattlesnake Canyon, but it is located remote from public services in an even more sensitive marine environment. As with the Horno and Rattlesnake Canyon sites, public access to the onshore area of the site is not now possible, but the marine life off Little Cojo is considered the most unique, abundant, and diverse of all the sites by the Department of Fish and Game. The marine environment in the Point Conception area is the most valuable because cold northerly waters and warmer southerly waters meet and mix there, making it the range limit for 14 species of fish and 20 species of invertebrates. In addition, Kelp Bed 23 is one of the most productive in the state and is a rich habitat for marine life. Condition 22 prohibiting seawater vaporizers would reduce the terminal's impact on these resources. **`**

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but Lanker, tug and line boat maneuvering, shipping fuel oil to the site, and operating a terminal with its associated noise and lights would cause continuing and permanent disruption of this sensitive habitat. Unlike either the Horno or Rattlesnake sites, a terminal at the Little Cojo site would result in major changes to the character of the last major semi-wild coast left in Southern California. The site is located on a wide, sweeping, open coastal terrace providing a striking panorama which stretches ten miles to the east and three to the west.

As with the Rattlesnake Canyon site, valuable archaeological resources are found in the Little Cojo area, which also has religious significance to Native Americans, and these resources would be difficult to avoid during construction, despite relocation of the terminal. The surfing breaks off Little Cojo are widely recognized as classic breaks providing a remote surfing experience. Although the Little Cojo site has some advantages over the Rattlesnake Canyon site because it does not require a breakwater as currently designed, would be more remote and cost less, a terminal at this site would be more inconsistent with the development policies of the Coastal Act and would have greater adverse impact on natural resources. The Commission finds, therefore, that the Little Cojo site is clearly less desirable than Rattlesnake Canyon; but, as conditioned, the difference between Little Cojo and Rattlesnake is not as great as between Horno Canyon and Rattlesnake Canyon.

The Deer Canyon site would have major adverse impacts on nearly all coastal resource categories, including recreation, views, highway capacity for recreation and access, marine and terrestrial natural resources, and the natural canyon landform. The marine resources offshore among scattered kelp. while less valuable than those at Little Cojo, are considerably more diverse and abundant than at Horr. Canyon, and the offshore area is a designated Area of Special Biological Significance. The site, with a cryogenic pipeline crossing Pacific Coast Highway, is between two heavily used State parks, and construction activities and traffic would seriously interfere with recreational use of the Coast Highway. Massive changes to the Canyon bottom and its riparian habitat would be unavoidable since level contruction pads would have to be built, filling in the Canyon to the 400 and 60° foot elevations. However, after construction period disruptions finish, a . -minal would be mostly out of public view inside the Canyon and the long run adverse impact on the character of the Deer Canyon coastal area would not be as severe as at Little Cojo. Therefore, the Commission finds that the difference in adverse impacts between the Little Cojo site, as conditioned, and Deer Canyon would not be major overall and would be similar to that between Rattlesnake and Little Cojo. - 1 °CĴ () 1 °C (S) (S) (2759)

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The recommended conditions are necessary to minimize and mitigate the adverse environmental impacts of a terminal at all four sites. In general, the conditions make all the sites more suitable and would not change the ranking, except for the site specific conditions recommended for the Little Cojo site. If the PUC does permit the seawater intake system, new above-ground electric transmission lines and full use of an upgraded road and if the PUC does not mitigate adverse impacts on surfing and wildlife, or, if a breakwater were to be included as part of the project, then the overall adverse impacts of a terminal at this site would be so substantial that the Commission would have ranked it last, below Deer Canyon.



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III. TERMS AND CONDITIONS

The Commission adopts the following findings and the proposed terms and conditions for inclusion in a Public Utilities Commission permit for an LNG terminal.

A. <u>Incomplete Terminal Designs Warrant an Added Opportunity for the</u> <u>Commission to Develop Conditions</u>

The LNG Terminal Act of 1977 requires the Commission to recommend terms and conditions to the PUC for inclusion in any terminal permit granted by the PUC. The Act requires the PUC to impose these conditions unless a condition jeopardizes gas supply for high priority gas customers, adversely affects public health or safety, or is not supported by substantial evidence. The purpose of these terms and conditions is to ensure that the construction and operation of a terminal at any ranked site will be in accordance with the policies of Chapter 3 of the Constal Act. The only site which has at least some detail on terminal configuration and plans for construction and operation is Little Cojo, because Western LNG Terminal Associates prepared an application for it. The other three sites have only conceptual designs and configurations and little detailed planning for construction or operation. Even at Little Cojo, the details of construction have changed. The site itself was moved about 1,500 feet eastward to avoid archaeological sites, and the access road location and design have been changed to avoid damaging riparian areas. In addition, requirements of the PUC or federal agencies may change terminal design or operation to cause unforeseen adverse impacts on coastal resources.

The Commission finds that, due to a general uncertainty about detailed designs and construction plans for terminals at each site, it is not possible in many cases to recommend specific terms and conditions to protect a number of coastal resources. Therefore, the Commission recommends 31 general and site-specific conditions to the PUC that provide for Coastal Commission review of detailed plans developed by the applicant after a site is approved. The conditions provide for an additional opportunity for the Coastal Commission to develop added site specific conditions should they be necessary to prevent or minimize damage to coastal resources protected by Coastal Act policies. The general conditions also set guidelines for the r applicant to follow in preparing detailed design, construction, and operating plans to minimize adverse environmental impacts. Since the PUC, and not the coastal Commission, is the permit authority for an LNG terminal, the recommended of they adversely affect health or safety, jeopardize gas supply for high priority users, or are not supported by substantial evidence.

B. Terms and Conditions Recommended For All Sites

The staff recommends that the Commission adopt the following terms and supporting findings for inclusion in a permit granted by the Claifornia Public Utilities Commission for an LNG terminal at any ranked site.

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See State Condition 1--Onshore Public Access. Terminal operations shall not commence until the Coastal Commission expresses in writing its satisfaction that:

- (1) The beach area in front of the terminal has been restored as nearly as possible to its original condition.
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Should federal or state law or regulations later interfere with public access, the applicant or its successor shall obtain the certification of the Coastal Commission that equivalent replacement access or right of way has been provided. a sana a a Geragia

Finding 1. The Coastal Commission finds that Condition 1 is necessary to ensure compliance with Public Resources Code (PRC) section 30212, which requires that new development shall not interfere with existing public access, including the use of dry sand and rocky coastal beaches. and PRC sections 30220 and 30221, which require protection of coastal areas suitable for recreation. Although the applicant has stated that a terminal at any site will not interfere with the public right of access to the sea and along the coast, construction of the terminal and placement of the cryogenic pipeline could destroy a beach area or otherwise block access. In addition, security measures which might interfere with public access may be imposed by federal or state agencies.

Condition 2--Nearshore Recreation Access. Terminal operations shall not commence until the Coastal Commission expresses in writing its satisfaction that operations do not unreasonably interfere with nearshore recreational activities such as boating, surfing, or skindiving. Should fede a or state law or regulation or the unavoidable results of LNG marine corrations interfere with nearshore recreation, terminal operations shall not cave place until the Coastal Commission expresses in writing its satisfact that adequate equivalent recreational opportunities or access have been provided in a nearby location. , I and the second second

Finding 2. The Coastal Commission finds that Condition 2 is necessary to ensure compliance with PRC sections 30220 and 30224, which protect water oriented recreation and encourage recreational boating. Although the applicant has indicated access would be restricted only in the immediate tanker berthing area. regulations of the Coast Guard or other requirements of federal or state agencies or placement of the trestle or other structures could substantially interfere with nearshore recreation and accession of the stability of the second seco 1991 (199**1)**

Condition 3--Marine Resources: Construction. Prior to initiation of construction of the trestle, berthing facilities, or the seawater intake system, if applicable, the applicant or its successor shall contract for an independent study (not done by in-house staff) which includes the following APPENDIX D Page 33 of 49

- (1) A survey of the marine biota within a one-mile circumference of the seawardmost part of the proposed trestle.
- (2) A survey of the marine biota and existing condition of the intertidal area within one mile in each direction of the proposed trestle.
- (3) A survey and modelling of the existing sediment transport system.

Based upon these studies, which shall be submitted to the Commission, the applicant or its successor shall submit to the Coastal Commission, the California Department of Fish and Game, and the State Lands Commission an offshore facilities construction plan and schedule which shall require:

- (1) That the trestle, berthing facilities, and seawater intake system, if applicable, shall be located so that their placement, function, and associated marine operations will cause the least possible biological damage, and will interfere to the minimum extent feasible with natural sand transport. Consideration must be given to use of only one construction corridor for these facilities.
- (2) That the construction and placement of the trestle, berthing facilities, and seawater intake system, if applicable, take place at the time of year which will cause the least biological damage, if consistent with safe offshore engineering practice.
- (3) That the methods of offshore construction to be used are the least environmentally damaging feasible methods. If blasting is involved, techniques such as drilling, tamping, and sequencing of charges which limit fish kills must be used.

Construction of in-sea facilities shall not begin until the Coastal Commission, after consultation with the Department of Fish and Game and the State Lands Commission, has stated in writing that such offshore construction plan and schedule complies with this condition.

Finding 3. The Coastal Commission finds that this condition is necessary to ensure compliance with PRC sections 30230, 30231, and 30260, which require protection of the marine environment, maintenance of biological productivity, minimization of entrainment, and mitigation of adverse environmental effects. The construction and placement of the berth. trestle, and seawater system would have significant adverse effects on the marine environment. While some studies of the offshore biology and the impacts of a terminal have taken place, further site specific studies are needed to determine final facility location, construction methods, and scheduling in order to minimize adverse impacts on marine resources.

<u>Condition 4--Marine Resources:</u> Seawater Intake and Discharge System. If a seawater intake system is to be used at a site, the applicant or its successor must submit to the Coastal Commission and the California Department of Fish and Game the plan for the design and operation of the system to be used, which APPENDIX D Page 34 of 49

- (1) Use of the best available technology to prevent entrainment of fish.
- (2) Use of alternatives to chlorinization such as mechanical. biological, or thermal antifouling, unless shown to be infeasible.
- (3) Provisions for maximum dispersion of the cold water plumes.
- (4) Use of any other methods to prevent biological damage caused by the operation of the seawater system.
- (5) Testing, if possible, of all aspects of the proposed system.

The plan shall be prepared in consultation with the California Department of Fish and Game. Construction of the seawater intake system shall not begin until the Coastal Commission, after consultation with the California Department of Fish and Game, has stated in writing that the submitted plan complies with this condition and incorporates the best available technology for minimizing adverse effects on marine resources. The seawater system shall be constructed and operated in conformance with the approved plan.

Finding 4. The Coastal Commission finds that Condition 4 is necessary to ensure compliance with PRC sections 30230, 30231, and 30260, which require protection of murine resources and water quality, maintenance of biological productivity, and minimization of entrainment and mitigation of adverse environmental effects. The operation of the seawater intake system will have su stantial adverse effects on marine resources. including marine mammals, fish, larvae, and plankton, through impingement, entrainment, damage from anti-fouling chemicals, and water temperature changes.

Condition 5--Marine Resources: Operation and Impact Monitoring If the applicant or its successors uses a seawater intake system, it shall concret for an independent (not using in-house staff) five-year ongoing marine multipring system to examine the effect of the seawater intake system to determine:

- (1) The effect of the cold water discharge on marine biota
- (2) The approximate number of invertebrates and larger fish lost due to entrainment and impingement."
- (3) The approximate number of eggs and larvae of fish and commercial invertebrate species lost due to mortality within the seawater system.
- (4) Rate of detention time and survival for each regularly entrained larger fish and invertebrate species.
- (5) The distribution of species which are entrained and the returned to the ocean.
- (6) The relationship between species entrainment in the initial years of operation and entrainment in subsequent years, as indication of depletion of local species due to entrainment.

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The applicant shall also implement a five-year marine monitoring program, regardless of whether a seawater system is used, which shall accomplish the following:

- (1) Detection of the extent and frequency of occurence of water quality impacts due to changed conditions.
- (2) Determination of the effects of LNG terminal operations, including movement of tankers, bunker fuel vessels, tugs, line boats, and other small craft on kelp resources.
- (3) Determination of changes in sediment transport and resulting changes in marine biota.

A program to conduct these monitoring systems and to select an independent consultant shall be devised with the concurrence of the California Department of Fish and Game and the State Water Resources Control Board. Terminal operations shall not commence until the Coastal Commission has stated in writing that the monitoring program(s) comply with this condition and provide for publishing of results at reasonable intervals.

Upon completion of the five-year program(s), the Coastal Commission shall then determine the degree of monitoring that shall follow.

At any time, the Coastal Commission, after consultation with the State Water Resources Control Board and the Department of Fish and Game, based upon the results of the monitoring, may require changes in the seawater system or other aspects of the LNG terminal operation to protect the marine resources of the area. The applicant shall implement all such changes, unless the California Public Utilities Commission determines, after opportunity for public comment, that such changes are infeasible.

Finding 5. The Coastal Commission finds that Condition 5 is necessary to ensure Compliance with PRC sections 30230 and 30231, which require maintaining and protecting marine resources and water quality, and PRC section 30268, which requires mitigation of adverse environmental effects. An LNG terminal authorized under the LNG Terminal Act would be the first of its kind in California. The magnitude and implications of the adverse impacts of operation of the seawater system and of the marine operations at a terminal at any site are not yet known. An ongoing monitoring system would provide information which would allow for minimization and mitigation of adverse effects of terminal operation

<u>Condition 6--Marine Resources:</u> <u>Bunkering Operations</u>. Terminal operations shall not begin until the Coastal Commission, after consultation with the California Department fo Fish and Game, the State Lands Commission, and the U.S. Coast Guard, has approved an oil spill prevention and contingency plan. The plan shall provide for, at a minimum:

- (1) The most environmentally protective method of oil refueling and storage.
- (2) A program for an effective on-site spill containment and cleanup system capable of handling the maximum possible oil spill associated with bunkering operations.

(3) A demonstration that the plan complies with all regulations of the U.S. Coast Guard, E.P.A., or other responsible federal agencies.

Finding 6. The Coastal Commission finds that Condition 6 is necessary to ensure compliance with PRC section 30232, which requires protection against spillage of crude oil or other hazardous substances, as well as section 30260, which requires mitigation of adverse environmental effects. The LNG terminal application indicates bunkering operations will take place in the berthing area. Even small-scale oil spills resulting from this operation could result in substantial damage to the marine environment at these remote locations. Although the U.S. Coast Guard and the California Department of Fish and Game have primary responsibilities for oil spill prevention and clean-up, the Commission finds its review necessary to ensure the overall methods used for transporting the fuel oil minimize probabilities of oil spills.

Condition 7-Land Resources: Construction. Prior to construction, the applicant or its successor shall contract for an independent study (not conducted by in-house staff) to be reviewed by the California Department of Fish and Game, of the flora and fauna in the vicinity of the site, access road, and utility corridors. The study shall include, at a minimum:

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- (1) The location of rare or endangered plants or animals or potential supporting habitat.
- (2) Mapping vegetative habitats or other critical biotic Teatures such a riparian corridors, springs, known nesting sites, and significant watershed vegetation.

Based on the results of this study, the applicant or its successor shall submit a construction plan to the Coastal Commission. This plan shall provide for:

- (1) Maximum protection afforded by federal law for endangered plant and animal species.
- (2) A noise and dust monitoring program and requirement that construction noise and dust be kept at a minimum.
- (3) Maximum feasible protection of riparian vegetation and habitat. This shall include a prohibition of all filling and other alteration of stream beds, as well as paving or other construction within 50 feet of stream beds, or the limit of riparian vegetation, whichever is greater, unless there is no other feasible alternative. Any ground water pumping shall not be permitted to diminish or harm existing water flows or riparian vegetation.
- (4) A landscaping element arrived at in cooperation with the affected county, which requires insofar as feasible a balanced cut and fill, preservation and reuse of topsoil, minimum feasible disturbance of natural vegetation and landforms, replanting with natural vegetation, and disposal of fill, if any, in the least environmentally damaging manner.

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(5) A construction schedule which will minimize damage to seasonally affected flora and fauna.

(6) A plan for solid waste disposal, to include disposal during operation, arrived at in consultation with the State Solid Waste Management Board.

Construction may not commence until the Coastal Commission, after consultation with the California Department of Fish and Game, states in writing that the construction plan complies with this condition and provides the minimum feasible disturbance to flora and fauna in the vicinity of the site, access roads, or utility corridors. All construction shall be in conformance with the certified plan.

Finding 7. The Coastal Commission finds that Condition 7 is necessary to ensure compliance with PRC section 30240, which requires protection of environmentally sensitive habitats and compatibility of development in such areas, PRC section 30231, which requires protection of streams and prevention of depletion of ground water supplies, PRC section 30251, which requires minimal alteration of land forms, and PRC section 30260, which requires mitigation of adverse environmental effects. All potential LNG terminal sites are in remote locations that are relatively undisturbed and part of environmentally sensitive habitat areas. Construction of an LNG terminal and associated facilities will extensively alter existing land forms and destroy wildlife habitats, while the noise and industrial activity will disturb wildlife populations. Ground water withdrawals could lower the water table and decrease stream flows and riparian vegetation to the detriment of fish and wildlife resources. While some inventories of flora and fauna at possible sites have been made, some added site specific inventories are needed to determine the exact location for construction activities to minimize adverse impacts on terrestrial coastal resources.

<u>Condition 8--Land Resources: Gas Pipeline Route</u>. The gas pipeline route from the terminal site to the gas transmission system shall be the least environmentally damaging feasible route and shall be constructed in accordance with a plan approved by the Coastal Commission after consultation with the Department of Fish and Game. The plan shall provide that:

- (1) The route shall parallel existing road or pipeline rights of way wherever feasible.
- (2) The route shall be surveyed by the California Department of Fish and Game.
- (3) Pump stations should be located near existing roads.
- (4) Ground equipment should not be operated off the right of way when avoidable.
- (5) Rights of way should be revegetated with native plant species beneficial to wildlife.
- . (6) Sidecasting of excess soil should be prohibited.
 - (7) Maintenance of access should be minimized in areas of valuable wildlife habitat, such as areas within the range of the California condor.

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(8) Public access to maintenance roads should be controlled to prevent abuse by off-road vehicles.

All gas pipeline construction shall be in accordance with the approved plan.

Finding 8. The Coastal Commission finds Condition 8 is necessary to ensure compliance with PRC section 30260, which requires mitigation of adverse environmental effects. The construction, operation, and maintenance of the gas pipeline from any of the sites to the gas transmission system could result in a major disturbance to plants and animals and loss of habitat (see Staff Notes). The gas pipeline, which could be more that 100 miles long, is part of the LNG terminal under Section 5562 of the LNG Terminal Act. Prudent selection of pipeline routes and proper construction and maintenance procedures could minimize environmental damage.

<u>Condition 9--Termination of Operations</u>. Prior to commencement of operations, the applicant shall submit a bond or other assurance to the PUC. This bond or assurance shall be adequate to provide for the removal of all in-sea or onshore components of the LNG terminal after cessation of operation. The removal shall take place in accordance with plans approved by the Coastal Commission after consultation with the State Lands Commission. The plan shall require removal of each terminal component unless Coastal Act policies would allow or encourage retention of that component.

Finding 9. The Commission finds Condition 9 necessary to ensure compliance with PRC sections 30211, 30212, 30224, 30230, 30231, 30232, 30240 and 30260, which protect access, land and water recreation, fish and wildlife, and require mitigation of adverse environmental impacts. Since all sites are in remote areas with high value for recreation and fish and wildlife habitat, all major structures associated with an LNG terminal should be removed, when no longer needed, to restore the natural character of the area.

Condition 10--Replacement of Lost Habitat. The applicant shall provide terrestrial and marine habitat equivalent in value to that lost, damaged or adversely affected as a result of terminal construction and operation, including construction of utility corridors, roads and pipelines. The habitat acquired or protected shall be approved by the Commission prior to terminal operation and shall be maintained by the applicant for the life of the project.

Finding 10. The Commission finds that Condition 10 is required to ensure compliance with PRC sections 30230 and 30231 requiring protection and restoration of marine resources, section 30240 requiring protection of environmentally sensitive habitat areas, and section 30260 requiring mitigation of adverse environmental impacts. Construction and operation of an LNG terminal and associated facilities will unavoidably result in the destruction of terrestrial and marine habitat even with the most stringent conditions. Equivalent replacement of destroyed habitat will mitigate such losses.

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<u>Condition 11--Air and Water Quality</u>. Terminal construction and operation shall comply with the requirements of the Air Resources Board, the Air Pollution Control District, the State Water Resources Control Board and Regional Water Quality Control Board to the extent required by federal law and regulations.

Finding 11. The Commission finds Condition 11 necessary to ensure compliance with PRC sections 30231 and 30253 which protect air and water quality. While the LNG Terminal Act exempts the first California LNG terminal from all state agency permits except that issued by the PUC, it does not exempt it from state permits required by federal law.

<u>Condition 12--Archaeological and Cultural Resources</u>. Prior to construction the applicant shall contract for an independent survey (not conducted by in-house staff) of archaeological and cultural resources at the approved LNG terminal site and pipeline route. This survey shall be submitted to the State Office of Historical Preservation, the Native American Heritage Commission, and the Coastal Commission. If any of these agencies determine that such resources have been or are likely to be found at the site, construction shall not commence until the Commission, after consultation with the State Historic Preservation Officer and the Native American Heritage Commission a plan for the protection of these resources. Such plan shall include:

- (1) Construction methods and facility configuration that do not disturb sites of historic, archaeological, religious, or paleontological importance.
- (2) If avoidance of such sites is infeasible, the use of techniques which would best preserve the sites and objects found in them for future study, evaluation, or religious use.
- (3) Access, consistent with security and resource protection, for Native Americans to sites of religious significance.
- (4) A procedure for halting construction when artifacts of cultural or religious significance are uncovered and for consultation with the State Office of Historic Preservation and local Native American groups, and implementation of feasible mitigation measures.

Finding 12. The Commission finds that Condition 12 is necessary to ensure compliance with PRC section 30244 which requires mitigation of adverse impacts on archaeological resources. LNG terminal construction would affect archaeological resources at three of the ranked sites.

<u>Condition 13--Construction and Operations Monitor</u>. The applicant shall fund a construction monitor to be jointly selected by the PUC and the Coastal Commission. The monitor shall ensure compliance with the terms and conditions of the LNG terminal permit and of the certified or approved plans submitted pursuant to permit conditions. The monitor may issue a stop order to the applicant if a permit condition visitation is occurring or is likely to occur. The applicant may appeal any such stop order to the PUC. The applicant shall allow access to the site

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and related facilities by the monitor and any public agency employees who may assist the monitor, including representatives of the State Historic Preservation Office, Department of Fish and Game, PUC, and the Coastal Commission. The PUC and Coastal Commission may jointly agree to replace the monitor.

Finding 13. The Commission finds that Condition 13 is necessary to ensure compliance with these permit conditions and to ensure that terminal construction proceeds in compliance with Coastal Act policies.

Condition 14--Geologic Hazards. The applicant shall fund the operation of two independent terminal design and construction review panels to assure that the geological hazards at any PUC licensed site be thoroughly quantified, that the construction drawings and calculations be thoroughly reviewed, and that construction be inspected. The Geological Hazards Panel shall be comprised of seven experts, including two seismologists, two engineering geologists, two geotechnical engineers and a structural engineer. The Structural Panel shall be comprised of seven experts, including two structural engineers, one geotechnical engineer, one engineering geologist, one mechanical engineer, one electrical engineer, and one engineer expert in fire protection and safety engineering. The members of each panel would be appointed as follows: two each by the PUC, Coastal Commission, and Division of Mines and Geology, and one by the Seismic Safety Commission. The applicant shall provide these panels with all data and information used to determine the geological hazards at a site approved by the PUC and the final design and construction methods for a terminal at that site as soon as the data and information are available. The Geological Hazards Panel shall provide the applicant, the PUC and the Structural Panel with its best judgment on the character of the geotechnical hazards that might affect the terminal. The Structural Panel shall make recommendations to the applicant and the PUC on any modifications to the applicant's proposed terminal design, configuration, and construction and operation methods that the panel feels, in its best judgment, would minimize risks to life and property from geologic hazards. These judgments shall be pro-vided in writing to all interested parties. Following a public hearing, the PUC shall implement or impose such recommendations on the applicant unless the PUC rejects any panel recommendation pursuant to Condition 15.

Finding 14. The Commission finds that Condition 14 is necessary to ensure compliance with PRC section 30253 which requires minimum risks to life and property in areas of high geologic hazard. The coastal areas of California are criss-crossed with major and minor earthquake faults which present hazards to a possible LNG terminal. The Commission finds that two panels are needed because determining the geotechnical hazards and determining what to do about them are two distinct and difficult tasks. Seven members are required for each panel because the Commission has learned in evaluating 82 potential. terminal sites that experts in a field can have different approaches and opinions on how to estimate and deal with seismic risks. Therefore, each panel should have a variety of opinions represented. This complicated two-panel review system is required because of the controversy that has followed this subject subject, because the seismic problem for critical facilities in California is extremely complicated, and becuase the proposed LNG termianl would both present potential hazards to people and property nearby as well as providing a large portion of the State's energy supply. The Commission's structural consultant, H. J. Degenkolb, has made extensive review and recommendations on the seismic safety of LNG terminals which should be considered by the applicant, the PUC and the panels.



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opinions represented. This complicated two-panel review system is required because of the controversy that has followed this subject, because the seismic problem for critical facilities in California is extremely complicated, and because the proposed LNG terminal would both present potential hazards to people and property nearby as well as providing a large portion of the State's energy supply. The Commission's structural consultant, H. J. Degenkolb, has made extensive review and recommendations on the seismic safety of LNG terminals which should be considered by the applicant, the PUC, and the panels.

Condition 15--Public Utilities Commission Denial of Conditions. In approving any plan or other action required under these conditions, the Coastal Commission shall either issue written approval within sixty days of receipt of such plan. or shall deny such approval and specify in writing to the applicant what further terms must be included in the plan or other action and what steps must be taken to obtain approval. A failure to do either within sixty days will result in automatic waiver of approval requirements. The Coastal Commission shall consider the feasibility, as defined by PRC section 30108, of the proposed pTan or other action.

The applicant may appeal any such written denial to the PUC. The PUC may overrule any denial if, after notice and opportunity for public comment, it finds that the further terms required for approval:

- (1) would cause delays in terminal operations that will result in significant curtailment of high priority gas requirements and that deletion or modification of the term will avoid on a significantly reduce such curtailment: or
- (2) will adversely affect public health or safety; or
- (3) are not supported by substantial evidence.

Finding 15. The Commission finds that Condition 15 will facilitate the construction and operation of the terminal in accordance with the mandate of the LNG Terminal Act of 1977 which provides for a single permit issued by the PUC, and requires conditions set by the Coastal Commission to ensure compliance with Coastal Act Policies.

Condition 16--Fire Protection. Prior to commencement of operations, the applicant or its successor shall prepare a fire protection plan for the affected area. Terminal operations may not commence until the Coastal Commission, after consultation with the affected County fire department, the California Department of Forestry. and the State Fire Marshall, has stated in writing that the applicant's plan adequately minimizes risks to life and property from fire originating at either the terminal or the nearby area.

Finding 16. The Commission finds that Condition 16 is necessary to ensure compliance with PRC section 30253 (1) which requires minimization of risks to life and property in areas of high fire hazard. All sites are in remote areas which are very susceptible to fires if there were an ignition of LNG vapors. In addition, the terminal itself could be endangered by encroaching fires. стора и 1966. И по на 1966. И по на 1966.

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C. Site Specific Terms and Conditions

<u>Condition 17--Horno Canyon on Camp Pendleton:</u> Use of the San Onofre <u>Nuclear Power Plant Heated Water</u>. Waste heated water from the San Onofre Nuclear Facility shall be utilized in place of ambient seawater for all baseload LNG vaporization heat exchange operations in the facility in accordance with plans approved by the Commission. The plan shall ensure that the adverse effects to bluffs, beaches, and marine life are minimized during the construction and operation of the system. Should the California Public Utilities Commission determine, after public hearing, that such a system is infeasible, an intake structure for ambient seawater may be utilized in accordance with plans approved by the Coastal Commission and designed to minimize adverse environmental effects, in accordance with the standards set in General Condition 4.

Finding17. The Coastal Commission finds Condition 17 necessary to ensure compliance with PRC sections 30230 and 30260, which require protection of marine resources and mitigation of adverse environmental effects. A seawater intake system at Horno Canyon would have adverse environmental effects which would be similar to, although not nearly as far reaching as, those at Little Cojo (see Little Cojo Finding 23). The San Onofre Nuclear Power Plant, which is currently in operation, is located approximately 4½ miles from the Horno Canyon LNG terminal site. A heated water discharge which has a deleterious effect on the marine biology of the area is currently being emitted from this facility. Planned expansion of the facility will increase the volume of this discharge and resultant biological damage.

A pipeline from the San Onofre Nuclear Facility to the Horno Canyon LNG facility, allowing the latter to use waste heated water to vaporize the liquefied natural gas, would eliminate the most damaging effects of the LNG terminal's seawater system, as well as the effects of the nuclear facility's heated water discharge, and could possibly improve the efficiency of the system. The applicant has proposed just such a system for its Oxnard LNG site, which was .8 miles from a fossil fuel power plant. The cost of such a sharing of waste heated water appears to be reasonable (\$20,000,000 according to the Public Utilities Commission's Alternative Siting Report, Coastal Commission record entry number 01230).

<u>Condition 18 -- Horno Canyon on Camp Pendleton: Public Access</u>. Prior to commencement of operations, the beaches and bicycle path shall be returned to their pre-construction condition and no restrictions or limitations on public access shall interfere with public access or use during the life of the project, provided, however, that should federal law, regulation, or needed security procedures interfere with lateral foot or bicycle travel, alternative access of a substantially equivalent nature and approved by the Coastal Commission shall be provided. Operations shall not commence until the Executive Director has stated in writing that the condition has been satisfied.

<u>Finding 18.</u> The Coastal Commission finds Condition 18 necessary to ensure the compliance with PRC sections 30211 and 30212, which require protection and provision of public access to and along dry sand and

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rocky coastal beaches. The Horno Canyon area of Camp Pendleton is situated on a coastal terrace adjacent to the well-traveled Interstate Highway 5. This area is situated nearly equidistant from the expanding urban areas of greater San Diego and Orange County. There is a sandy beach in front of the proposed LNG facility, and a bicycle path utilizing the old highway 101 right-of-way. It is essential that existing public access and travel along the beach and coastal areas be maintained in this specific area, particularly in view of growing population and recreation needs of the closeby urban areas.

<u>Condition 19--Horno Canyon on Camp Pendleton: Inground LNG Storage Tanks</u>. The LNG storage tanks shall be set partially in the ground and built upon bedrock and shall not protrude above ground level by more than 50 feet, in accordance with plans approved by the Executive Director. The plans shall provide for ingrounding the storage tanks and landscaping the dikes surrounding the tanks to incorporate the best feasible means of preserving the public views, protecting possible future recreation, and making the LNG facility compatible with the open space nature of this part of the coast. All construction shall take place in accordance with the approved plans, and operations shall not commence until the Executive Director of the Coastal Commission has stated in writing that the construction and landscaping has been completed.

Finding 19. The Coastal Commission finds Condition 19 necessary to ensure compliance with PRC section 30251, which requires minimization of land; form alterations and protection of coastal views, and PRC section 30253, which requires minimization of risk to life and property. The Camp Pendleton site is located on an open stretch of the coast, adjacent to the well-traveled Interstate Highway 5. The area presently affords broad ocean vistas of a ten-mile stretch of open, undeveloped coast seen by over 60,000 motorists a day and is easily accessible to residents of the expanding urban areas of San Diego and Orange Counties. An LNG facility would be located between the highway and the coast. Its three 130-foot high storage tanks with an outside diameter of nearly 240 feet will intrude upon the coastal views of passing motorists and lower the quality of possible future recreation use. The Commission's structural engineering consultant, H. J. Degenkolb and Associates, has recommended that the tanks be placed partially inground. Landscaping the dikes surrounding the inground tanks would greatly reduce visual intrustion. Partially underground tanks would also be better protected from flying objects and earthquake motions. Preliminary indications from the Commission consultant are that the costs of ingrounding storage tanks at Camp Pendleton are not unreasonable (\$6.500.000 per tank).

<u>Condition 20-Rattlesnake Canyon:</u> Breakwater Design. The design for a breakwater at the Rattlesnake Canyon site shall be of the general design recommended by the Commission's maritime consultant John J. McMullen Associates, in exhibit 1218 in the Commission's record. If the PUC certifies that, after an opportunity for public comment, such general design is either infeasible or would render LNG operations unsafe or unreliable, the breakwater shall be redesigned and constructed in accordance with a plan approved



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by the Coastal Commission. The Commission's approval shall be a second based on minimizing adverse effects to the marine environment and a within the limitations on feasibility and safety determined by the PUC.

Finding 20. The Commission finds that condition 20 is necessary to ensure compliance with PRC section 30235, which requires that breakwaters minimize adverse impacts on sand supply, and PRC section. 30260, which requires mitigation of adverse environmental impacts. The Commission finds that the John J. McMullen Associates breakwater as designed would have the least adverse impacts on the marine environment because it would minimize offshore blasting and rock removal. The cost for construction of this breakwater is currently estimated at \$175 million.

Condition 21 -- Rattlesnake Canyon: Use of Power Plant Heated Water. The applicant shall use heated water from the Diablo Canyon nuclear power plant in place of seawater for all baseload LNG vaporization operations in the terminal in accordance with a plan approved by the Commission. This plan shall ensure that the adverse impacts to bluffs, beaches and marine life are minimized during the loss of construction and operation of the system. If the PUC determines" that such a system is infeasible, a seawater exchange system may be used in accordance with Condition 4 and other applicable conditions herein.

Finding 21. The Commission finds that Condition 21 is necessary to ensure compliance with PRC section 30230, which requires protection of the marine environment, and PRC section 30260, which requires mitigation of adverse environmental effects. A seawater exchange system at Rattlesnake Canyon would have adverse impacts on marine resources, and such impacts would be minimized using already heated water from a power plant in place of seawater. The cost of such a sharing of waste heated water at Rattlesnake Canyon. appears reasonable at about \$7 million, according to the Public Utilities Commission Alternative Siting Report, Coastal Commission record number 01230-

Condition 22--Rattlesnake Canyon: Public Access. Prior to operation of the terminal, the applicant shall acquire an interest in land over the PG&E access road up to the LNG terminal site sufficient to allow for public access to the coastal areas in the immediate vicinity of the site. Prior to operation, the applicant shall submit to the Coastal Commission its plan for providing limited public access for picnics and viewing the area in the vicinity of the terminal site. Such access shall be consistent with protection of coastal resources, adequate terminal security, and shall be an entry provided for the life of the project. Terminal operations shall not commence: until the Commission has approved the access plan and the as being in compliance with this condition. This access requirement

a series a A series a s A series a s may be waived if the PUC determines that federal law or regulations and or necessary security precautions at either the LNG terminal or the nuclear power plant make public access at Rattlesnake Canyon as and we ก็การที่ได้ มีกับที่เสราได้ เหตุรัตว์ได้ต่อ แรกมอย่างกล มหายาย และ เกตุรัต กระหลัง ลกรายมหระดีก็กระจาม impossible.

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Finding 22. The Commission finds that Condition 22 is necessary to ensure compliance with PRC section 30212, which requires that public access be provided in new development. The terminal area is one of great natural beauty, but the PG&E security gate prevents public access to the coastal terrace there. The applicant. a joint venture of the Pacific Lighting Corporation with PG&E. has the power of eminent domain for access for operation of the LNG terminal under Section 5590 of the LNG Terminal Act and could use such powers, if necessary, to provide access required as a condition of terminal operation.

<u>Condition 23 -- Little Cojo: Seawater Exchange System and Transmission</u> <u>Lines.</u> A seawater exchange system for vaporizing LNG shall not be installed or used at Little Cojo, and all electricity used at the site shall be generated on site. If for any reason the on site generation of electricity is not permitted, all transmission lines to the site in the coastal zone shall either be placed underground or shall use existing wooden transmission poles:

Finding 23. The Commission finds that Condition 23 is required to • · · · · · · · · · · · ensure compliance with PRC sections 30230, 30240, 30242 and 30260 which protect marine resources, coastal views and land forms, and require mitigation of adverse environmental effects. The nearshore environment at Little Cojo is the most diverse, productive and unique of the sites being ranked. The seawater exchange system proposed by the applicant to regasify LNG would have a serious impact on marine resources, including fish, fish eggs, and invertebrate larvae, through impingement, entrainment, and damage from antifouling chemicals. The construction of the conduits would also temporarily damage marine resources. Elimination of the seawater exchange system would eliminate these adverse impacts on the marine resources of the Little Cojo area. The Cove Point, Maryland, LNG terminal uses gas fired vaporizers instead of a seawater system."

al activity of Electricity would be needed at a Little Cojo site as it would at any terminal site to run pumps and other equipment. Elimination of the seawater exchange: system would eliminate a major power use at the terminal. If the electricity were brought to the terminal by new, above-ground transmission lines, the lines would traverse about 40 miles over the coastal area between Little-Cojo and Goleta, adversely affecting views and wildlife habitat. On site electricity generation seems feasible and would eliminate these adverse impacts of the transmission lines. Indications are that the Cove Point, Maryland LNG terminal uses about two percent of the LNG throughput there to generate electricity and regasify the LNG. and the second secon

Condition 24 -- Little Cojo: Construction Period Transportation Plan. All transportation of workers, materials, and equipment for construction activities shall be in accordance with a transportation plan approved by the Commission prior to commencement of construction. The plan shall be prepared in consultation with the PUC. Caltrans. the County of Santa Barbara and the Departments of Fish and Game 1999. and of Parks and Recreation. as appropriate, and shall include:

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- Maximum feasible use of barges and the railroad for (1)transport of workers, materials, and equipment.
- (2) Reconstructing the Hollister Ranch access road to minimize adverse environmental impacts, with methods to bridge the canyon and stream crossings, avoiding fill in canyons and streams, and avoiding valuable wildlife habitats.
- (3) Minimum rebuilding and realignment of the Hollister Ranch access road consistent with feasibility and safety.

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(4) Minimizing adverse noise, traffic, and construction impacts on Gaviota Beach State Park.

Finding 24. The Commission finds Condition 24 is necessary to ensure compliance with PRC sections 30230, 30231, and 30240, which protect land and water resources and section 30260 which requires mitigation of adverse environmental effects. The construction and use of the access road, unless properly conditioned, could have a significant adverse effect on the terrestrial resources of the area. The draft environmental impact report indicates that improvement of the Hollister Ranch road would have the least adverse environmental impacts. The Commission further wishes to ensure that imporvement will be consistent with maximum resource protection. The Little Cojo site, according to the applicant's brief, allows for maximum use of the railroad and barges for transporting equipment; the Commission desires to make certain this will be the case and that, in addition, use of the railroad to transport workers to the site will be considered. Finally, use of the Gaviota area as a staging site for workers, as currently proposed by the applicant, could greatly interfere with public access to and enjoyment of the park. This situation should be avoided if there are other alternatives.

Condition 25--Little Cojo: Public Access. Prior to operation of the terminal, the applicant shall acquire an interest in land over the Hollister Ranch road and if necessary, Bixby Ranch Road sufficient to allow for limited and controlled public access to Little Cojo Bay. Prior to terminal operation the applicant shall submit to the Coastal Commission its plan for providing limited and controlled public access to the beach and bluff top area of Little Cojo Bay. The plan shall be consistent with the protection of fish and wildlife and vegetation resources and scenic quality of the area and shall ensure that private property rights and security are maintained. Terminal operations shall not commence until the Commission has approved the access plan. Terminal operations shall be implemented in accordance with the approved plan. GMC and NC and NC

If the Commission determines that security precautions or federal law or regulations or other actions make a public access program via the ranch road(s) impossible or infeasible, the applicant shall institute and operate a program to bring limited numbers of the public to Little Cojo Bay by water.

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Finding 25. The Commission finds Condition 25 necessary to ensure compliance with PRC section 30212, which requires that public access be provided in new coastal development. The Little Cojo Bay area possesses unique opportunities for limited recreation use, especially surfing. The onshore area, including a sandy beach, provides opportunities for bird and marine life watching and other forms of outdoor recreation. Unlimited public access might damage the natural resources of the Point Conception area, but at present the locked gate policies of Hollister and Bixby Ranches prevent any onshore public access to the area. The limited public access condition is a condition of terminal operation, and the applicant has powers of eminent domain for access roads and other facilities necessary for operation of the terminal under section 5590 of the LNG Terminal Act of 1977.

Condition 26 --Little Cojo: Partial Ingrounding of Storage Tanks. The LNG storage tanks shall be set inground and built upon bedrock and shall not protrude above ground level by more than 50 feet. Prior to construction, the applicant shall obtain approval of the Commission of a plan for ingrounding the tanks and landscaping the dikes surrounding the tanks to incorporate the best feasible means for making the terminal visually compatible with the open space character of the area. Construction shall take place only in accordance with the approved plan.

Finding 26. The Commission finds that Condition 26 is necessary to ensure compliance with PRC section 30251, which requires new development to be visually compatible with the character of the area, and minimization of land form alterations and protection of coastal views, and PRC section 30253, which requires minimization of risks to life and property. Locating the 130-foot high storage tanks completely above ground would present a major bulky intrusion onto the Little Cojo coastal terrace which would substantially change the open space character of the area. Partial ingrounding would decrease this adverse visual impact and better protect the tanks from airborne objects and earthquake motions. Preliminary reports by the Commission's consultants indicate the cost of ingrounding appears feasible at about \$7.5 million per tank.

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<u>Condition 27--Little Cojo:</u> Surfing Breaks. The applicant shall ensure that terminal construction and operation interferes with or restricts surfing at the surfing breaks in Little Cojo Bay to the minimum extent feasible. If the Commission or the monitor provided in Condition 13 determines that terminal construction or operation is or is likely to interfere with surfing opportunities in Little Cojo Bay, the applicant shall develop a plan to provide equivalent surfing opportunities through construction of an artificial surfing reef break or provision of access to a surfing area(s) not presently accessible by the public. Commission approval of the plan is a condition for operation of the terminal four months after the determination is made, as provided above, that surfing would be adversely affected by the terminal.

Finding 27. The Commission finds that Condition 27 is necessary to ensure compliance with PRC section 30220, which protects coastal areas suited for water-oriented recreation and with section 30260, which requires mitigation of adverse environmental impacts to the maximum extent feasible. The surfing breaks in Little Cojo Bay are highly valued remote surfing breaks currently unaffected by industrial development. Trestle construction or tanker berthing activities or safety restrictions could prevent or interfere with surfing at these breaks.

<u>Condition 28--Little Cojo: Kelp Harvesting</u>. Applicant shall minimize interference with kelp harvesting from Bed #32 to the extent feasible. If the studies implemented under general conditions 3, 4, and 5 indicate that terminal construction or operation would decrease the amount of kelp that can be harvested under the Department of Fish and Game lease, a committee composed of one representative from the PUC, Coastal Commission, and Department of Fish and Game shall develop a program to minimize such decreases in harvestable kelp resources and to mitigate any losses suffered by the Bed #32 lessor or lessee. The applicant shall implement this program after it is approved by the Coastal Commission.

Finding 28. The Commission finds that Condition 28 is necessary to ensure compliance with PRC section 30230, which requires maintaining the biological productivity of coastal waters for long-term commercial purposes. Kelp Bed #32, which extends off Little Cojo Bay and eastward offshore the Hollister Ranch. is the most productive kelp bed off California and accounts for about ten percent of the State's annual kelp harvest. The trestle and berth may prevent kelp harvesting boats from harvesting kelp in their vicinity, and vessel operating restrictions may interfere with kelp harvesting. Condition 28 will ensure that such adverse impacts are minimized or mitigated, if unavoidable.

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<u>Condition 29--Deer Canyon: Water Quality</u>. The construction and operation of a seawater exchange system shall conform to the regulations and requirements of the State and Regional Water Quality Control Boards. The operation of the terminal shall not result in any waste discharge from any point source into the Point Mugu Lagoon to Latigo Point Area of Special Biological Significance. Any discharge beyond the ASBS shall not harm the integrity of the ASBS, as determined by the State Water Resources Control Board. Best practicable technology shall be used in construction, site preparation, and in drainage controls to minimize adverse water quality impacts in accordance with a plan approved by the State Water Resources Control Board.

Finding 29. The Commission finds Condition 29 necessary to ensure compliance with PRC section 30231, which requires maintaining water quality in coastal waters, and PRC section 30230, which requires special protection for areas of special biological significance. The offshore area off Deer Canyon is part of an area designated as an ASBS by the State Water Resources Control Board. The regulatory procedures of the Board generally preclude waste discharges into an ASBS from a point source such as a seawater exchange system. The seaward boundary of the ASBS is the 100 foot isobath, off Deer Canyon, about 6,000 feet from shore. Even discharges at this depth could affect the integrity of the ASBS.

<u>Condition 30--Deer Canyon: Balancing Cut and Fill</u>. Prior to construction the applicant shall obtain Commission approval of a site preparation plan. The plan shall provide for a sufficient elevation of the storage tanks and for other designs that balance required cut and fill to minimize or eliminate the need for off site fill disposal and shall provide for maximum feasible soil stability in the Canyon.

<u>Finding 30</u>. The Commission finds Condition 30 necessary to ensure compliance with PRC section 30210 and 30211, which protect public access because. under one site plan, more than a million dump truck trips would be needed to remove excess cut material from the Canyon. Such traffic would seriously interfere with travel on the scenic Pacific Coast Highway and with park access and enjoyment nearby. Building the terminal at higher elevations would eliminate the need for excavation while also eliminating off site fill disposal requirements and reducing landslide potential.

<u>Condition 31 --Deer Canyon: Recreation and Public Access</u>. Prior to terminal operation the applicant shall provide additional public access and recreational opportunities in accordance with a plan approved by the Commission. The plan shall include dedication of access ways in the site area and, if feasible, parking and fishermen's access facilities in the vicinity of the terminal.

<u>Finding 31.</u> The Commission finds Condition 31 necessary to ensure compliance with PRC section 30212, which requires provision of access in new development.

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- 1. Prior to issuing any permit under Pub. U.C., Section 5580 of the ING Terminal Act of 1977, the CPUC shall explicitly designate which State and/or local agency will have responsibility for implementing and enforcing each and every condition. adopted as part of the permit. month its property.
- 2. Unless construction of the ING terminal is commenced within 18 months of issuance. of this permit, this permit will be deemed null and void and of no further effect
- or force... This 18-month period shall be extended to the length of time necessary; to equal the period the applicant is prohibited from proceeding by Court order. (> CPUC may grant an extension of time for good cause shown.
- 3. County of Santa Barbara shall be sent an annual status report on all baseline and monitoring conditions and mitigating measures. Information produced under the of monitoring program shall be made available to the County of Santa Barbara upon one request. ವಿಗಿದ ಪ್ರಜಾ ವಿಧ ನಾಟವಾಗಿಕೆಂದವೇ ಎಂದೆ

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- ೆಷ್ ಎಸ್ಟಡ ಅಲ್ಲಿ ಅಸ್ಥಾನಿಗ್ರಂ ಪೂ*ಗಾರ ಗ್ರಾಮ ಮುಂದಿಯೇ, ಮ*್ಲಿ ಎಮಿ 5. The quality control inspectors shall have the power, authority, and duty to stop any work or activity not in strict compliance with the approved plans and specifications. The quality control inspectors shall log any incident of noncompliance and the date and manner of correction.
- 6. The quality control group shall maintain a complete set of permanent records of all quality control activities, tests, inspections, x-ray films, material tests, and origins. Records shall include date, name of inspector, method of test, observations, results, location of test, or item tested, and any other information which may prove useful. X-ray films shall be kept for not less than three years after startup of the facility. The second start of the second start of the second start of the
- 7. Deviations from approved plans and specifications may be made only with a valid and approved change order. Prior to the start of construction, the procedure and persons qualified and authorized to make change orders shall be designated. و الأرديني - يعرف المعام الرويينية - - - معطوم المعطومية ، عن - 2 العار أن 2 الآريني. ماد المحمد المعام المعامي المعام المعام المعام المعام المعام المحمد المعام المحمد المعام المحمد المحمد المحمد ا Changes involving any reduction in safety factor or reliability shall be pro-Stall Ten - I Starfan - Astariotataeth staf - Joeda St المراجعة المحاجة المراجع المراجع المحاجة المحاجة المحاجة المحاجة المحاجة المحاجة المحاجة المحاجة المحاجة المحا محاج محاج المحاج المحاجة المحاج المحاجة hibited without full CPUC review.

8. All safety, protective, or warning devices shall be tested at least once every six months. CPOC inspectors shall witness the tests at least annually. الا المحمومين الأولى على الكلم الروسي المحفولي وينها وال وي المحمومين المحمول المحمول المحموم ال وي المحموم المحمومين المحمومين المحموم المحموم المحمومين المحموم المحمومين المحمومين المحمومين المحمومين المحمو Permanent test records will be maintained.

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- · s and the 9. The applicant shall develop and maintain a records and reporting system which, یک و در مصلح در ده. مدیر کیمی فراید اور مح as a minimum:
 - a) logs all safety device failures, malfunctions, or false alarms, and the measure, if known reasons, if known.
 - b) logs the loss of availability of any safety, protective, warning, or shut-

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- a down device, and the reason for loss of availability have the second of the loss
- c) logs all hydrocarbon leaks including origin and cause.
- d) Oppies of such reports shall be sent to the CPUC Party of a sent of the CPUC Party of the sent of t
- مسيسين والمربع وسنبت المالي والمرجوع والالا 10. The testing and acceptance of all systems shall be completed prior to the arrival of the first ING ship." Any testing requiring cold or a vaporizing action shall and be done with an inert, non-flammable material. An initial cooldown of systems except the tanks shall be made using an inert, non-flammable material prior to مينية. موجد المرجمية من المرجمية الم the introduction of any ING.
- 11. Any values or other safety devices shall move to the shutdown position upon loss of power or a malfunction. Block valves must be fail-closed and shall not re-. ೧೯೯೫ ಇಂದು quire a remote energy source for operation to the closed position. ಂಜರಾವ್ ೧೮೮೮ - ನಿರ್ದಾಮಂಗ್ರಾಮ್ - ಇವನಿ ಬಂಧ
- 12. In addition to any other safety devices, each pump or compressor handling hydrocarbons shall have a local stop station located not less than 50 feet nor more than 75 feet from the pump or compressor which may be used to shut down the مراجع المعادية والمراجع المعادية والمعادية المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع الم الموالية المراجع . CO... device. الم مسجل کار و محمول الصحی الطائر می اگرد در از مرحک می درمند از مرکز می مرحک می الم مرکز الصح و در دارد در مر محمول مرجع می مرکز این محمول الصال موجک المان درمان از محمول این محمول می درمان می داد. این و در دارد در مرکز م
- 13. Prior to startup, the applicant shall submit all operating procedures, safety procedures, emergency shutdown procedures, employee training programs, and any other relevant procedures to the CPUC, and shall obtain approval for all before والمتعادية والمعتدين والترجع ومعتدين والمعالية والمعارك والمعادي والمعادي والمعادي والمعادي والمعادي والمعاد و the startup.

nas Green gare este mente care politice das casta das Las castas das Caretas das comparas das Procedures shall clearly define the step-by-step process needed to safely execute all normal operating sequences, emergency shutdown sequences, and maintenance of critical or major components. Information shall include chain of command, safety precautions, duty of each person involved, and effect of activity on terminal - moleco azonata looratego (ur reliability and shutdown capability.

and a second The duties, responsibilities, and limitations of each person involved in adminiswhile stration, operation, or maintenance shall be clearly defined. No person shall be permitted to work a job for which they are not trained and qualified.



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- Persons filling shift supervisor, operator, suboperator, or similar positions shall clearly understand the processes they are responsible for and shall be familiar with the locationand function of each valve, vessel, instrument, safety device, pipe, and other piece of equipment in their jurisdiction. Operators should receive hands-on training on a simulator.
- 14. The latest edition of the appropriate codes in effect prior to construction of the facilities shall be used as a minimum.
- 15. Design, construction, and operation of the gas transmission pipeline into the facility shall, as a minimum, conform to Part 192, Title 49, of the Code of Federal Regulations, "Transportation of Natural and Other Gas by Pipelines: Minimum Federal Safety Standards," and the American Society of Mechanical Engineers "Guide for Gas Transmission and Distribution Piping Systems." The latest editions in effect prior to start of construction or up to the date of operation shall be used. In case of variance between similar portions of the two codes, the stricter shall apply.
- 16. Class locations selected for determining piping stresses and safety factors shall be based on the maximum population densities and distributions existing during the life of the pipeline or at the year 2000, whichever is more restrictive.
- 17. Minimum burial depth shall be 36" to the top of the pipe. In areas now under cultivation or with a high probability of being under cultivation during the life of the pipeline, the minimum burial depth shall be 48". Deeper burial may be necessary, depending on particular cultivating practices. On slopes, the depth of burial shall be measured perpendicular to the surface slope.
- 18. The line location shall be indicated with surface markers: 20 and 200 and 200 and
 - a) At every public road and highway crossing.
 - b) At every railroad crossing. All a character to address a distribution of the state in the
 - c) At every crossing of an oil or gas shipping line (excluding well flow lines) -
 - d) At least every 1/2 mile in Class 1 and 2 areas a subject most in another brack
- e) At least every 1/5 mile while in the Cat Canyon, Oryana, and other oilfields. Markers shall contain the name and phone number of the gas line operator and a warning about excavating.
- 19. A check value shall be located just outside the UK site limit to prevent backflow in the event of problems at the UK site.

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20. The inlet to any gas piping not designed for the minimum ING temperature shall be equipped with a temperature recorder, two independent low temperature shutdown devices, and a fail-closed low temperature block valve to prevent cold gas or ا المحرقة (محرافي) في المراقب المراقبة المحمد من المراقب المحمد المراقب المحرفة المحرفة المحمد المراقب المحمد ا والمحمد بعد المحادث المحمد ا unvaporized LNG from entering.

21. Additional sectionalizing block valves shall be installed within one mile of each side of active and potentially active fault zones. All block valves shall be power operated and capable of remote operation by the pipeline dispatcher.

22. An automatic leak detection and shutdown system, in compliance with all existing rules and regulations of appropriate authorities, shall be included in the facility. All pipelines shall be constructed and maintained in accordance with all existing codes and regulations. Said system shall be designed and operated in accordance with the best engineering practices available. A substantian decision

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Flood Control:

- 23. Hydrologic studies shall be made of the watershed area tributary to the terminal. Tributary areas are based on natural contour or an accepted master drainage plan. Drainage quantities shall be derived from considerations of expected future to development of the watershed, soil types, historical scorn data, gradient of terrain, etc. These considerations must receive approval by the Santa Barbara County Flood Control Engineer. For most major channels, flow quantities will be supplied by the Santa Parbara County Flood Control Engineer.
- 24. Bydraulic data shall be included on engineering plans for all drainage channels, pipes, etc., in conformance with standards of the Santa Barbara County Flood Control: Department.
- 25. Open channels shall have adequate capacity and have erosion protection through use of revetment, non-erosive velocities, and proper gradients. The engineering design must be approved by the Santa Barbara County Flood Control Engineer. Closed drains shall be reinforced concrete pipe, unless otherwise approved. .
- 26. Energy and hydraulic grade lines shall be shown on all plans and profiles for underground storm drains and open channels. We am the the trave speed at the
- 27. All hydraulic calculation sheets shall be signed by the engineer who signs the improvement plans. At the other water of the second base of a second second different second second
- 28. Drainage inlets and pipes shall be designed for a minimum of a 25-year storm flow.
- 29. Finished floor levels of equipment buildings, residences, etc. shall have a minimum elevation of two feet above adjacent 100-year storm flow surface clevation, or more where deemed necessary by the Santa Barbara County Flood Control Engineer.

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APPENDIX 5 Page 5 of 31

- 30. All drainage improvement design shall comply with standards of the Santa Barbara County Flood Control Department and shall be approved by the Santa Barbara County Flood Control Engineer.
- 31. The original and two copies of approved drainage plans and specifications shall be furnished to the Santa Barbara County Flood Control Engineer before construction begins, or when the above is furnished to the County of Santa Barbara, Department of Transportation, one set of sepia reproductions of the approved plans and specifications shall be furnished to the Santa Barbara County Flood Control Engineer.
- 32. The Santa Burbers County Flood Control Engineer shall receive notice in whiting at least 24 hours before the start of construction of drainage facilities.

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Fire Department:

33. The owner/operator shall fund one additional fire protection specialist position full-time in the Santa Barbara County Fire Department to monitor, review, and evaluate the facility and systems during design, construction, activation, and operational phases of the facility through the six (6) month period after startup.

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- 34. The owner/operator shall submit fire-protection systems plans to the Santa Barbara County Fire Department for approval. These systems shall include, but not be limited to, an integration of subsystems of detection, prevention, suppression, and loss mitigation.
- 35. The Santa Barbara County Fire Department shall plan check and review the proposed fire protection systems using the Uniform Fire Code, Standards of the National Fire Protection Association, the Insurance Service Office, and other nationally recognized fire safety standards. The latest of all applicable codes shall be used. The owner/operator shall allow the Santa Barbara County Fire Department to constantly review the facility during construction and operation and make reasonable requirements resulting from changed conditions or state of the art advances.
- 36. There shall be at least one employee of the owner/operator on duty at the facility at all times after activation, whose primary responsibility shall be fire safety inspection, prevention, and suppression.
- 37. The Santa Barbara County Fire Department shall be a member of the ING Risk Management Group of the CPUC during this project.
- 38. The Santa Barbara County Planning Commission recommends that the CPUC, or its designated agent, use the Mission Research Corporation Comeral Conditions, dated



APPENDIX E Page 6 of 31

condition \$38, continued: انها ها از در ۲۰۰۰ بر ۲۰۰۱ بر به های از معرف میزد در در در به از می مراد از در ۲۰۰۰ بر بین ۲۰۰ مسافلهای از با به معاد معط میران از میکر با میره و در ایر به افسان می می در در میزد و در میرود. از از آمان

March 16, 1978, as a reference document; and that the Santa Barbara County Fire Department be designated the CPUC's agent. ا است. می دود از این الارد بین الدور با می است. الانتخاص و در این از این از این ا این از این مورد با این می این می می مودن این موجود این و دود این این از این ا

Environmental Health: Statute of a particulation of Statute Content and Statute and Statut

41. a) A sound level monitoring program shall be established and supervised by a qualified acoustical consultant. a ser a s A ser a s

b) All sound level monitoring expenses both for baseline data acquisition as well as subservent monitoring shall be borne by the applicant.

c) Prior to construction, sound level monitoring shall be established on the perimeter of the Southern California Edison Company property by a qualified acoustical consultant, approved by the State or Santa Barbara County Health Department, to determine baseline ambient sound levels. The scope and timing of said study shall be submitted to and approved by the State or Santa Barbara County Health Department.

d) All equipment during construction activities shall be designed, constructed, operated, and maintained so that sound levelsinherently and recurrently generated by or resulting from any use operated on the property when measured at the perimeter of the Southern California Edison Company property shall not exceed the -following exceedance levels set forth in the California Office of Noise Control -Model Noise Ordinance

Exceedance Level	(7AM - 10PM)	(10PM - 7AM)
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 \sim e). During operation, all equipment shall be operated, and maintained so that ~ 20 sound levels inherently and recurrently generated by or resulting from any use operated on the property when measured at the boundary of the Southern California Edison Company property shall not exceed pre-project ambient sound levels as determined by initial baseline monitoring.

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f) The scope of all sound level surveys will be submitted to the State or the Santa Barberz County Health Department for approval and shall be approved prior to implementation. aconsión.

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*L₅₀ is the sound level which shall not be exceeded more than 50 percent of the sample time period (i.c., 30 minutes out of each hour.)

*"Lo is the maximum allowable sound level and shall never be exceeded.

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condition 42, continued:

(5) Detailed engineering plans and specifications shall address the adequacy and appropriateness of the source(s), system capacity, storage treatment, distribution, and cross connections protection. The system plans and specifications shall be reviewed and approved by Santa Barbara County Public Works and Lealth Department officials when appropriate.

- (6) Installation of the system per approved plans shall be under the design supervision of a licensed engineer.
- (7) Chemical and bacteriological testing shall be done by a State approved domestic water testing laboratory to insure that the water supply developed is suitable for drinking purposes.
- (8) If water is to be hauled in for demestic use during construction, procedures and equipment shall be reviewed and approved by Santa Barbara County health officials.
- (9) Prior to construction, a complete hydrological evaluation of domestic groundwater availability shall be made by an independent consultant, and submitted to the California Public Utility Commission and the County of Santa Earbara. Investigation shall include evaluation of impacts upon surrounding coasting groundwater usage and the effect upon this supply with continual pumping for this project.
- (10) Prior to construction, a long-term pump test in excess of two to three months shall be conducted by a registered civil engineer or licensed well drilling contractor to determine long-term availability of groundwater to the proposed project.
- (11) Prior to construction, a detailed analysis of project water derands both for construction and operation shall be completed. Analysis shall itemize specific types of water use proposed for the domestic supply throughout the plant. (Ourrent preliminary evaluation of potable water usage is felt to be seriously inaccurate.)
- 43. Food handling facilities construction, operation, and maintenance, both during plant construction as well as after the facility is in operation, shall comply with all applicable provisions of the "California Restaurant Act" (Mealth and Safety Code, Section 28520 ct. seq.).
 - a) All plans and specifications for food service shall be reviewed and approved by the Santa Barbara County Health Department.
 - b) Food service facilities shall be routinely inspected for compliance with all provisions of "California Restaurant Act" by the Santa Barbara County Mealth Department.

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Condition \$41, continued:

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g) Prior to construction, quarterly sound level surveys shall be performed at the Southern California Edison property boundary at locations reviewed and approved by State or by the Santa Barbara County Health Department. b) During operation, quarterly sound level surveys shall be performed at the Southern California Edison Company property boundary at locations reviewed and approved by the State or Santa Barbara County Health Department. i) Additional sound level investigation shall be performed as required by the State or the Santa Barbara County Health Department and said agency shall conduct such sound nonitoring investigations as it deems appropriate.

j) The quarterly sound level monitoring program may be changed to an annual one with the approval of the State or the Santa Barbara County Hoalth Department after said agency has evaluated sufficient information that is representative of the actual project noise conditions.

k) All monitoring activities shall be subject to inspection and all records of monitoring activities shall be available for inspection by the California Public Utilities Commission upon request, and developers shall submit the result of such monitoring activities quarterly to the California Public Utilities Commission and the State or the Santa Barbara County Health Department.

42. a) A potable water supply shall be developed on the property to serve the project with demestic water and a demestic water supply permit shall be obtained by the owner/operator pursuant to California Health and Safety Code, Section 4011. A well drilling permit shall be obtained from the County of Santa Barbara pursuant to local ordinances.

- (1) Demestic water shall be available on the site during the construction phase as well as after the project is completed and in operation.
- (2) Denestic water well (s) construction shall be in accordance with standards set forth by the Department of Water Resources Bulletin No. 74, "Water Well Standards": State of California.
- (3) Donestic water well development and test pumping to determine capacity of water source(s) shall be performed by a California Registered Civil Engineer, Registered Geologist, Registered Engineering Geologist, or licensed well drilling contractor. He shall also certify that the results of this testing show the supply to be adequate to serve the proposed development.
- (4) Donestic water well system facilities shall be designed by a licensed engineer in accordance with "California Safe Drinking Water Act" (Health and Safety Code, Section 4010, et. seq.), relating to Demestic Water Supply, and all administrative regulations adopted pursuant to this act.

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44. Sewage and wastewater shall be disposed of in a sanitary manner which neither endangers the public health, degrades in any way the groundwater supply, or creates a public nuisance condition.

- a) Sanitary facilities during construction of the plant shall provide for the confinement of all raw sewage and wastewater underground, either by conventional subsurface effluent disposal or by portable chemical toilet facilities which are pumped daily and the waste is subsequently delivered to a permitted dumping site.
- b) For the permanent sewage plant facility, all wastewater discharge shall be in compliance with discharge requirements to be issued by the State Water Resources Control Board pursuant to the California Water Code.
- 45. Solid waste collection and disposal, both during construction of the plant as well as during its operation, shall be in a safe sanitary manner.
 - a) Solid waste shall be removed to an approved disposal site issued a permit pursuant to Government Code, Section 56700, et seq., Solid Waste Munagement and Resource Recovery, and California Administrative Code, Section 17051, et seq., OR
 - b) Solid waste disposal shall be accomplished on site subject to all rules and regulations set forth under the above mentioned statutes and regulations, and a solid waste disposal permit shall be obtained from the local jurisdiction.
- 46. An on site disaster plan shall include provision for prevention and correction of environmental health hazards resulting from disasters and shall address water supply, sewage disposal, food service, shelter, vector control, and refuse disposal, and shall be reviewed and approved by the Santa Barbara County Health Department officials.
- 47. Santa Darbara County Health Department officials shall routinely inspect and evaluate food operations, domestic water system, noise monitoring program, and solid waste disposal facilities, and shall report findings to the permitting agency.

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Board of Supervisors, Tanks

48. The CPUC shall require that the ING storage tanks be emplaced below the ground level of the facility so as to have the upper portion of each and every tank protruding from the GROUND level of the facility not more than fifty feet. This fifty-foot portion of the storage vessel shall be surrounded by a gently sloping, softly contoured structure (natural soil) so as to round off, and otherwise blend as much as possible, the tank lines with the natural land forms.

The purpose of this condition is to mitigate the visual impact, incorporating Section 30251 of Coastal Resource and Management Properties: "The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting."

This configuration of recessed tank and a berned backfill shall not compromise the safety of the facility. The intent is to provide for spill safety and minimize sabotage.

Board of Supervisors, ING Site Access

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49. The Southern Pacific Company shall provide railroad passenger and freight service to WLING on their present line. There is adoquate siding capacity at the Iompoc Valley spur.

There is no acceptable road access that does not have major negative environmental impacts, either to coastal resources or to the Jalama Valley. Any improved road will become a major inducement for increased industrial and other urban growth throughout the Point Conception area.

The Santa Barbara County Board of Supervisors has unaninously taken the position that transportation to the ING site for materials and employees be by Southern Pacific railroad from the Lompoc Valley spur. This will save millions of dollars from construction of a road and will help to maintain the remoteness

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with a sub-sector classes.

of the site after construction is completed. We ask the Coastal Commission to join with us in requesting the PUC to request and/or require the railroad to provide passenger service to this site, at least during the construction stage.

The applicant has proposed to improve the Hollister Ranch road and bus their construction workers to Gaviota where a parking lot will be provided. This route will have a disastrous effect on Southern Santa Barbara County where the rental vacancy factor is minimal and much of the area is under a building moratorium. The applicant has made no arrangements for housing the workers (1,650 workers at peak construction) during the 44-month construction period. Approval of the railroad access will put the major burden on Lompoc and other North County areas, where the housing situation is less acute.

The proposed improved Hollister Road also will severely impact Gaviota State Park and cause a hazardous situation at the on-road crossing at Highway 101.

Lompoc is easily serviced by road and rail. It can accommodate these activities. Johns-Manville and VAFB have not experienced supply access difficulties. The assumed reply of Southern Pacific is negative.

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- 50. Prior to completion of Plan and Profile drawings of pipeline, consult with Santa Barbara County Transportation Department to assure coordination with existing and future road facilities.
- 51. Obtain an Encroachment Permit from the Santa Barbara County Transportation Department for installation of the pipeline at all locations within Santa Darbara County road rights-of-way. The permits will show location of pipe and depth of cover, as well as identify detours where necessary.
- 52. If the road access route is via the Hollister Ranch, and Gaviota, the following conditions shall apply:

a) The applicant shall either improve Gaviota Beach Road (County) between U. S. 101 and a point south of the concrete summer crossing to all weather conditions and a safe width, or shall enter into an agreement with Santa Barbara County to maintain and assume all liability and responsibility for the road and any personal injury and property damage occurring thereon or in the connection therewith, until the ING plant is in operation.

b) The applicant shall satisfy the California Department of Transportation regarding providing a safe entrance and safe exit between U. S. 101 and Gaviota Beach Road during the construction period of the ING plant. Conditions may require closure of the center divider, thus requiring traffic from the south to use the U.S. 101-State Highway 1 Interchange, construction of an interchange, relocation of the connection of Gaviotz Beach Road, or some other improvement.

53. If the road access route is via any portion of Jalama Road (County), the following condition shall apply:

a) The applicant shall either improve the portion of Jalama Road to be a part of the access route to a safe standard of grade and alignment, as well as adequate geometric and structural standards to the approval of the Santa Barbara County Department of Transportation prior to use as the access route, or shall enter into an agreement with Santa Barbara County to maintain and assume all liability and responsibility for the road, and any personal injury and property damage occurring thereon or in connection therewith, until the ING plant is in operation.

54. The owner/operator shall develop a "Staging Area and Parking Plan" for the various staging areas.

Public Works:

- 55. The ING facilities shall be designed to withstand, without interruption of service, a design maximum earthquake of Richter Magnitude 7.5 using a bedrock . acceleration-time history with a maximum peak acceleration of at least 0.69,
 - and occurring on a fault three miles from the site, or a greater distance if

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Condition \$55, continued:

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the causative fault is found to be located at a greater distance.

- 56. Owner/operator shall submit to the Santa Barbara County Department of Public Works a grading plan and complete surface drainage plan of all roads and building areas; said grading plan to show method and degree of compaction and proposed method of stabilization of exposed slopes; owner/operator to plant and maintain all cut and fill slopes, said maintenance to be continued until the project is completed.
- 57. All grading shall comply with all applicable provisions of the Santa Barbara County Grading Ordinance #1795.
- 53. A complete geological report of the area prepared by a qualified engineering geologist will be required prior to construction. Said report shall include a complete description of the geology of the site and conclusions and recommendations regarding the effect of the geological conditions on the proposed development. Said report shall be filed with the Santa Barbara County Department of Public Works.
- 59. A preliminary soils report of the area, prepared by a civil engineer experienced in soil mechanics and slope stability and registered by the State, will be required prior to construction. Said report shall include data regarding the distribution, stability, and expansive nature of existing soils and conclusions and recommendations for grading procedures and design criteria for corrective measures. Said report shall be filed with the Santa Barbara County Department of Public Works.
- 60. The project soils engineer shall certify to the Santa Barbara County Department of Public Works that all underground utility trench backfill has been sufficiently compacted to prevent settlement and erosion prior to project completion.
- 61. Supervision The engineer responsible for the design shall exercise supervisory control during the grading and construction operation to insure conpliance with approved plans.
- 62. Approved erosion preventative devices shall be installed prior to November 1st; and shall be maintained on the site through April 15th of the following year.
- 63. During the actual grading process, a registered engineering geologist and registered soils engineer shall provide sufficient inspection to determine that conditions of their pre-grading reports are followed, and if unusual conditions are encountered during grading they shall submit grading recommendations for change of plans to the project engineer and to the Santa Barbara County Department of Public Works.

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- 64. Out slopes shall not be steeper than 1-1/2:1 nor fill slopes steeper than 2:1 unless certified to their stability by the project soils engineer and engineering goologist. Whenever possible, the top and toe of slopes shall be rounded to produce a contoured transition with the natural ground, and all slopes shall be sprayed with hydro-mulch to provide fast growth and reduce erosion.
- 65. The materials for road construction shall meet the requirements of the California Department of Transportation Standard Specifications and Standard Plans of current date.
- 66. The main access road shall be designed to conform with the California Department of Transportation Highway Design Manual of current date and shall consist of two 12' wide travel lanes. Interior roads shall have a minimum pavement width for two 12' travel lanes for 2-way traffic and one 15' travel lane for 1-way roads.
- 67. Design of all road improvements to be constructed as part of this development shall be performed by a Civil Engineer registered in the State of California.
- 68. A registered civil engineer or licensed land surveyor shall certify, in writing, that all curbs, cut and fill slopes, drainage facilities, and other related road work have been staked in the field in accordance with the approved plan and profile drawings and that they are built according to the approved plan standards.
- 69. Bydrologic studies indicating drainage flows to be anticipated from the entire watershed within the project shall be submitted to the Santa Barbara County Department of Public Works for review and approval. Detailed hydraulic studies of storm water runoff to be carried in each roadway shall be submitted by the engineer for approval. The amount of storm water runoff to be carried in a road section shall be computed on a basis of a ten-year frequency storm. Special drainage facilities shall be required when the capacity of the road section has been reached. The drainage facility designs shall be submitted to the Santa Barbara County Department of Public Works for review and approval.
- 70. The final design plans for the proposed LNG terminal, pipeline system, utility facilities, and access roads shall be submitted to the Santa Barbara County Department of Public Works for review and approval prior to construction.
- 71. The pipeline right-of-way and construction access roads should be located a reasonable distance from known landslides, and consideration should be given to the possibility of stabilizing existing slide areas which cannot be avoided and which could pose a significant threat to the pipeline.
- 72. The cwner/operator shall contact the U.S. Soil Conservation Service (SCS) to determine the proper means to control erosion and revegetate the proposed rightof-ways for the pipeline system, temporary construction areas, utility facilities, and access roads. If periodic inspections of the completed right-of-way reveal



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72, continued:

and a second that revegetation and/or erosion control measures have not been successful, reseeding and other measures recommended by such agencies should be accomplished.

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73. Conditions for control of fugitive dust abatement: 2000 controls about contro a) The scheduled watering of grading areas dependent on weather and working conditions. Destains au les sobrements sections de la contraction de la contractione de l

b) Scheduled oiling of access roads and work areas dependent on weather and working conditions. These conditions can reduce dust emission levels roughly. 30-70 percent. Provisions for this measure will be included in the grading permit. c) Conditions for control of vehicle emissions to and from work areas should consider options such as require transport buses. This would eliminate some 25,000 vehicle miles traveled each work day:

The applicant shall submit to the CPUC a plan for transporting workers from various sites in the County to the ING site. This will eliminate 25,000 vehicle miles traveled each day. Without this condition, NO emissions will be produced on the order of 17.5 lbs/hr., seven days a week.

- 4. Ships in Port (Leaving and Entering): Conditions for control of transport emissions dictate that ships must use 0.5 percent sulfur content fuel or less, to avoid violations of the California State ambient air quality standards and district rules for land-based sources. Ships using 3 percent, 2 percent, or 1 percent sulfur fuel would be in violation. Applicable under Coastal Act, Public Resources Code, Sections 30253(3); and 30263 (b) .) المرابطة 1976 محموم معرفية ومربعات الرئيسية من ويسال درية الدرار الإخرارية الأردار الالاري المرابط المرابط الم الالام محركة الحمد والمحموم الحالة الأربيس عرض والتاريخ المرابط والمرابط والمرابط الرئيس المرابط المرابط المرابط
- 75. Beating Process to Gasify the ING: and the process participation of the formation of th Conditions for control of gas turbine emissions must utilize a Water Injection System" (EPA-North Carolina) for NO, roduction. This system constitutes the best available control technology. It will assist in the attainment of the State one hour NO, emission standard of .25 ppm. Two of the three 35 megawatt turbines will be in constant operation for plant power. As designed, the turbines will cause violations 133 hours per year. Emission reduction which may be expected with water injection are on the order of 70 percent and, even with this reduction, air quality impact analysis must be performed. Requirements for gas-fired vaporizer and trim heaters shall be conditioned to use "Selection Catalytic ... Reduction System" (Southern California Edison-Environmental Department) for best available control technology. This system is presently used in Japan for natural gas burning apparatus, and is regarded to reduce NO, emissions by approximately

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Condition \$75, continued:

90 percent. If the gas-fired vaporizer and trim heaters are not conditioned for NO, control, they will produce on the order of 9.24 lbs/hr and 8.47 lbs/hr, respectively. These emissions are in violation of the 5 lbs/hr limit passed by the New Source Review requirements, and these emissions would also require air quality impact analysis data submissions. (Applicable under Coastal Act, Public Resources Code Sections 30253 (3) and 30263 (b).) and so is in the solution of the line o مارد از این میکند. در منطقه میکند کند. از میکند میکند میکند. مارد از میکند از مطلقه میکند کند. میکند میکند میکند میکند میکند. و¹⁹ رو د المول الدامير مراجع م

76. Air Conitoring System:

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Conditions include the implementation and operation of an ambient air monitoring program. Monitoring at two locations will begin one year prior to commencing plant operation and continue indefinitely. Pollutants measured for SO,, NO, NO, NO,, TSP, SO,, and ozone, meteorological parameters will include wind speed and direction and atmospheric stability (Delta temperature). Collection of ambient air quality data will document any significant deterioration of the atmosphere and insure the maintenance of ambient air quality standards.

a) The monitoring program shall consist of the monitoring locations, operation and equipment maintenance program, and reduction of data. One site shall be located approximately 2-1/2 miles downwind within the isopleth of the maximum impact area. The second site will be located near the Gaviota store for further commind analysis. Final site determinations shall be subject to Air Pollution Control District's approval. The state the conservation for forming web constituted

b) The following lists the parameters reasured at each site: Ist site (2-1/2 miles from source): SO2 SO4, NO, NO2, NO2, TSP, Wind Speed and nanos i no campanya i cambaay i golear Direction where the second star in the second second

2nd site (near Gaviota store): SO2, SO4, NO, NO2, NO2, TSP, Ozone, Wind Speed ನ್ನು ಮನವರ and Direction, Atmospheric Stability (Delta Temperature)

c) All monitoring equipment must be housed in temperature controlled structures 2 **Conditions** for everyons all yesteriones to instant much much and the set of the **Conditions** of

d) All air quality, neteorological, and data reduction systems must use instrumentation approved by the Santa Barbara County Air Pollution Control

e) Data shall be recorded continuously on both strip chart-recorders and magnetic tape data acquisition system compatible for play buck on Santa Barbara County Air Pollution Control District's deta reduction equipment. " attained to attain data f) Reduced data also will be supplied to Santa Barbara County Air Pollution

Control District and the California Air Resources Foard (CARB) on standard CAFB monthly data form, TSD-1 (4/77), no inter than 14 days after the end of each n el marte de la completa de la comp and the second second

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condition No. 76, continued:

month of monitoring for all gaseous parameters. Particulate and sulfate data shall be delivered no later than six weeks after each month of monitoring on CARB Form TSD-3 (4/77).

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g) Magnetic tape cassette recordings of all pollutant and meterological data will be delivered to the Santa Earbara County Air Pollution Control District no later than 14 days after the end of each month of monitoring for transcription of data on the Air Pollution Control District's playback equipment. Strip chart recordings will also be delivered to the APCD at the same time.

b) All data collected will be considered public data and available for public inspection or duplication.

i) Operation and maintenance of the monitoring program shall be conducted by professional individuals or contracting firms with a minimum of three years direct field experience in the use of air quality and metcorological monitoring instrumentation. A resume of work experience shall be supplied to the Santa Barbara County Air Pollution Control District upon request for any individual directly involved in the monitoring program.

j) A documented quality assurance plan must be submitted to the APCD for approval 30 days prior to the beginning of ambient air monitoring. The quality assurance plan shall conform to the requirements of the SEAPCD, California Air Resources Board (CARB), and the United States Invironmental Protection Agency for the operation and maintenan-e of an ambient air monitoring program.

 k) Calibration of equipment shall be conducted on all sensors and data reduction equipment in a manner and at intervals specified by the SBAPCD. Records of all dynamic calibrations shall be supplied to SEAFCD no later than seven days after each calibration.

1) The SEAPCD and CARE staff shall have immediate access to both monitoring locations for either inspections or auditing the air monitoring program. m) To insure that all data collected is reliable and valid, the ambient air monitoring program must follow the quality assurance plan approved by SEAPCD and CARE. This plan must include submission of site criteria to CARE and designation of ARE site numbers for each monitoring location to allow data to be filed in the ARE data bank.

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Air Pollution Control District (Cont.)

77. Applicant will meet all requirements of New Source Review as required in Rule 9.1 of the Santa Barbara County APCD and all other rules and regulations will apply to the project, including equipment used during construction.

Board of Supervisors, Supply of Electrical Energy Needs

78. All electric power utilized by the facility shall be produced onsite provided that offsite electrical power may be permitted when the facility reaches an operative capacity of 0.9 BCF/D if applicant conclusively demonstrates at that time or no sconer than two years prior to that time both of the following: a) Expansion of the gas turbine generating capacity is impractical or will unavoidably result in unacceptable levels of air pollution under then-current best available control technology and standards, and b) No other method of onsite power generation (including without limitation. cold power systems and solar and wind power generation) is feasible at the time such capacity is reached.

Transmission of offsite power to the site, if permitted under the above, shall be by means of underground lines at all places visible from within the coastal zone as defined in Section 30103 of the California Public Resource Code.

Planning Depertment, Environmental Monitoring Conditions

- 80. The applicant shall compensate for losses to marine resources, preferably in as nearby a location as possible. Compensation measures may be worked out with the Department of Fish and Game. The extent of the program shall relate to the level of impacts and may vary from year to year. The program shall continue throughout the life of the project, including construction, operation, and decommissioning of terminal and facilities (P.R.C. $\frac{5}{3}$ 30230, 30231).
- 81. As part of the environmental monitoring program, and in conjunction with replanting of graded areas, native species shall be used which are viable, given existing site characteristics. Replanting and reseeding shall be part of a total landscaping program designed to mitigate the impacts of the facility on coastal visual resources (P.R.C. § 30240, 30243, 30251).

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anning Dept., Env. Monitoring Conditions, cont.

- 82. To the maximum extent feasible, construction material shall be transported to the site by rail, from terminal pickup points in major collecting areas at distant railheads.
- 83. No permanent or temporary dwellings shall be built or installed on the site for residential use other than those needed for construction-related activity, such as those for foremen, supervisors, or watchmen.
- 84. If a need arises for terporary housing of construction workers, or local recreational vehicle campgrounds become adversely impacted through use by construction workers for temporary residences, the applicant shall obtain County, approval for developing locations for temporary trailers or RV facilities.
- 85. The applicant shall provide the Santa Earbara County Planning Department with information on the origin and temporary and/or permanent location of employees, both construction and operation. This information shall be transmitted semiannually during construction. The second factor of the second second second second second second second second

Planning Department, Construction and Operation

Surface water which accumulates or flows onto the area of proposed development 6. shall be intercepted in non-erodable devices and channeled either to the ocean or Canada del Cojo. No drainage shall be allowed to spill over natural or graded slopes, or coastal bluffs (P.R.C. \$ 30253(2)).

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- 87. Equipment for the cleanup of petroleum and other hazardous products, together with equipment for deployment, shall be placed in appropriate locations to 200 handle bunker oil, diesel fuel, and other hazardous substances spilled during construction and operation of the facility. Disposal of oil wastes shall be in accordance with the existing County Petroleum Ordinance (No. 2795, \$ 30232, P.R.C.)
- 88. Upon obsolescence or termination of operation, the terminal shall be decommissioned, all equipment and materials removed, including trestle, pipelines within the site, and electrical transmission towers on-site and off-site, and the site restored to prior condition. The public utilities to receive gas from the terminal shall agree with the CPUC to guarantee performance of this condition.
- 89. Prior to operation of the facility, developer shall remove or cause to be removed all shove ground, man-made junk and debris located on the property.
- 90. The width of the pipeline right-of-way shall be subject to the following con-وه این از به در این به این از مرافق این از مورد و به این این این مورد افراد 1 40 1 aitions:

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Planning Dept., Construction & Operation, continued:

490, continued:

- a) If production capacity is not expected to exceed 900 MATD within five years, one 34" pipeline shall be installed. The width of the right-of-way shall not exceed 100 feet during construction and 50 feet during operation.
- b) If production capacity is expected to exceed 900 if/CFD within five years, the proposed parallel 34" pipeline shall be installed during the initial construction period.
- c) If the parallel pipeline is installed, either initially or at some later point, the right-of-way shall not exceed 125 feet during construction and 75 feet during operation.
- 91. a) During construction of the pipeline, use of ground equipment and material storage shall be restricted to the prescribed right-of-way.
 - b) Sidecasting of soil shall be restricted by the removal of excess soil.
 - c) The use of herbicides shall be prohibited.
- 92. Any subsequent repair operations shall be subject to the same operational, soil treatment, and revegetation conditions originally applied.

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Board of Supervisors, Visual, Lighting, and General Liability

- 93. With storage tanks partially undergrounded, as herein specified, all other above-ground structures and equipment shall be completely screened from direct observation from any point on the ground surface within ten miles of the facility by suitable maintained dense landscaping and shall be painted to achieve the maximum camouflage possible during the period prior to full maturity of the screen planting.
- 94. No beem of exterior lighting originating in the facility, including the marine facilities, shall be directed toward adjacent areas without intermediate obstruction. Night lighting of any kind shall be restricted to that required for 1) construction activities, and 2) essential safety lighting during operations.
- 95. The owner and the operator of the facility, including the individual partners of Western LNG Associates, shall be jointly and severally liable without regard to fault for all legally compensable damages or injuries suffered by any property or person located outside the exterior boundaries of the property included in this application that result from or arise out of any LNG gas or water spillage, fire, explosion, odor, or air pollution within the said facility. For the purpose of this condition, the "facility" shall be deemed to include the marine facilities, the gas handling facility, all pipeline and transmission facilities to and from the property, and all vessels, regardless of concerning



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Condition 95, continued:

or control, transporting or designed to transport or otherwise used in connection with the marine operations, while located or operating within three miles of the shoreline. This condition shall not inure to the benefit of any of the owners of the Western LNS facility. This condition simply imposes or preserves stric. liability for ultrahazardous activities, defines the facility and activities to which it is applicable, and defines the entities that are participants or beneficiaries in the ultrahazardous activity, and otherwise, the extent of this strict liability and the limitations upon it shall be governed by the applicable law of California on strict liability.

Department of Environmental Resources - ING Ship Safety

- 96. Collision Avoidance System (CAS) The ship shall be equipped with a modern Collision Avoidance System to provide rapid indication of potential collision threats and free the bridge crew from the time-consuming task of radar plotting.
- 97. Anereneter The ship shall be equipped with an anereneter to provide wind speed and direction information to the bridge. This information will be necessary for docking and to ensure that docking is not attempted under conditions outside the specified operational envelope.
- 98. Rate of Turn Indicator The ship shall be equipped with a rate of turn indicator to read out at the steering stand for use by the helmsman and at a second appropriate place on the bridge for use by the Master/Pilot. This indicator will assist in maneuvering and docking the ING ship.
- 99. Docking Velocineter If it is not provided on the pier, the ship shall be equipped with a direct reading bridge glossometer or similar instrument that displays the velocity of the low and stern (separately) toward the pier. This will assist in preventing too high a lateral velocity of the ship into the pier.

- 100. Range Harkers The terminal shall be equipped with a set of range markers defining the initial approach to the pier. One marker at the end of the trestle and a second on the mainland, properly aligned.
- 101. Bubys A buby shall mark the location of the reported rock (hazard to havigation) at longitude 1190 20.5' latitude 34° 24.4'. This reported rock is at a depth of four fathons and must be avoided by LNG ships. At least two bubys shall mark the southern-and western-rost extremes of the field of submerged well-heads in the vicinity of the offshore oil platform (Herman). These wellheads are at a depth of 64 fathons and shall be avoided by LNG ships. No other bubys marking the approach to the dock are recommended, since they could become a bazard rather than provide assistance.



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DER UIG Ship Safety, continued:

102. Lighting of the Pier - The entire trestle and pier head shall have shielded lights not directly visible from the land side. These lights shall be in operation at night and under all conditions of reduced visibility. Except for actual search purposes, spotlights or floodlights pointing seaward shall be avoided. An occulting, distinctive-colored light on top of the control tower is recommended to serve as a navigation aid for ships not yet in the docking approach.

Site instrumentation mitigating measures are as follows: " The state of the state of the

- 103. Weather Instrumentation The control tower on the pier shall be provided with an anemometer for direct onsite reading of wind speed and direction to assist in determining if the wind conditions at the pier are inside or outside the specified operational envelope.
- 104. Visibility Measurement The control tower shall be provided with equipment and a procedure for determining if the visibility conditions at the pier are inside or outside the specified operational envelope. Harking a series of distances along the trestle to be visible from the control tower would be adequate.
- 105. Swell/Wave Measurement The pier shall be equipped so that wave and swell height, direction, and period can be measured to determine if the ocean water conditions are inside or outside the specified operational envelope. This may be accomplished by visually observing the wave and swell action against a marked piling.
- 105. Radar The control tower shall be equipped with a surface search radar with a 15-to 20-mile range. This radar shall be operated when an ING ship is in transit as soon as it is within range.

Procedure mitigating measures involving the approach route, communications, and the docking operational envelope.

- 107. During its approach to the vicinity of the trestle, the ING ship shall attempt to communicate with all other vessels within (or potentially within) its path and inform them of its intentions. It is recommended that the control tower on the pier attempt to communicate with vessels with which the ING ship may interact and inform them of the ship's intentions.
- 103. The LNG ship and the site shall mutually confirm, by use of their radars and communications, all vessel traffic with which the LNG ship may interact. This procedure, particularly under conditions of limited visibility, will, in effect, be a vessel traffic service for all LNG ships during their approach and departure
- 10,109. The site control tower shall also advise the ship of existing and forecasted weather conditions and, in general, event a positive role over whether and under

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Condition 4109, continued:

- what specific conditions the ship should proceed to the trestle or wait for favorable weather, sea, or ship traffic conditions. In order for the onshore facility to be able to assume these functions and effectively carry them out, the tower shall have sufficient meteorological, navigation, and communications input and/or equipment, including possible linkage with Vandenberg AFB.
- 110. Before operation of the facility, the CPUC shall determine specific criteria for ING ship approach to the pier, for remaining at the dock, and for leaving the berth; and, these shall include visibility, wind speed, and wave height considerations. These conditions shall be enforced until such criteria are applied to the facility by the United States Coast Guard.
- 111. ING ships using the import facility shall have aboard during each transit from the source to the terminal a person qualified and certified to repair and service all ships' navigation and communications instruments; and have available all supply of replacement parts sufficient to ensure the reliability of such instru-الهارين الاقتصارين بي الكريمين ومناسبة منها والمراجع المراجع والمراجع والمراجع المراجع والمراجع والمراجع والمرا المحاذ المراجع المراجع والمراجع ومناطقة المراجع والمراجع والمراجع والمراجع والمراجع والمراجع والمراجع والمراجع و rents and systems.

D.E.R. - Darine Facilities

- D.E.R. Narme Facilities. 112. The CPUC shall contract with the State Department of Fish and Game and the State Water Quality Control Board to determine the feasibility of using a different seawater exchange and vaporization system from the one proposed and/or less biological impacting procedures in the seawater system. If the use of less chlorine eq. (.01 ypm) or a design using copper-mickel alloy throughout the system (needing no anti-folding chemicals) is found to be environmentally preferable, then the CPUC shall implement such systems and/or procedures by conditioning the permit accordingly: (P.R.C.S. 30231) - a set good an approximation of
- 113. The marine facilities should be designed to minimize interference with longshore المراجع مراجع والمراجع المراجع sediment transport (P.R.C. § 30235).
- 114. Applicant shall provide written notification to the convercial fishing industry, kelp harvesters, local marinas, and boat launch facilities of the proposed offshore work, including but not limited to the location(s), dates, duration, and type of construction to be performed (P.R.C. \$ 30230). المراجع والمحالي والمحالي والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والم
- 115. The applicant shall develop and implement a public information program to educate the public, particularly the frequent users of the ING offshore project area, of the potential hazards resulting from an LNG spill (P.R.C. 5, 30253) - and and
 - ార్, సంసాధాని కాటు సాజాలు అల్లాండికి చేస్తున్నారు. కల్లాడులో జారాజను చెదింది సరేదు సంధర పో**సోధిడియరించి, వారాం విజ**జే and and the second management and and and and the two models will be



D.E.R., Invironmental Monitoring

116. Prior to operations, a baseline study will be performed which will encompass all agricultural and native vegetation communities adjacent to the facilities, as measured from the conter of the onshore LNS plant at the mean high tide line, up to the miles to the west, two miles to the north, and three miles to the ease (statute miles). These communities will be documented in terms of their present distribution, areal extent, and condition by competent scientists approved by the CPUC in consultation with the State Department of Fish and Game. This baseline study shall include the acquisition of color infra-red aerial photography (transparencies) imaged semi-annually during the wet and dry scasons. The area (2003 miles, as above) shall be flown to obtain this photography at a scale of 1:6,000, providing this does not delay the normal time for beginning of construction.

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- 117. Prior to full-scale operation, any work that would affect the marine blota in the area, to a distance to be determined by a qualified scientist approved by the State Department of Fish and Game and/or the State Water Quality Control Board, shall be studied. The length of the study period shall be determined by a qualified marine biologist; and shall not delay the correncement of construction
- 118. Prior to operation, the beach area above the mean high tide line and one statute mile to the east and uest of the trestle shall be monitored by competent scientis approved by the California Public Utilities Commission in consultation with the State Department of Fish and Came. This baseline file shall include a permanent photographic record of existing features and conditions associated with the creek and the beach areas. The intent is not to delay commencement of construction.
- 119. During startup and subsequent operation of the LNS facility, observations of agricultural and native onshore vegetation shall be made nonthly or seasonably as appropriate, and shall include semi-annual infra-red film, aerial photography at the scale of 1:6,000 taken for a set of areas representative of those plant communities sensitive or as indicators of pollution. The sample shall also be randomized over the baseline study area. This program, as well as appropriate beach and ocean biota monitoring systems, shall continue for at least a threeyear period and thereafter until such time that it is apparent that no serious, recurring problems relating to pollution of the air, water, or lend exist. The ongoing marine monitoring program shall include a quarterly sampling and observation by a competent scientific term, of the biota potentially affected by, but not restricted to, the cold water discharge and the sea water intake system and the LNS tanker and tug and line boat operations, bunker fuel handling and

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119, continued:

- delivery, and the sediment transport caused by the facilities and operations. This monitoring program shall continue for a period of three years and may be reduced to yearly observations only through the decision of the State Department of Fish and Game and the CPUC. In the event that evidence of serious pollution damage is observed which is attributable to the operation of the onshore and/or marine facilities, and due to the nature of the facilities, it can be reasonably expected that the serious pollution could recur, design modifications and/or other appropriate action will be taken to avoid future impacts and eliminate unacceptable impacts. Such actions shall be initiated by owner and operator upon receipt of official notification by the CFUC and a schedule of compliance shall be filed.
- 120. During construction, including grading operations at the onshore site and construction of the marine facilities, qualified soil, animal, and plant scientists shall monitor for evidence of near-site damage to agricultural and native onshore and marine vegetation and biological communities to determine near-site impacts of heavy construction activities including dust, erosion, turbidity, siltation, and the effects of mitigation measures and conditions required by this permit.
- 121. Prior to construction, the proposed pipeline and power transmission-routes shall be surveyed by qualified scientists approved by the State Department of Fish and Game during the appropriate seasons in order to document sensitive vegetation and wildlife varieties. Pare and endangered species shall be protected from the results of the facility's preparation, installation, and operation by the following: 1) When the proposed route passes through areas of rare or enlangered species, the pipeline and/or power transmission route shall be realigned to avoid sensitive species or areas; 2) Both routes shall be reestablished with appropriate native vegetation; and 3). The latest and most effective means of soil restoration and/or engineering practice shall be applied to prevent and control erosion and siltation of areas including marshes, streams, and rivers, and other sensitive areas from primary land-altering activities and their secondary results. The pipeline, as well as the power transmission line routes, and adjacent areas up to 250 feet each side of the centerline of such routes where rare or endangered species are known or suspected to exist or use, as well as sensitive areas such as all marchlands, stream, and/or river crossings, are to be appropriately documented by competent scientists approved by the State Department of Fish and Game. This documentation will be in terms of sensitive species distribution, areal extent, and condition. This baseline study shall include-



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\$121, continued:

the acquisition of color infra-red photography (transparencies) imaged semiannually at times appropriate to determine the baseline conditions of such areas and species, and which can act as a benchmark against which the future impacts can be judged. This imagery shall be flown to obtain photography at a scale of 1:6,000. After construction, these areas shall be photographed (as above) yearly, for two years, and ground truth scientific documentation shall be obtained simultaneously with the aerial photo program, to characterize the inpacts of construction. Where impacts can be attributed to the pipeline and/or power transmission line projects, and where the impacts resulting on biota and from erosion or siltation can be shown to be feasibly subject to mitigation, such mitigation will be ordered by the CPUC and a schedule of compliance will be issued to the operator ... A reevaluation of the pipeline and power transmission ... routes shall be performed yearly, using aerial infra-red photography and ground. truth scientific evaluative techniques to determine the kind and degree of environmental impacts for a period of two years. Thereafter, further yearly implementation of the conitoring evaluative program will be applied to those portions of the routes which are suspected to continue to experience adverse environmental impact or where enduring tests of mitigation measures are needed. ివి (అమారాజియారా లా కార్రాల్

122. All monitoring activities shall be subject to inspection and all records of monitoring activities shall be available for inspection by the California Public Utilities Commission and the Santa Barbara County Department of Environmental Resources upon request, and applicant shall submit the result of such monitoring activities quarterly to the California Public Utilities Commission, and the State Department of Fish and Game. We are addressed out of the state

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123. Applicant shall integrate the above monitoring activity into any nonitoring and reporting arrangement that may be developed cooperatively by appropriate federal, state, and county governmental authorities. and a second a service a service service and the service service and the service service and the service service of the serv Service and service services and s

D.L.R., Cultural Resources Based of the second for the first of the second s

124. The California Public Utilities Commission shall retain the services of a cultural resources manager hereinafter referred to as Manager. This person shall: be retained as soon as possible after approval of the ING project, and be held during the entire construction period of both phase 1 and phase 2 of the project and up until one year after the construction and operation of the facility. The Manager shall also act as a liaison with those Federal, State and/or local na ng para

124, continued:

- jurisdictions and Indian people, including representatives and local Chumash and Yokut communities actively involved in the preservation of Heritage sites in the Santa Barbara and Bakersfield areas, and archaeological groups involved in the preservation of antiquity sites potentially affected by the project.
- 125. The proposed onshore LNG facility, including onshore elements of the seawater system, shall be moved from the presently proposed location approximately 2,500 feet to the east or less, but no less than 1,500 feet, if it can be proven that no significant site or site component will be encountered, to avoid disturbing the soil near the archeological sites near Canada del Cojo, including Site SBa 1502. This determination shall be made prior to the approval of the final siting of the facility.
- 126. Any location of any aspect of the onshore or offshore facilities, including but not limited to the access and pipeline routes, electrical power alignment, storage and metering station locations, etc., which has not been surveyed for antiquities and current cultural resources, shall be so surveyed before a specific and final location for such aspect of the project is approved by the CPUC.
- 27. Alternative routes or facilities locations shall be adopted by the CPUC for such aspects when cultural resources will be significantly impacted by the proposed locations unless avoidance of sites is determined not to be feasible by the CPUC. When feasible, the CPUC shall bypass cultural resources which will be significantly impacted by routes or facilities. The Manager will determine the conditions under which a judgment of "potential significant impact" can be made after the Manager consults with the State Historic Preservation Officer (SHPO), the Native American Heritage (NAHC), and other local Indian and archaeological advisory persons or bodies.
- 128. The Manager shall implement a program for the adequate subsurface archeological testing for areas of known or suspected cultural resource sites in order to determine proper mitigation only when avoidance of the site is determined not to be feasible.
- 129. The Manager shall consult with and largely, if not fully, follow the recommendations of the local Native American Indians, archaeologists, NAHC, and SHOZ: 1) approval of the final disposition of Native American Indian artifacts or burials, or other types of mitigation in the event that antiquities are discovered during construction activities shall be by members of the Chumash, Yokuts, and other local Native American tribes and groups, and 2) determining those sites or places to be fenced and otherwise protected during construction of the project.

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D.E.R., Cultural Resources, continued:

- 130. The Manager, after consultation with local Indians, archaeologists, SMOP, and the MMPC, will develop or cause to be developed a data salvage program, including complete scope of work, materials disposition, information publication and costs, etc., in the salvage of cultural resources and information from the historic village of Shisholop.
- 131. The CPUC will require that the salvage of Shisholop, under provisions of Condition ND. 130 above, will be funded by the applicant and be accomplished within a period of three years after the project has been permitted regardless of the imposition of Condition NO. 125 above, providing that any imposition has been made on the village of Shisholop.
- 132. The Manager will prepare directly or through the assistance of competent consultants, the latter funded by the applicant and approved by the Manager, all salvage mitigation research programs. These programs are to incorporate a sample size which is agreeable in extent by those local area representatives of the scientific and Indian communities, and by the SHOP and NANC. The Manager shall: (1) follow all of the latest scientific procedures for the excavation, analysis, storage, protection, research documentation, and publication of the information and material cultural remains from each salvage site, and (2) shall follow the determination by the members of the Chumash, Vokuts, and other local Native American Tribes and Groups concerning the final disposition of native American Indian artifacts or burials, including other types of mitigation in the event that antiquities are discovered during construction activities.
- 133. Salvage of cultural sites shall be fully funded by the applicant and shall be allowed exclusive of the provisions of Condition No. 125 above, only after all avoidance procedures and other mitigation approaches, such as fencing, and salvage are deemed infeasible by the CPUC.
- 134. The CPUC is requested to require the applicant to grant access to the site to local Native American Indians for cultural and religious measons with the terms and conditions to be negotiated after permit approval, providing accepted safety practices will not be compromised.

Planning Commission, Pipelines

135. The conditions adopted relate to the pipeline as outlined in the DEUR and, if that route is proposed to be changed, Santa Burbara County seeks the opportunity to present additional conditions to the CPUC.

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ublic Works

- 136. If there is to be a main access mod, the structural mode section shall consist of the following: 0.33 feet minimum thickness asphaltic concrete. Base and the subbase shall be specified in response to the traffic index (T.I.) designated in by a registered civil engineer with experience in modeway design.
- 137. If there is to be a main access road from Gaviota State Park or Jalama State Park or any other alternate roadway from existing public highways to the proposed construction area, it shall be designed to not exceed a safe 25 mile per hour travel speed. Reductions in the above standard may be made for good cause when approved by the Santa Barbara County Public Works Department.

Board of Supervisors, Development Rights and Inverse Condemnation

139. Applicant shall purchase, or acquire through eminent domain, development rights for residential uses within a four-mile radius of the exterior perimeter of the plant site to prevent the exceeding of the residential densities permitted under the Public Utilities Code, § 5582. Such rights to include compensation for any dimunition or modification of rights or values presently held or enjoyed by owners of property within such area resulting from the installation or operation of such facility or from governmental restrictions imposed on such properties as a consequence of the existence of operation of this facility.

Board of Supervisors, Inspection and Enforcement Procedures, Fees and Reinbursement

140. a) That Santa Barbara County be granted the responsibility and authority to conduct all inspections and enforcement procedures normally permitted for any other project; and that the County of Santa Barbara be paid normal fees as for any other project.

b) That special studies and overseeing of conditions being conducted by the County of Santa Barbura be reimbursed by the State of California or the applicant as designated by the CPUC.

Board of Supervisors, Contractual Agreement

141. The CPOC has asked the County of Santa Barbara to submit conditions that would normally be submitted. In doing so, the Board of Supervisors has inserted the County of Santa Barbara as though it were the permitting agency. Having not with CPUC staff and recognizing the differences that still exist between the County staff and the CPUC staff, the Board of Supervisors recommends that there shall be a formal contractural agreement between the CPUC and the County of Santa Barbara after any permit has been granted.



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Board of Supervisors, General Section of the sections of an action of the section of the section of the section of the section of the more stringent or restrictive of the two shall apply. A section of the section of

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ADDENDUM OF May 8, 1978

to

SANTA BARBARA COUNTY BOARD OF SUPERVISORS Recommended Terms and Conditions Western LNG, Point Conception Meeting of April 10, 1978

Condition No. 48, page 10, add at end:

The CFUC shall evaluate various tank designs and materials, including concrete.

Condition No. 49, pages 10 and 10a, add to end:

If the CPUC fails to accept Condition No. 49 and if any improvements need to be made for land access, some form of northerly access moute shall be considered as a secondary recommendation, based on the availability of housing in the Lompoc area.

Condition No. 13, page 2, add at end:

Furthermore, prior to construction, the applicant shall conduct a cumulative feasibility and risk assessment report relating to the prospective lifetime of the proposed ING facility using continuously gathered, current data for the Little Cojo site. Of specific statistical relevance is the impact of wind, wave, and currents upon the required berthing operations.

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May 10, 1978

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TO ALL INTERESTED PARTIES:

Following the submittal on April 28, 1978 of the contention by Hollister Ranch Owner's Association that an active fault may underly the proposed ING site at Point Conception, the Commission staff has requested WING to undertake the following investigations: •••

- 1. Excavate trenches at both ends to the bedrock: (a) to expose the offset in Sisquot formation,
 - n brand side over (b) to establish the relationship between near surface flexure and Sisquoc offset,
 - (c) to determine the type and orientation of the offset, and

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- (d) to determine whether it is a fault.
- 2. Unless the investigation in 1(d) proves conclusively that. it is not a fault, determine:
 - (a) the trend of the fault,
 - (b) the length of the fault,
 - (c) whether the fault can be considered as an active fault,
 - (d) the anticipated ground motion at the site associated with the fault,
 - (e) the relationship of the fault to regional tectonic structures,
 - (f) the nature, amount, and geologic history of displacements along the fault, particularly the estimated amount of the maximum Quaternary displacement due to any one earthquake along the fault,
 - (g) the outer limits of the fault by mapping the fault traces along its trend in both directions.

Western LNG Terminal Associates has notified the Commission that its consultant Dames & Moore has commenced the investigation and that a report on this investigation will be submitted to this Commission by June 2, 1978.

You are invited to participate in the above investigation. You will be notified by Dames & Moore (D&M) when the trenches have been excavated and of other significant events as the work progresses. To minimize the impact on the Hollister Ranch Road, access to this site will be limited and

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May 10, 1978 Page 2

controlled. Therefore, transportation will be provided to the site in lieu of private vehicles. For questions regarding scheduling and transportation, please contact Kathy Jones, D&M, at 805-465-3055.

For technical questions, please contact Dr. Jeff Johnson, D&M, at 213-879-9700, or H. M. Jameel, CPUC, at 415-557-1861.

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A list of the parties is attached.

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 - ారు నిల్లి ఎంటు ఈ పోరాశానికి ఆంత్రిక్ పోసించిని, బోరా ప్రధిలా రాజులు ఉంటింది. ఆయి ఉంటింది కూడి, ఎంగా ఇంటి మీరులు దేవాడు వాసి పోరాగా ఇంటింది. విల్లి

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This appendix lists the environmental impact mitigation measures proposed in the EIR process. Alongside each measure is noted a volume and page reference where the measure is discussed in the EIR documents; whether the measure is required by this decision; and if required, the number of the condition it is required by.

References to EIR documents are made with the following abbreviations:

TR	25	Technical Report	
D	E	Draft EIR	
F.l	-	Final EIR Volume	I
F.2	=	Final EIR Volume	II

The titles corresponding to the referenced technical report numbers can be found in Appendix 1 of the Draft EIR.

Note that the abbreviation RWQCB in this appendix refers to the Regional Water Quality Control Board.

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REFERENCE		MITIGATION MEASURES	CONVENT AND DISPOSITION	
VOLUME	PAGE			
TR L	эз, з9, з4, 42, 41, 43, в4	Erosion control and drainage control measures to mitigate effects at graded areas, gullies, and the shore area.	Required by Conditions 11, 33.	
F.1 Tř l	6-1 86, 87	Additional soils study to determine the test foundation design.	Required by Condition 39.	
TR 1	λ28	Install seavater lines beneath the sea floor to mitigate sand drift and deposition.	Applicant's proposed design incorporates this feature.	
TR 4	153	Obey local regulations regarding grading and other construction practices.	Required by Conditions 1, 2, 4, 5,	
TR 4	154	Water and gravel cover for temporary construc- tion roads to reduce dust.	Selective use of witer and/or gravel cover will be required by Condition 7, where deemed appropriate.	
TR 4	154	Seed exposed slopes and temporary stockpiles of earth.	Required by Condition 3).	
TR 4	154	Ninimize open burning of cleared vegetation.	Required by Condition 33.	
TR 4	154	Develop a plan for transporting workers and materials, which minimizes air pollution to the extent feasible.	Required by Condition 16.	
7.2	32	A comprehensive package of air quality mitiga- tion measures has been suggested by the Air Resources Board.	Further consideration of these measures is required by Condition 34.	
P.1 TR 26	6-3 79	Replace proposed seawater intake system with a "calason" system, subject to a feasibility study.	Required by Condition 4.	
F.1 TR 26 TR 5A	6-5 27, 77 170	Study options for reducing the level of chlorination needed for the seavater system, including non-fouling coatings and scheduled maintenance.	Required by Condition 4.	



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REFERENCE		NITIGATION NEASURES	COPMENT AND DISPOSITION
VOLUNE	PAGE		
TR 26	37	Nonitor the system's impact on water quality with reference to organic chlorine compounds, living organisms, and metal ions.	Required by Condition 5.
TR 26	30	Study the cold water plume to determine the exposure of passively entrained organisms and the aerial extent of affected sea bottom.	Required by Conditions 4, 5.
F.1 TR 5A	6-2 174	Prepare an oil spill contingency plan.	Required by Condition 6.
TR SA	174	Minimize interference with commercial kelp barvest.	Required by Condition 19.
TR 58	20, 45, 23	Acquire, dedicate, and revegetate with appro- priate native plants land of equivalent ecological value to the habitat lost due to project construction. The upstream portion of the Cañada del Cojo should be considered for this purpose.	Required by Condition 10.
TR SB	22	Avoid fill of Cañada del Cojo riparian corridor. Dispose of excess fill offsite.	Required by Condition 7.
TR 58	22	Protect the Cañsda del Cojo with a fence and buffer zone during construction.	Condition 7 requires protection of riparian habitat, including Canada del Cojo. Pencing or other measures will be used as necessary.
TR 53	23	Avoid fill of coastal ravines and stabilization of bluffs.	These measures will be required to the extent feasible. Exceptions will be permitted with the approval of the CPUC construction monitor (Condition 13).
TR SB	23	Firebreak within 400 feet of each tank.	Decision on this measure will be deferred until the FUC safety stendards are developed.
TR 58	73	Survey and align pipeline route to avoid habitats of rare or endangered species.	Required by Condition 1.
\$R 58	79	Pipeline should parallel existing roads or other rights-of-way.	This measure is not feasible.
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REFERENCE				
VOLUKE	PAGE	NITIGATION MEASURES	COMMENT AND DISPOSITION	
TR 58	73	Revejetate route with appropriate native species	. Required by Conditions 7, 8.	
TR 58	47	Keep ground equipment within pipeline corridor during construction.	Required by Condition 8.	
TR 58	17	Avoid sidecasting of excess soil. Replace topsoil lost during construction. Revegetate pipeline route following construction.	Required by Conditions 7, 8.	
TR 5B	**	Phased pipeline construction. Build only single 36-inch line for development to 0.9 BCFD. Loop later only as needed.	This is consistent with the public application $(\lambda-57792)$.	
TA 58	8 8	Minimize pipeline operations corridor width to the extent feasible.	Required by Condition 8.	
TR SB	83	Control access to maintained pipeline, corridor, and pipeline service roads.	Required by Condition 8.	
TR 25	67-75	Align access road along existing Bollister Ranch road with minimal improvements.	Required by Condition 16.	
F.1	6-9	Conserve top soil during access road construc- tion. Respread and revegetate cut slopes with grassland/shrubland mixture.	Required by Condition 7.	
P.1	6-5	Minimize clearing for construction of poverline towers. Save and respread topsoil (top 12")	Condition 15 requires that transmission by wood pole and underground transmission lines be used instead of metal towers, to the extent feasible. Condition 7 requires conservation of top soll during construction.	
TR 6	27, 26	Limitation of major construction activities to the daytize hours.	This measure shall be given consideration as part of Condition 7.	
TR 6	20, 21 24	Limitation of noise generated during operation from the gas turbine generators.	Electrical power will be generated offsite (Condition 15). Condition 14 will require that appropriate noise reduction measures be applied to the standby generators.	

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REFER	TENCE	MITIGATION MEASURES	CORCIENT AND DISPOSITION	
VOLUNE	PAGE			
F.1	6-9	Establish a noise monitoring program during construction.	Required by Condition 7.	
TR 7	71	The Santa Barbara community should be made fully avare that the construction activity will be short-lived and no replacement activity of equal size is likely to occur.	Required by Condition 33.	
TR 7	71	Monitor the plans of the CCS and Vandenberg programs to determine if employment schedules coincident with this 10% project are increased in such a manner as to increase in-migration of labor and resulting effects on transient and permanent housing.	Condition 28 will require WING to provide its employment information to Santa Barbara County.	
1R 7	71	Consider avoiding substantial acceleration of the total project (e.g., attempting to construct a 0.9 BCFD facility within a period of 30 months), if it is confirmed that this would substantially increase the number of employees at peak and lengthen the duration of that peak.	The CPUC construction monitor shall consider the effect on housing before approving an accelera- tion of the project schedule.	
TR 7	71	Encourage weekday in-migrants to use housing in the north county where present occupancy rates are least, thus reducing effect on transient accompositions in the Santa Barbara area. This encouragement could include provision of informa- tion concerning accompositions and special transportation.	Conditions 16 and 28 concern transportation and housing. The applicant should consider other forms of encouragement as well.	
F , 1	6-11	A responsible public agency should monitor the number of transient and permanent housing units occupied by construction workers.	Condition 28 will require the applicant to provide such information to Santa Barbara County.	
7,1 TR 7	6-11 72	Bousing impacts could be mitigated by the development of additional temporary housing wither at the site or in the Lompoc area.	Condition 28 prohibits developing housing at the site for most workers.	
TR 7	120	Additional hazard of wild fire resulting from this project has serious implications but can be controlled by increased prevention and protection measures by the applicant in all areas of work (terminal, access road, pipeline, etc.).	Required by Condition 11, 14.	

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REFERENCE CONNENT AND DISPOSITION MITIGATION NEASURES VOLUME PAGE Required by Conditions 7, 8, 12, 13, 15, 16, The exact extent of impact resulting from the 120 TR 7 access road, pover transmission line and pipe-32 line is dependent upon specific locational and design decisions unavailable at present. Our analysis indicates that potential impacts can be significantly reduced by appropriate routing and design, discussed in Technical Reports ? and 23. Of particular importance is requiring the alignment engineers to diligently survey the corridor and use route selection criteria that place high priority on avoidance of potential adverse land-use impacts The applicant has revised his plant layout to Beach area impacts would be reduced by setting TR 7 120 comply with this measure. the seavater sump into the face of the bluff and the electric substation on the bluff above. This measure should be implemented to the extent Beach and water use impacts would be further 120 TR 7 feasible and is required by Conditions 18 ()) reduced by design of the trestle to span the beach areas and present as little bulk and and 33. obstruction as possible throughout its length. Condition 2 requires that nearshore access not Avoid an exclusion zone around the marine 121 TR 7 be unreasonably restricted. POC safety stanfacilities to minimize beach and water use dards and United States Coast Guard regulations impacts. vill determine the size exclusion zone required. The LNG Terminal Act limits the nature and Strict adherence to and enforcement of current 121 TR 7 quantity of future development within 4 miles land use policies and regulations of the County of the terminal. It does not, however, praand Coastal Cornission will constrain undesirempt the California Coastal Commission and able land use changes surrounding the project. Revision of the current County "160-AL" zoning County authority to set more stringent limits on development. to limit density to one owner-occupied unit per 100-acre parcel would prevent any of the project's tendency to increase the number of units per parcel in the area. Required by Condition 16. The visual harshness of the access road could be 156 TR 7 reduced by following contour where possible, shaping road cuts and embankments to blend into the surrounding earth forms, minimizing removal of existing vegetation, and making extensive but carefully chosen use of new landscaping. Substantial mitigation would require substantial reduction in the extent of road reconstruction, however.

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REFERENCE		NITIGATION NEASURES	CORVENT AND DISPOSITION	
VOLUME	PAGE			
5R 7	156	Route the power transmission line inland, out of sight of the coastal terrace, rather than along the coastal terrace.	Condition 15 will require the preparation of a study to determine which route will have the least adverse impact.	
F.1	E-10	Visual Impacts of powerline can substantially mitigated by using an existing wood pole line and undergrounding through the Gavlota State Park.	The extent to which this ressure can be implemented will be determined as required by Condition 15.	
SR 7	156	Choose a pipeline alignment that is as protected from public view as possible and where minimum change will result for vegetation.	Required by Condition 4.	
fR 7	166	Provide free bus transportation for construc- tion employees between residential centers and the construction site.	This option will be studied as part of the transportation plan required by Condition 16.	
TR 7	189	Require road crossings by the pipeline to minimize extent and time of traffic impact, with specific conditions conforming to state and local agency construction controls.	This measure shall be given consideration as part of Condition 27.	
TR 7	190	Ninimize construction traffic on the Bollister Road prior to its improvement.	This measure shall be given consideration as part of Condition 16.	
F.1	6-10	The visual impact of LNG storage tanks could be mitigated by partial undergrounding.	Required by Condition 18.	
¥R 7	121	The LNG Terminal Act requirement on density within one mile of the terminal results in down-moning density in that area. Impact on local property owners could be nitigated by purchase of some of the residential develop- ment rights involved.	This measure (also suggested in Santa Barbara Condition 139) is rejected as redundant. Landowners have existing avenues of redress through the courts.	
12 7	190	Continue restricted access policy through Bollister Parch.	This is required by Condition 16 but has been polified by Condition 17 to allow limited recreational access.	

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REFERENCE			COMENT AND DISPOSITION
VOLUNE	PAGE	NITIGATION REASURES	
TR 7	162	Availability of a helicopter to provide quick emergency response is suggested during both construction and operation phases of the project.	This proposal will be considered in the formula- tion of an onsite disaster plan for the opera- tional phase (Condition 26) and will be required by Condition 33 during the construction phase.
TR 7	163	Facilitate involvement of local government agencies in review and guidance of project development in a manner that maximizes their understanding of event and decisions, their feeling of participation, and that minimizes their expenditures.	The PUC staff is directed to adopt this approach in their relations with the local government agencies.
TR 7	155	Nitigate visual impacts by attention to design of the facility, Reduce the massive, recti- linear forms of the terminal facility if feasible. Partial burial of the tanks and use of earth berms and vegetative screens would reduce visual impact somewhat, particularly for persons located on the marine terrace.	Required by Condition 18. Screening of the facility by the use of offsite landscaping should be considered in the applicant's plan, subject to the approval of the property cyner.
		Color and paint patterns could be used to break up the perceived forms of the terminal facility to a limited extent.	
•		Plantings of trees in carefully chosen spots on the surrounding hills could also be used to block off the sight lines from houses to the terminal.	
5R 7	190	Minimize the level of access road improvements, using buses for labor and the railroad for materials and equipment transportation.	Consideration of these measures should be given in the transportation study required by Condition 16.
		Improve the Gaviota Intersection appropriate to the construction traffic demand, determined in consultation with appropriate state and local transportation agencies.	
		Minimize truck traffic on the access road by utilizing rail transport to the greatest extent possible.	
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REFE	RENCE	NITIGATION MEASURES	COPPLENT AND DISPOSITION	
VOLUME	PAGE	in the multi-importing significant	Required by Condition 12 and is recognized by	
tr I D	94, 95 6-8	Project redesign to avoid impacting significant cultural resources. - Movement of proposed Point Conception facility away from the most significant cultural resources.	the applicant's proposed moving of the facility approximately 1,440 feet east.	
		- Use of Alternate pipeline alignments to avoid cultural resources.	- 21 -	
1R \$	33	Major data salvage program if avoidance of cultural resources is not possible. Salvage of data to be lost due to residual impacts.	Required by Condition 12.	
TR #	94, 95, 97, 98, 93	Studies of sensitive areas to assess impacts and plan avoidance or salvage programs. Pages 94, 95, 97, 98 (bullet 2), 99 (bullet 4).	Required by Condition 12.	
tr 1 D	97, 91 6-8	Monitoring of construction work to minimize vandalism and other damage.	Required by Condition 13.	
SR B	97	Fencing of cultural resources located near construction areas.	this measure will be used where necessary to implement Condition 12.	
TR 8	38	Avoidance of future land disturbing activities in areas where cultural resources are located.	No further expansion of the facility is the area to the plated. Further development of the area to other uses is controlled by the California Cou al Commission and the County planning commission	
TR B D	53 6-8	Construction of a seawall to protect SBA-516 south. Page 98 (or salvage, see DEIR page 6-8),	this measure is not considered necessary sinc the site of the terminal will be moved east to avoid this area.	
TR \$	57	Nomination of eligible sites to the National Register of Bistoric Places.	The staff cultural resources manager on the monitoring program is directed to initiate th measure.	
TR \$ D	95, 93 ⁷ 6-7	Cultural resource manager at PUC to oversee mitigation programs.	This measure will be considered as part of the monitoring program required by Condition 13.	
D	6-8	Approval of mitigation programs by the State Bistoric Preservation Officer, the Native American Meritage Commission, and locally concerned Native Americans and archaeologists.	Condition 12 requires consultation with these entities.	

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VOLUME	PAGE	MITIGATION MEASURES	COMMENT AND DISPOSITON	
TR S	7-1	Ship Anemometer	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-2	Ship Rate of Turn Indicator	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-2	Docking Velocizeter	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-3	Ship Collision Avoidance System	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-4	Range Markers at Facility	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-4	Marking Buoys	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-5	Lighting of Pier, Berth, and Control Tower	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-6	Facility Weather Instrumentation	Pequired by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-5	Facility Visibility Neasuring Equipment	Required by Condition 35 to the extent permitted by U.S. Coast Grard regulations.	
TR 9	7-7	Site Wave/Swell Measuring Equipment	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 3	7-7	Site Radar	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-9	Approach Route	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	2-10	Facility/Ship Communications Procedures	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
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REFERENCE		Page 11 of 12		
VOLUME	PAGE	MITIGATION REASURES	CONVENT AND DISPOSITION	
TR 9	7-10	Docking Operational Envelope	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-12	Avallable Open-Sea Towing Capability Via Tugboat	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-12	Available Firefighting Capability Aboard Tugboats	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 9	7-12	Available Follution Control Via Vessel	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 3	7-13	Available person(nel) Trained in Open-Sea Tow Makeup	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.	
TR 11	15	Use of LNG boiloff from the tankers during maneuvering and docking and while it is moored at the dock instead of using Bunker C fuel oll would significantly reduce the emissions from the LNG tanker operation.	LNG boiloff should be used to the extent feasible. Bowever, the ship's engines require use of oil for pilot burners. Therefore, LNG boiloff cannot be used in place of oil during low speed maneuvering.	
TR 13	3, 4	Set aside 25 acres for future cryo uses. Fuel- free pover generation studies. Freeze desslination studies.	Condition 33 will require further study of fuel- free power generation and freeze desalination. This study should recommend an appropriate site for these uses. Consideration should be given in designing the facility to features which facilitate the future development of cryo uses.	
TR 16	119	Coordination with Vandenberg Air Force Base on future missile launch activities	Condition 33 will require that the applicant provide the Air Force with such ship scheduling and safety information as may be needed for coordination of launch activities.	
TR 16	2028	Consideration of planned ignition as a mitigat- ing measure in developing contingency plans,	This mitigation measure will be considered in the POC safety standards being developed in OII-1.	
TR 16	203	Implementation of a Risk Management Plan to allow CPUC to verify that final design, con- struction, and operation meets or exceeds the safety levels assumed in the BIR analysis.	A safety monitoring program is required by the LNG Terminal Act of 1977. The staff proposed program is included in the Appendix to the Final EIR. The Cocmission will adopt a program in its decision on OII-1.	

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	VOLUNE	PAGE	MITIGATION MEASURES	CONVENT AND DISPOSITION	
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	TR 17	7-1	Cover LNG pipes and tanks with energy absorbing material to protect them from penetration due to missile fragments.	This measure is rejected since the event is judged too improbable to justify the expense. The proposed safety standards contain provisions which would protect the public even should such an event occur.	
	TR 18	-	Technical Report 18 contains mitigation measures relating to seisaic design of the facility. With the exception of those measures specificially listed below, this subject will be the subject of further hearings in OII-1.	د	
	TR 18	44, 46, 47, 61	A conservative approach to consideration of near-site faulting should be adopted and further study made of selsaic harards to the site.	Required by Conditions 36, 37, 38, 39, 40, 41.	
1	TR 25	73	Reduction of impacts to cultural resources by doing fever improvements to the Bollister Ranch road.	Study of the measure will be required by Condition 16.	
	TR 25	11	Mitigation through avoidance more possible along the Jalama road alternative.	Study of the measure will be required by Condition 16.	
	TR 25	31	Careful planning in consultation with Native Americans necessary to protect integrity of religious values intrinsic to Point Conception if Jalama access alternative is adopted.	Required by Condition 12.	
	TR 25	136	Mitigation of power line impacts through avoidance. A survey program to identify impacts in the corridor is first necessary. Salvage of information should be done when necessary.	Required by Conditions 12 and 15.	
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APPENDIX G

NOTICE OF DETERMINATION

TO:

Secretary for Resources FROM: 0 1416 Nintu Street, Room 1312 Sacramento, California 95814

California Public Utilities Commission 350 McAllister Street San Francisco, Calif. 94102

<u>بر</u>

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

A-57626 ING Terminal ETR

Project Title

______78030684

State Clearinghouse Number (If submitted to State Clearinghouse)

Steven W. Miller (415) 557-2374

Telephone Number

Point Conception, Santa Barbara County

Project Location

Contact Person

Marine terminal for receiving ING and ancillery facilities

Project Description

The pages of the Commission's decision specifying required mitigation measures are attached.

This is to advise that the California Public Utilities Commission as lead agency has made the following determination regarding the above described project:

1. The project has been 1000 approved by the Lead Agency.

7 disapproved

2. The project <u>xx</u> will have a significant effect on the environment.

will not

3. XXX An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.

A Negative Declaration was prepared for this project pursuant to the provisions of CEQA. A copy of the Negative Declaration is attached.

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Attachment

89177 JUL 31 1978

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Decision No. BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA In the Matter of the Application of Western LNG Terminal Associates, a general partnership, and of a Joint Application of Western LNG Terminal Associates, Pacific Gas and Electric Company Application No. 57626 and Pacific Lighting Service (Filed October 14, 1977) Company, California corporations, for a permit authorizing the construction and operation of an LNG terminal pursuant to Section 5550 et seq. of the Public Utilities Code. In the Matter of the Application OF PACIFIC GAS and ELECTRIC COMPANY, AND PACIFIC LIGHTING SERVICE COMPANY, California corporations, for a Certificate that Public Convenience and Application No. 57792 (Filed January 9, 1978) Necessity require the construction, operation, and maintenance of a 34" Pipeline from the Point Conception area, Santa Barbara County, California to Gosford, Kern County, California, and related facilities. Investigation on the Commission's own motion into the matter of OII No. 1 the adoption of regulations (Filed October 18, 1977) governing the safety and construction of a liquefied natural gas terminal in the State of California. Investigation on the Commission's own motion into the impact of the Case No. 10342 decline in natural gas available (Filed June 1, 1977; to California from traditional amended August 23, 1977) = sources and the need for and timing of deliveries from supplemental supply projects.

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At the lychgate we may all pass our own conduct and our own judgments under a searching review. It is not given to human beings, happily for them, for otherwise life would be intolerable, to foresee or to predict to any large extent the unfolding course of events. In one phase men seem to have been right, in another they seem to have been wrong. Then again, a few years later, when the perspective of time has lengthened, all stands in a different setting. There is a new proportion. There is another scale of values. History with its flickering lamp stumbles along the trail of the past, trying to reconstruct its scenes, to revive its echoes, and kindle with pale gleams the passion of former days. What is the worth of all this? The only guide to a man is his conscience; the only shield to his memory is the rectitude and sincerity of his actions. It is very imprudent to walk through life without this shield, because we are so often mocked by the failure of our hopes and the upsetting of our calculations; but with this shield, however the Fates may play, we march always in the ranks of honour.

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Winston Churchill to the House of Commons November 12, 1940 on the occasion of the death of Neville Chamberlain

(See Appendix A for appearances.)

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OPINION IN APPLICATIONS NOS. 57626 AND 57792, CASE NO. 10342 AND OII 1

I. LNG TERMINAL ACT OF 1977

On September 16, 1977 the Liquefied Natural Gas Terminal Act of 1977 (SB 1081) was signed by the Governor. The Act grants to this Commission the exclusive power to issue a permit authorizing the construction and operation of a liquefied natural gas (LNG) terminal pursuant to a prescribed procedure. The Act makes appropriate modifications to the Public Resources Code and adds Chapter 10 to the Public Utilities Code. The Act became effective immediately upon enactment on September 16, 1977 as an urgency statute within the meaning of Article IV of the Constitution.

In Section 5551, the Legislature finds as follows:

- "(a) That an adequate supply of natural gas is essential to the economy of California and to the health and welfare of its residents.
- "(b) That the importation of liquefied natural gas from south Alaska and Indonesia into California may be a significant means of assuring that adequate and reliable supplies of natural gas are obtained in sufficient quantities to meet the state's needs and to prevent natural gas shortages which would disrupt the state's economy, increase air pollution, and impose personal and financial hardships on all of the state's residents.
- "(c) That an initial liquefied natural gas terminal may currently be needed in order to permit the importation of sufficient natural gas to prevent shortages which have been predicted to occur in the early 1980's.

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"(d) That, in order to expedite the siting, construction, and operation of such liquefied natural gas -terminal so that serious shortages of natural gas do not occur, it is necessary to vest exclusively In one state agency the authority to issue a single permit authorizing the location, construction, and operation of such terminal, and to establish specific time limits for a decision on applications for such permit." */

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In order to implement the policy stated in Subdivision (d) above, the Act provides that the issuance of a permit by the Commission shall be in lieu of any other permit, license, certificate, or other entitlement for use required by any agency of state or local government for the construction or operation of an LNG terminal, to the extent permitted by federal statute or regulation or any federalstate agreement relating to water discharge permits. The Act further provides that, to the extent permitted by federal statute or regulation, the permit shall also be in lieu of any other permit, license, certificate, or other entitlement for use issued by any agency, department, or instrumentality of the federal government.

In Section 5552, the Legislature further finds and declares, in part, "... that current uncertainties about the safety of liquefied natural gas require that the single terminal authorized by this chapter be located at a site remote from human population in order to provide the maximum possible protection to the public against the possibility of accident."

Section 5582 provides that the following population criteria apply to the terminal:

*/ The Act requires that "... on or before July 31, 1978, the commission shall issue a decision on an application for a permit to construct and operate an LNG terminal". (Section 5580; emphasis added.) All references are to the California Public Utilities Code, unless otherwise noted.

- "(1) Population density shall be not greater than an average of 10 persons per square mile for a distance of one mile outside the perimeter of the site on which the offloading, regasification, and storage facilities for LNG will be located.
- "(2) Population density shall be not greater than an average of 60 persons per square mile for a distance of four miles outside the perimeter of the site on which the offloading, regasification, and storage facilities for LNG will be located.
- "(3) The terminal shall be located so that no marine vessel transporting LNG would be required or permitted in the normal course of marine operations, according to the plan of operations filed by the applicant pursuant to subdivision (b) of Section 5601, to pass closer to areas of population density than the distances specified in paragraphs (1) and (2)."

Section 5584 requires that the storage and regasification facilities be located onshore. Section 5585 requires that the gas delivered to the terminal must be gas produced in Indonesia and south Alaska. It also requires that the "terminal's average daily input capacity shall not exceed the gaseous equivalent of 1.3. billion cubic feet." Further, Section 5600 requires that any party seeking a permit to operate and construct a terminal had to file an application within 30 days after the effective date of the legislation. Western LNG Terminal Associates (Western Terminal), the only applicant under the Act, filed Application No. 57626 on October 14, 1977, for a permit to construct and operate an LNG terminal in Santa Barbara County near Point Conception. Under the Act the Commission is required to submit a copy of the application to the California Coastal Commission (CCC) (Section 5610). This was done on October 14, 1977.

The CCC is required by the Act to undertake a study to identify and evaluate potential onshore sites for an LNG terminal. Not

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later than May 31, 1978, the CCC was required to complete and transmit to this Commission its final report evaluating and ranking such sites, together with recommended terms and conditions of construction and operation of a terminal at each site. (Sections 5611, 5612.)

The Act provides that this Commission shall not issue a permit for construction and operation of a terminal at any site not evaluated and ranked by the CCC. In issuing a permit, this Commission is required to issue it for the site ranked highest by the CCC. "However, the Commission may select a lower ranked site if it has determined with respect to each higher ranked site that it is not feasible to complete construction and commence operations of the terminal at such higher ranked site in sufficient time to prevent significant curtailment of high priority requirements for natural gas and that approval of the lower ranked site will significantly reduce such curtailment." (Section 5631.) Section 5559 defines "feasible" as "... capable of being accomplished in a successful manner within a reasonable period of time, taking into account: (a) economic, environmental, social, technological, safety, and reliability factors, (b) gas supply contracts, (c) gas supply and demand forecasts, (d) federal regulatory requirements, and (e) alternative sources of natural gas."

Under the Act this Commission cannot issue a permit for construction and operation at any site unless it finds to do so would be consistent with public health, safety, and welfare, and it may impose such conditions on the issuance of a permit as may be necessary or appropriate to ensure the public health, safety, and welfare. (Section 5632.)

If this Commission issues a permit for construction and operation, the Act requires it to impose, as a condition of such permit, each term and condition recommended by the CCC for the selected site, unless this Commission finds with respect to each term or condition any of the following:

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(a) Imposition of the term or condition will cause delays in commencement of terminal operations that will result in significant curtailment of high priority natural gas requirements and that deletion or modification of the term or condition will avoid or significantly reduce such curtailment.

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(b) The report of the CCC recommending the term or condition was not based on substantial evidence, considering the record as a whole. (c) Imposition of the term or condition will adversely affect public health or safety. (Section 5633.)

The Commission may also impose its own terms and conditions. These terms and conditions may also include those recommended by the local city or county within whose jurisdiction the terminal is proposed to be located. (Section 5636(d).)

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Section 5601 requires the permit application to contain the following information:

- (a) Information, including maps and pictorial and written descriptions of present and proposed development for the site and relevant geological, archaeological, aesthetic, ecological, seismic, marine transport, and population data. The maps shall designate the location of the perimeter of the LNG offloading, regasification, and storage site from which the population density criteria specified in Section 5582 shall be measured.
- (b) A detailed description of the proposed engineering design features, proposed methods of construction, and proposed operating procedures for the terminal and a proposed plan for marine operations, including shipping routes and control procedures.
- (c) An analysis of accident possibilities, consequences, and risks for the terminal.
- (d) Information regarding safety and public protection tion features, including fire protection measures, marine navigational systems, emergency systems for shutting down the terminal, and other contingency plans for accidents.
- (e) Information regarding the cost of the terminal, fuel consumption in operating terminal equipment, service life of the terminal, and capacity of the terminal.
- (f) Information regarding the source of liquefied natural gas, including the contractual terms for the delivery of such gas supplies.

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(g) A description of any proposed or existing natural gas transmission lines related to the Proposed terminal, including a map, in suitable scale, of the routing that shows details of the right-of-way in the vicinity of populated or developed areas, parks, and recreational areas; the justification for the route; and a preliminary statement of the effect of any proposed natural gas transmission line on the environment.

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- (h) A description of contingency plans for equivalent volumes of natural gas in the event of both shortand long-term interruptions of the LNG supply system for the proposed terminal.
- (1) A description of the proposed method of financing the terminal and analysis of the rate impact thereof on natural gas consumers in this state.
- (j) The applicant's legal opinion regarding the rights this state has, or can assert, under federal law (1) that will assure the allocation of adequate supplies of natural gas to consumers in this state from sources other than the terminal to be permitted pursuant to this chapter and (2) that will assure consumers in this state full and fair compensation for any losses of supplies of natural gas costing less than gas converted from LNG that may result from federal allocation policies.
- (k) Any other information which the applicant deems necessary or desirable to support its application and better inform the commission and the public. */

This Commission is designated by the Act to be the lead agency for purposes of the California Environmental Quality Act (CEQA). (Section 5635.) The Act requires this Commission to adopt regulations

^{*/} As discussed <u>infra</u>. the proceeding in Application No. 57626 basically addresses issues relating to Subsections (a), (e). (g). (i), and (k) of Section 5601. The issues relating to the other subsections are addressed, as appropriate, in OII 1 and Case No. 10342.

governing the safety and construction of the terminal. (Section 5637.) It further requires this Commission to establish monitoring systems:

- (1) To ensure that any terminal authorized is constructed and operated in compliance with all applicable regulations adopted and the terms and conditions established pursuant to the Act, and
- (2) To monitor the costs incurred in the construction, or in the preparation for construction, of such terminal in order to determine if the costs are in the best interests of the ratepayers. (Sections 5637, 5638.)

II. PROCEDURAL SUMMARY

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A. Entities

Western Terminal is a general partnership pursuant to the Uniform Partnership Act of the State of California. A copy of its general partnership agreement was filed as a part of Application No. 57626. Although not applicants in this proceeding, the parties to the Western Terminal partnership are: Western LNG Terminal Company, a California corporation, which is an affiliate of Pacific Lighting Corporation (PLC); and Pacific Gas LNG Terminal Company, a California corporation, which is an affiliate of Pacific Gas & Electric Company (PG&E).

PLC was a utility holding company until 1969 when it was diversified by the addition to its holdings of companies engaged in agriculture and real estate. The public utilities controlled by PLC are Pacific Lighting Service Company (PLS) and Southern California Gas Company (SoCal), both of which are California gas corporations. SoCal is the largest distributor of natural gas in southern California. PLS serves the sole purpose of buying natural gas from various suppliers and selling it to SoCal. PLS has no employees of its own. Manpower for all PLS functions is provided by SoCal, which charges PLS for the service of its employees.

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Western LNG Terminal Company, which participates as a partner in Western Terminal, is a wholly owned subsidiary of PLC.

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PG&E is a public utility which is the largest supplier of gas and electric service in northern California. It controls a number of affiliates having the primary functions of developing and purchasing natural gas supplies and transporting the gas to PG&E's pipeline facilities. PG&E formed Pacific Gas LNG Terminal Company as a wholly owned subsidiary for the purpose of participating as a partner in Western Terminal:

On March 11, 1975, Western LNG Terminal Company entered into an agreement with Pacific Indonesia LNG Company (PacIndonesia) agreeing to receive, regasify, and deliver, at the instruction of PacIndonesia, specified volumes of the LNG under specified conditions. On February 26, 1975, Western LNG Terminal Company entered into a similar agreement with Pacific Alaska LNG Company (PacAlaska).— In accordance with the general partnership agreement effective January 27, 1976, the agreements are now binding upon Western Terminal.

**/ PacAlaska is a wholly owned subsidiary of PLC.

PacIndonesia is a California corporation which is a wholly owned subsidiary of PLC, but which is now jointly controlled by PLC and PG&E. PacIndonesia has contracted: (1) to purchase the specified volumes from Perusahan Pertambaugan Minyak Dan Gas Bumi (Pertamina); (2) to transport the LNG to California; and (3) to sell the regasified LNG to SoCal and PG&E.

B. Proceedings Before Commission

1. Application No. 57626

Pursuant to Sections 5550 et seq. of the Act, Western Terminal seeks a permit authorizing it to construct and operate an LNG terminal as defined in Section 5562 of the Act. The site of the proposed terminal is in Santa Barbara County near Point Conception. At this site Western Terminal intends to construct and operate LNG unloading, storage, vaporization, and ancillary facilities for the purpose of receiving LNG imported into California from Indonesia and south Alaska.

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Western Terminal alleges that the proposed project set forth in the application fully complies with the provisions of the Act and that the project is designed to receive critically needed LNG supplies in a feasible and timely manner.

FG&E and PLS 10in with Western Terminal in seeking the permit insofar as it authorizes the construction and operation of the pipeline and appurtenances necessary for the transmission of the regasified LNG from the metering station at the outlet of the vaporization facilities of the terminal to the points of interconnection with existing natural gas pipelines.

2. Application No. 57792

Pursuant to Section 1001 of the Public Utilities Code, PG&E and PLS jointly seek an order of the Commission granting to them a certificate of public convenience and necessity for the construction, maintenance, and operation of a pipeline which will be owned equally by the two California utilities. The pipeline will be approximately 112 miles long and will be 34 inches in outside diameter. It will begin at the metering station of the proposed LNG terminal site and terminate at a point of interconnection with PG&E's existing pipeline near Gosford in Kern County. There will be two interconnections along the 112-mile route, the first with SoCal's existing pipeline west of Buellton in Santa Barbara County, zand the second with PLS's existing pipeline near the North Coles Levee Field in Kern County.

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Applications Nos. 57626 and 57792 were consolidated for hearing.

3. Case No. 10342

On June 1, 1977 the Commission instituted an investigation, Case No. 10342, into the impact of the decline in natural gas available to California from traditional sources and the need for and timing of deliveries from supplemental supply projects. Specifically the investigation included the following:

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- (1) A forecast of gas requirements by end-use priority.
- (2) A forecast of gas supplies from traditional sources, and the projected cost of these supplies.
- (3) An evaluation of the potential supplies available from new sources, and the projected cost of these sources.
- (4) The estimated date of curtailment of each end-use priority with traditional sources and the economic, social (with emphasis on loss of jobs). and environmental costs of converting these customers to alternate fuels.
- (5) The potential price and supply impacts of federal allocation and pricing policies on California's new gas supplies.
- (6) The facilities needed for and the economic, social, and environmental costs of diverting gas from northern to southern California.

SoCal, PG&E, and San Diego Gas & Electric Company (SDG&E) were made respondents in this case.

4. Order Instituting Investigation No. 1

On October 18, 1977 the Commission instituted OII 1 to discharge its statutory mandate under Section 5637 of the Act, which requires the Commission to adopt regulations governing the safety and construction of the LNG terminal. OII 1 constitutes the vehicle by which the Commission intends to develop comprehensive safety standards.

The standards adopted by the Commission in OII 1 will prescribe that level of safety which operators of a proposed LNG terminal must legally meet in connection with the design, construction, testing, operation, and maintenance of facilities required in the transfer, storage, and vaporization of LNG.

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For purposes of developing appropriate safety standards, OII 1 encompasses all current state-of-the-art safety information relative to the handling of LNG. Present national, state, local, industrial, and professional codes, standards, practices and regulations covering design, construction, operation, inspection, maintenance, and safety of LNG terminal facilities are to be analyzed to determine their adequacy with respect to the Commission's responsibility for developing comprehensive safety standards. Respondents and the applicant for a proposed LNG terminal within the State are required to furnish to the Commission proposals for standards necessary to provide for the safe construction, operation, and maintenance of a proposed LNG facility.

The ultimate LNG safety standards promulgated by the Commission in OII 1 are to be incorporated as Part III of the Commission's General Order No. 112-C, which presently contains rules governing design, construction, testing, maintenance, and operation of utility gas gathering, transmission and distribution piping systems.

SoCal, PG&E, SDG&E, and Western Terminal were named respondents in OII 1.

5. Trifurcated Public Hearings

At the prehearing conference held on October 28, 1977 on Application No. 57626, staff recommended that for the purpose of expediting the hearing process, so as to allow a decision to be issued by July 31, 1978 on the permit, three separate and concurrent sets of hearings should be held and the three records consolidated. One set of hearings was recommended to be held in Application No. 57626, another set in Case No. 10342, and the third in OII 1. The three assigned Administrative Law Judges (ALJ) approved this recommendation, requiring that, in general, evidence relating to natural gas supplies and requirements be presented in Case No. 10342,

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safety related evidence be presented in OII 1, and evidence on the remaining issues be presented in the application. Subsequently, on January=9, 1978, Application No. 57792 for a certificate of public convenience and necessity for the gas transmission pipeline was filed, and it was consolidated for hearing with Application No. 57626.

An appearance in any one of the proceedings was deemed to constitute an appearance in all of them. The hearings were conducted to avoid, insofar as practicable, the duplication of evidence, while undertaking to compile a composite record that would be adequate in every aspect necessary for the Commission to make all required determinations within the time limit specified in the Act. References to the transcript, exhibits, and items in each hearing were preceded by a letter designating the applicable record: Case No. 10342 by a "C", Applications Nos. 57626 and 57792 by an "A" and OII 1 by an "O".

6. Hearings in Applications Nos. 57626 and 57792

The hearings in the applications were held in two series. The first series of hearings began with Western Terminal's basic showing and were concluded on February 17, 1978. Following Western Terminal, the Commission staff presented evidence relating to the cost of the proposed LNG terminal, financial issues relating to the construction and operation of the proposed terminal, and a plan to monitor the construction costs of the proposed LNG receiving terminal. Although provided the opportunity, no other parties presented evidence relating to this phase of the Application No. 57626 proceedings. At the conclusion of the first series of hearings in the applications, the presiding ALJ invited all parties to file concurrent interim briefs by March 7, 1978 on those issues in which presentation of evidence had been completed.

At the second series of hearings, beginning on March 14, 1978, the staff presented expert witnesses and exhibits relating to the serious environmental impacts associated with constructing an LNG

receiving terminal at Point Conception. " These exhibits are technical reports which support and set forth the detailed facts and concluSions which are presented in the Draft Environmental Impact Report (DEIR) on the proposed project. Testimony and technical reports were offered on socio-economic and land use impacts, meteorology and air quality impacts, geology and seismicity impacts, and terrestrial biology impacts. The staff also presented witnesses who supported technical reports dealing with energy use, the proposed seawater system, utilities and effluents, and an assessment of cryo-utilization of the "cold power" generated by an LNG receiving terminal. In addition, technical reports addressing the relative environmental impacts of constructing and operating an LNG facility at alternative sites were introduced and received in evidence. ""

The staff also presented a technical report (Exhibit A-90) that sets forth the impacts of the proposed access road and electrical power transmission line required to serve the plant. Exhibit A-90 also assesses the impacts of alternative routes for a gas transmission pipeline, power line, and road. Finally, the staff presented testimony and Exhibits A-115 and A-116, which analyze on a comparative basis, the feasibility, costs and timing of constructing an LNG receiving terminal at each of the five sites proposed by the CCC in its preliminary report.

These expert witnesses were consultants hired by the Commission to prepare an Environmental Impact Report (EIR) on the proposed project.

^{**/} Exhibit A-66, the staff's Technical Report No. 23 supporting the DEIR. is a study comparing the impacts at Point Conception, Oxnard, Camp Pendleton, Tajiguas, and Guadalupe Dunes. Exhibit A-103, Technical Report No. 23A, is a supplement to Exhibit A-66, which presents an analysis of the Rattlesnake Canyon site and the Las Varas site. The Final EIR includes a detailed analysis of the Deer Canyon site in response to several comments on the DEIR.

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> Western Terminal also presented additional testimony and exhibits during the second phase of the Application No. 57626 proceedings. —This presentation related to those mitigating measures recommended in the DEIR which Western Terminal was adopting. These mitigating measures included moving the site to avoid archaeological resources; using the existing Hollister Ranch Road as an access route and improving this road to a 25 mph standard rather than a 40 mph standard; busing laborers to the site from a staging area near Gaviota; alternative electric power arrangements; and taking certain measures that will mitigate air quality impacts. Western Terminal also presented a study concerning the design of the seawater system, and an exhibit setting forth the capital cost for constructing the terminal at Point Conception, revised to reflect these mitigating measures.

In the applications, 48 days of public hearing were held before ALJ James F. Haley in Los Angeles, San Francisco, San Diego, San Luis Obispo, Santa Barbara, Oxnard, and Oceanside. The applications were taken under submission on May 12, 1978 subject to receipt of the following:

- By May 15, 1978 recommendations of cities and counties in which a terminal is proposed to be located, as to safety, protection of the environment and land use.
- 2. By May 30, 1978 concurrent briefs by the parties to the proceedings.
- 3. By May 31, 1978 the final report of the CCC evaluating and ranking the potential onshore sites pursuant to Section 5611 of the Act, with comments thereon to be filed by the parties not later than June 9, 1978.
- 4. By July 7, 1978 the Final EIR prepared by the Commission staff.
- 5. Additional evidence in OII 1 concerning the extent of faulting at the proposed Point Conception site.

The record in Applications Nos. 57626 and 57792 consists of 4,154 pages of transcript, 120 exhibits, and 26 items.



7. Hearings in Case No. 10342

Scheduled hearings in Case No. 10342 commenced before ALJ Charles E. Mattson on November 1, 1977. Hearings were concluded May 4, 1978. The record includes 56 volumes of transcript (5,894 pages), 90 exhibits, and Items A through N. Concurrent briefs were filed on May 30, 1978, and Case No. 10342 is under submission.

A number of parties presented evidence on estimated natural gas supplies, customers' requirements, and potential economic and environmental impacts associated with declining gas supplies. Gas supplies estimates and requirements were provided by the staff of the Energy Resources Conservation and Development Commission (ERCDC), PG&E. SoCal, Resource Planning Associates, Inc. (RPA), Applied Decision Analysis (ADA), and the California Public Utilities Commission staff (staff). The respondent utilities presented estimates of gas supplies and requirements for their service areas. RPA provided a report on California Natural Gas Supply and Demand, 1977-1990 (Exhibit C-61), and ADA supplied a report titled "Decision Analysis of California LNG" (Exhibit C-66) in support of the DEIR in these consolidated matters. General Motors Corporation (GM). Union Carbide Corporation (UC), and SDG&E participated and presented direct evidence. The California Citizens Action Group (CCAG) actively participated in various portions of the proceedings through cross-examination.

8. Hearings in OII 1

By direction of the Presiding Administrative Law Judge and with the concurrence of the interested parties, OII 1 was divided into two phases. Phase I of the proceeding, which concluded on July 14, 1978, was devoted to examination of site-specific safety and reliability issues generated by Western Terminal's request in Application No. 57626 to construct and operate an LNG terminal at Point Conception. Phase II of OII 1, with hearings commencing in August, 1978, will serve as the forum for the ultimate development Ξ and adoption by the Commission of comprehensive regulations and a

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monitoring system pursuant to the mandate of Section 5637, governing the safety and construction of LNG facilities within California.

In Phase I of OII 1, 43 days of duly-noticed public hearings in the matter of LNG safety were held before ALJ John J. Doran in San Francisco, Los Angeles, San Diego, and Santa Barbara between February 7, 1978 and July 14, 1978. The record includes 42 volumes of transcripts (4001 pages) and 138 exhibits. Witnesses were offered by Western Terminal and cross-examined by the parties on the site-specific subjects of geology, engineering, seismology, structural design, sea-state and weather conditions, marine operations, LNG risk assessment, fire protection, operating procedure, project reliability, and liability. The Commission staff presented evidence on the issues of geology, seismic design, missile hazards, vessel traffic, sabotage and security, berth availability, project reliability, safety and construction monitoring program, and overall safety of the proposed LNG facility. Intervenors sponsored testimony on the subjects of geology, seismology, wind and wave conditions at Point Conception, and indemnification. Respondent SDG&E testified about the nature of its operation at the LNG peak-shaving facility in Chula Vista, California.

Phase I of OII 1 was submitted in three parts: (1) on May 4, 1978, all Phase I matters, except those relating to seismicity; (2) on June 22, 1978, all seismic matters, except evidence relating to additional on-site geological and technical investigations and related ongoing studies; and (3) July 14, 1978, all Phase I matters were concluded, with final addendum briefs filed on July 19, 1978.

In late April the geological consultant employed by Hollister Ranch indicated his professional belief that a fault existed on the site. Consequently the Commission determined to sever the seismic issue from Phase I and require additional studies. The staff, by letter of May 2, 1978, requested Western Terminal to undertake specific seismic investigations in response to the contention concerning a fault on the site. Parties to the proceedings

were advised during the May 4, 1978 hearing that additional seismic investigations would be required and were invited to participate. Further, a staff letter was sent to the parties in confirmation of that decision. The 32nd and last day of hearing on the Phase I issues, save seismicity, was May 4, 1978, with submission of concurrent briefs on May 30, 1978.

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After nine days of additional hearings, from June 12 to June 22, the seismic issue, except for the additional trenching requested during the June 16 hearing, was submitted with concurrent briefs on June 30, 1978. Exhibits proposing changes in the seismic design criteria were identified during the June 22 hearing, but the matter was deferred to Phase II of this proceeding.

Exhibits respecting the requested June 16 trenching and related ongoing studies were scheduled to be filed by July 12. A one-day hearing was scheduled for July 14 in San Francisco, and addendumtype briefs were filed July 19. Phase I of OII 1 stood submitted.

Hearings on the proposed changes in the seismic design criteria, the proposed general order on LNG safety standards, and the construction and safety monitoring program are scheduled following the decision on the permit applications and constitute Phase II of this proceeding. All issues except Phase II are the subject matter of this opinion. Phase II will be the subject of a later opinion following additional hearings.

C. California Coastal Commission Proceedings

Following enactment of SB 1081, the CCC in October 1977 directed its staff to identify and evaluate possible mainland onshore LNG terminal sites. The staff sent letters to interested parties inviting site nominations for preliminary evaluation. By the December 1, 1977 deadline imposed in the invitation, 18 such sites had been nominated. The CCC staff itself nominated an additional 64 sites.

To determine which nominations should be legally retained as feasible for site ranking, the CCC staff evaluated the 82 locations² according to the following criteria: population density, land and water characteristics, maritime conditions, seismic safety, and

coastal resources. Many of the 82 sites failed to meet the population density requirements of the Act. Others were eliminated because they were too near earthquake faults, or soil conditions were not suitable, or because adverse wind and wave conditions would prevent regular berthing of LNG tankers.

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After receiving public comments and holding a staff workshop on the evaluation criteria, the CCC held a public hearing and voted, on January 31, 1978, to retain the following five sites (listed from north to south) for further study and ranking: Rattlesnake Canyon in San Luis Obispo County, Point Conception (Little Cojo) and Las Varas in Santa Barbara County, Deer Canyon in Ventura County, and Camp Pendleton in San Diego County. These five sites were those included in the CCC's preliminary report submitted to this Commission pursuant to Subsection 5612(b) of the Act.

Consultants retained by the CCC then evaluated these five sites in detail to determine whether engineering and maritime factors were suitable. Additional information and opinions on the sites were submitted by interested parties, including local, state, and federal agencies, affected property owners, and Western Terminal. As required by Section 5615 of the Act, the CCC held public hearings in April 1978 in each county in which a potential LNG site is located. These hearings were held in San Luis Obispo, Santa Barbara, the city of Port Hueneme, and Oceanside following public workshops conducted in each of the four counties by the CCC staff.

On May 5, 1978 the CCC staff issued its report to the CCC on site ranking and terms and conditions. The summary contained in the staff report reads, in part, as follows:

"Staff recommends that the Commission rank the potential LNG terminal sites in the following order:

- "1. HORNO CANYON on Camp Pendleton in San Diego County where a terminal would have the least adverse impacts on coastal resources.
- "2. RATTLESNAKE CANYON in San Luis Obispo County.
- "3. LITTLE COJO near Point Conception in Santa Barbara County.

"4. DEER CANYON in Ventura County where a terminal Would have the most overall adverse impact on coastal resources.

"Staff is recommending elimination of a fifth site at LAS VARAS in Santa Barbara County (Figure 1), due to the recently confirmed presence of a small active earthquake fault passing through the site. A similar fault has been identified at the LITTLE COJO site, which is nevertheless retained in the ranking because the LNG Terminal Act of 1977 requires that the Commission rank the site selected by Western LNG Terminal Associates in its application to the Public Utilities Commission (PUC)."

On May 24, 1978 the CCC met to vote on its final evaluation and ranking of the sites for the purpose of making its final report to this Commission as required by Subsection 5612(a) of the Act. Under date of May 31, 1978 the CCC transmitted its final report to this Commission. The CCC voted to rank the above four potential sites in the same order that had been recommended by its staff. The letter transmitting the report contained the following paragraph qualifying the CCC's ranking:

"The Commission's ranking is based on the thirty-one conditions which it adopted and which are contained in the final report. The Commission report also includes two resolutions, one urging consideration of offshore LNG terminal sites if it is not possible to approve an onshore site by July 31, 1978, and another urging that a vessel control system be developed for any approved site."

The CCC final report elaborates as to how its conditions affect Point Conception's ranking on page 27:

"With-conditions 23 through 28 which prohibit a seawater intake system and electric transmission lines at the site, require partial ingrounding of storage tanks, and provide for public access to the area, the overall adverse impacts of a terminal at this site would be moderately more severe than at the higher ranked Rattlesnake Canyon site, but slightly less severe than the lower ranked Deer Canyon site. If the PUC does not impose the specific conditions recommended for a terminal at Little Cojo, Little Cojo would be ranked fourth, with moderately more adverse impacts on Coastal Act objectives than Deer Canyon, which would then be ranked third."

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In addition to its final report, the CCC transmitted the full public record of its study containing 2,098 entries. This Commission has incorporated the full CCC record into its own record in Application No. 57626. (See Section 5612.)

The following portions of the CCC "Final Report Evaluating and Ranking LNG Sites" have been extracted and attached to this opinion and order as Appendix D: "Summary"; Section II, "Terminal Site Ranking and Findings"; Section III, "Terms and Conditions"; and Section IV, "Commission Resolutions". Not included in Appendix D are the following parts of the CCC report: Section I, "Background"; Section V, "Staff Notes"; and Section VI, a list of "Substantive File Documents".

Section 5650 of the Act provides as follows:

"Not later than 12 months after the effective date of this chapter, the coastal commission shall complete a final study of potential offshore sites and types of terminals for such sites. Such study shall indicate the most appropriate offshore terminal site or sites, in the coastal commission's judgment, together with the most appropriate type or types of terminals for each such site.

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The results of such study shall be transmitted to the commission, to the energy commission, to the Governor, and to each house of the Legislature."

On July 14, 1978 the CCC <u>staff</u> issued a <u>draft</u> report relating to the siting of an LNG facility at an offshore location. The <u>draft</u> report by the CCC staff concludes that "a floating-type LNG terminal at southeast Ventura Flats in the eastern Santa Barbara Channel (9-12 miles offshore from the cities of Ventura and Carpinteria) would be the most appropriate of all the alternatives evaluated."

Section 5584 of the Act precludes this Commission from issuing a permit for an LNG terminal whose storage and regasification facilities would be located offshore. Section 5564 of the Act defines "offshore" as "any location seaward of the mean high tide line of mainland California, including all islands." Therefore, an amendment to the Act would be required before this Commission could issue a permit for an LNG terminal at a site like Ventura Flats.

D. Santa Barbara County Proceedings

Pursuant to Section 5636(c,d) of the Act, the County of Santa Barbara (County) submitted its recommendations to the Commission following more than 25 hours of public hearings before the County Planning Commission and an additional seven hours of public hearings before the County Board of Supervisors.

The County recommended that the Commission take the following actions:
"1. Accept and ultimately adopt as part of your Commission's action, if you approve the pending application for an LNG facility at Point Conception (A-57626), the terms and conditions developed by the County of "Santa Barbara (attached, 29 pages), plus the <u>Addendum</u> to said document (attached, one page).

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- "2. In the event that Las Varas remains as a proposed site in the LNG ranking recommendations approved by the Coastal Commission, that your Commission strongly consider the findings contained in this Board's letter, dated May 8, 1978 (attached, five pages), to the Coastal Commission requesting that Las Varas be deleted from further LNG ranking consideration.
- "3. That your Commission choose no sites this year under authority granted by the LNG Terminal Act of 1977, based upon the findings contained in this Board's Resolution No. 78-163, dated April 10, 1978 (attached), and this Board's letter to Assemblyman Gary Hart in support of AB 3098, dated April 11, 1978 (attached, seven pages).
- "4. That your Commission establish a Geotechnical Review Committee to review geo-seismic reports and field data on the Point Conception LNG Terminal site. The committee to consist of six persons experienced in geology, earthquake engineering, seismology, foundation engineering, or other related fields, three representatives from consulting firms, a member from the California Division of Mines and Geology, a member from the United States Geological Survey, and Mr. Wendell L. Nichols, Supervising Engineering Geologist, of the Santa Barbara County Public Works Department."

Included in the County's submittal was a comprehensive list of 142 terms and conditions which the County urged the Commission to make a part of any permit issued for an LNG terminal at Point Conception. These recommendations are attached to this decision as Appendix E.

E. Related Federal Proceedings - PacIndonesia

PacIndonesia filed with the Federal Power Commission (FPC) on November 30, 1973, in Docket No. CP74-160, pursuant to Section 3 of the Natural Gas Act, an application for authority to import from Indonesia into the United States an average daily quantity of A. 57626 et al. IM

519.71 billion British thermal units (Btu) of LNG to be purchased pursuant to a contract with Pertamina.

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On February 15, 1974 PacIndonesia filed another application with the FPC, in Docket No. CP74-207, pursuant to Section 7 of the Natural Gas Act, for authority: (1) to construct, own, and operate facilities for receiving, storing, and vaporizing the LNG; and (2) to sell the regasified LNG to SoCal. Subsequently PLC formed Western LNG Terminal Company to provide terminal facilities in place of PacIndonesia. Accordingly, on September 17, 1974 Western LNG Terminal Company filed with the FPC, in Docket No. CP75-83, to have the LNG terminal facilities at Los Angeles, Oxnard, and Point Conception. Western LNG Terminal Company filed a supplemental application on March 31, 1975, in Docket No. CP75-83-3, to locate at Oxnard the facilities required to provide terminal service to PacIndonesia.

A memorandum of understanding was signed by PLC and PG&E on January 27, 1976 under the terms of which (1) PLC and PG&E would participate equally in the management and operations of PacIndonesia and Western Terminal and (2) SoCal and PG&E would each receive half of the sales volume of regasified LNG.

On July 22, 1977 presiding Administrative Law Judge Gordon of the FPC rendered his Initial Decision in the PacIndonesia proceedings. In his decision ALJ Gordon granted PacIndonesia's application and approved Oxnard as the site for the LNG terminal. Subsequent to the enactment of SB 1081 and the filing of Application No. 57626 with this Commission, Western Terminal filed an amendment to its application to the FPC proposing Point Conception as an alternate site for an LNG terminal.

As a result of the Department of Energy Organization Act, the FPC was abolished and many of its functions transferred to the Federal Energy Regulatory Commission (FERC). However, import authorization was transferred to the Department of Energy (DOE), and the secretary of the DOE gave the administrator of the Economic Regulatory Administration (ERA) the authority to render a final

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> decision in the PacIndonesia proceedings. On December 30, 1977 the ERA issued its Opinion Number One which conditionally authorizes (1) PacIndonesia to import LNG equivalent to 619.71 billion Btu per day over a 20-year period for sale to SoCal and PG&E and (2) Western Terminal to construct, own, and operate an LNG receiving terminal near Oxnard.

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Findings and conclusions to the following effect were among those contained in the opinion:

The DOE determined that the PacIndonesia project involves a reliable and relatively secure source of gas which would help diversify our resources of LNG.

Due to limited flexibility in the California market to switch to other energy types because of its unique air quality problems, the DOE found that the delivered price of Indonesian LNG may be roughly equivalent to, or even lower than the incremental cost of true alternate sources for residential space heating purposes, such as synthetic natural gas (SNG) from imported naphtha or, perhaps, electricity available within the time frame of the PacIndonesia project.

Based upon projected future curtailments of existing and potential gas supplies for California, the DOE found that applicants have demonstrated the need for this supply.

The DOE found that an all-events, cost-of-service tariff as requested by applicants is not in the public interest. The DOE instead adopted a volumetric fixed tariff and minimum bill, with any rate changes subject to a filing pursuant to Section 4 of the Natural Gas Act. The DOE specifically disapproved automatic flow through of the price escalations under the PacIndonesia-Pertamina contract which are tied to changes in the price of Indonesia crude oil and changes in the Bureau of Labor Statistics (BLS) wholesale price index for fuels and related products. The DOE also rejected automatic flow through of escala-. tions under the currency adjustment provision in the Pertamina contract. However, the DOE stated that it was disapproving only the specific escalators in the Pertamina contract. The DOE acknowledged that approval of flow through of costs associated with an escalator may be necessary to project financing and stated that it would be inclined to flow through costs under an escalator linked to an index that reflects world or domestic economic conditions.



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The DOE expressed general support for the concept of incremental pricing, but it recognized the difficulties of implementing that concept. In this connection, the DOE noted that under the principles implemented by this Commission, retail prices of gas consumed in California are designed to encourage conservation of scarce resources, which accomplishes a principal goal of incremental pricing.

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Because it was the only location justified on the basis of the record, the DOE accepted conditionally the Oxnard terminal site originally proposed by applicants as acceptable, subject to certain safety and environmental requirements. The DOE stated, however, that it did not conclude that Oxnard is the only acceptable site. The DOE concluded that further proceedings would be necessary to evaluate applicants' proposed Point Conception site.

On January 30, 1978 Western Terminal filed a petition for rehearing and clarification of ERA Opinion Number One. In its petition Western Terminal voiced the following specific areas of concern with the ERA decision:

- "(1) The position taken on the Pertamina contract escalation provision, coming without any warning, being in conflict with the Administrative Law Judge's approval, and departing from the precedent of the <u>Trunkline</u> decision, required that additional time be allowed through an Order on Rehearing to provide an opportunity for further discussions with Pertamina.
- "(2) The decision's rejection of the Pertamina contract currency adjustment provision indicates a misunderstanding of its operation. The currency adjustor operates upward and downward and contains both a ceiling and a floor. Therefore, the provision does afford 'equitable distribution of currency fluctuation risk between buyer and seller' and should be approved.
- "(3) The Administrator's approach to the siting issue requires the establishment of a reasonably concurrent siting procedure for an appropriate terminal site which will ensure a federal decision immediately following California's decision. This is imperative to avoid risking loss of the project.

"(4) The imposition of an extraordinary burden of proof on the recovery of equity lost as a result of _operation at less than 90% of capacity is unreasonably harsh. At the very least, Applicants should be allowed to recover such lost equity (which is the normal recovery through depreciation of the cost of facilities dedicated to public service) by successfully meeting the traditional burden of 'justness and reasonableness' of the Natural Gas Act.

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- "(5) Prohibiting the automatic flow through in rates of all costs as provided in the shipping contracts, including return of investment in the event of premature project abandonment, jeopardizes shipowners in this project.
- "(6) Rejection of Applicants' proposed cost-of-service tariff in favor of volumetric fixed rate requiring Section 4-type proceedings necessitates a permanent one-day suspension condition. Such a permanent condition will mitigate the loss of vitally needed and fully justified revenue to the Applicants and would accord more than adequate protection to the ratepayers.
- "(7) The imposition of the volumetric fixed rate requires that attention be focused on the economic impact on the Applicants during the start-up period when the volumes received are building to full capacity. It is imperative for the financial integrity of the Applicants that any costs incurred above amounts collected under the volumetric fixed rate or minimum bill during such start-up period be capitalized and amortized over the balance of the life of the project.
- "(8) Any procedure adopted relative to review of the construction process must not endanger the project's financeability by limiting the ability of the project to commence operations after completion of construction.
- "(9) The decision's requirement for obtaining various state and local approvals is not appropriate due to the enactment by the California Liquefied Natural Gas Terminal Act of 1977 which places the state and local permitting jurisdiction solely with the California Public Utilities Commission."

By order dated February 28, 1978, ERA granted rehearing in the PacIndonesia proceeding for the purpose of further consideration of its order of December 30, 1977. This Commission has filed responses to Western Terminal's petition for rehearing. To date ERA has not issued an Order on rehearing.

F. Related Federal Proceedings - PacAlaska

On November 11, 1974 PacAlaska filed an application with the FPC for a certificate of public convenience and necessity under Section 7 of the Natural Gas Act. PacAlaska's application contemplated the transportation of LNG from south Alaska to an LNG terminal facility on Terminal Island in the Los Angeles Harbor. The PacAlaska project consists of two phases each having an annual average equivalent of 200 million cubic feet per day (MMcfd) of natural gas. As of the present time, PacAlaska has entered into gas purchase agreements in varying amounts with the following producers: Atlantic Richfield Company, Chevron U.S.A. Inc., Shell Oil Company, Pacific Lighting Gas Development Company, Cities Service Company, and Pacific-Simpco Partnership.

Formal hearings before the FPC commenced on June 21, 1976. Those hearings have continued up until the time of the filing of Application No. 57626 with this Commission. Thus far more than 50 days of hearings have been held on PacAlaska's application. On November 15, 1977 PacAlaska amended its federal filing to substitute Point Conception in place of the Los Angeles Harbor as the site of the proposed LNG terminal facility. The presiding ALJ has accepted as evidence in the PacAlaska proceeding, the PacIndonesia filings with the ERA and FERC on the Point Conception site. The PacAlaska matter is currently pending in this posture before the FERC.

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III. ESTIMATED BASE CASE SUPPLY

Exhibit C-68 sets forth the staff's estimated base case supply levels. The base case supply levels are identified as including gas estimated to be available from traditional sources plus supplemental supplies from offshore southern California and the Rocky Mountains, and from the southwestern United States through the exploration and developments efforts of a SoCal affiliate. Deliveries from the listed supplements are estimated by the staff to be relatively assured. The staff's base case supply estimates are set forth below:

Base Case Supply

(Million Cubic Feet per Day)

Year	Northern California	Southern California
	Recorded	
1972 1973 1974 1975 1976	2774 2695 2352 2319 2282	2679 2566 2398 2252 2132
	Estimated	
1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1989	2213 (2194)* 2060 1966 1876 1804 1741 1700 1663 1653 1453 1140 1125 1076 922	2058 (2115)* 1928 1765 1636 1527 1448 1396 1337 1287 1287 1236 1169 1131 1088 1034

*Recorded.

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In Exhibit C-70 the staff compared the base case supply estimates provided by the parties in this proceeding. Tables 1 and 2 on the following two pages reflect the supply comparisons contained in the staff exhibit.

The Commission staff comparison sets forth two estimates for the ERCDC since the ERCDC study submitted March 15, 1978 did not include a recommended forecast. The concurrent brief of the ERCDC filed May 30, 1978 (see ERCDC brief, page 17, Table 4, column (2)) recommends that its "Case A" estimates be used for <u>firm</u> supplies. The ERCDC's forecast of available firm supplies is set forth in its brief as a combined total for northern and southern California. Since firm supplies are identified as traditional supplies <u>only</u>, ERCDC's recommended levels are lower than its combined North-South "Case A" estimates shown in Tables 1 and 2.

In order to make a comparison of the basic supply estimates of the parties consistent with ERCDC's recommended forecast, Tables 1 and 2 must be combined to form statewide traditional and base case supply comparisons. Such comparisons follow:

COMPARISON OF STAT	EWIDE SUPPI	LY ESTIMATE	<u>s</u>
Traditio	nal Sources	5_	•
	1980	1985	1990
	(Million	Cubic Feet	per Day)
Combined PG&E-SoCal	3421	2759	1509
ERCDC (Recommended)	3367	2824	1717
RPA	3314	2562	1488
Staff	3487	2820	1803
Ba	ise Case	÷	
Combined PG&E-SoCal	3457	2866	1691 🤤
ERCDC (Case A)	3423	2999	1912
'RPA	3418	2930	1884
Staff	3512	2940	1956

ERCDC also reproduces material from CPUC Staff Exhibit C-70 as set forth on pages 143 and 144 of its concurrent brief. However, ERCDC erroneously cites the source of material as Exhibit No. C-66 - the ADA submittal. **A.** 57625 et al.

TABLE 1

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Northern California Base Case Supply Comparison of Zstimates

(Base supplies include Traditional & Rocky Mountain)

	1978	1980	1985	1220
	(M1111	on Cubic	Yeet per	Day)
PG&E Exhibit C-33 Table VIII			•	
California Gas	2 92	256	207	189
El Paro	707	597	453	370
P.G.T.	1014	1016	957	210
Biomass	0.5	0.5	0.5	0.5
	2014	1870	1618	770
ERCDC Summery Fig. IV-7, Case A		•		
Contract Volume	331	2 96	221	9 6
El Paso. Case A	714	610	516	446
Canadian	1020	1020	953	200
Rocky Mountain	10	30	100	100
	2075	1956	1790	842
ERCDC Summary Fig. IV-7, Case B				
Contract Volume	331	296	221	96
El Paso, Case B	727	6 48	591	533
Canadian	1020	1020	953	200
Rocky Mountain	10	30	150	<u>170</u>
	2088	100/	1015	000
	2000	1774		377
RPA Exhibit 2.b			1001	487
Base Supply	1997	1/58	1961	42/
El Paso	18	36	5 68	24
California	17	45	100	13/
Rocky Mountain	8	55	<u> </u>	<u>193</u>
	2040	.1895	1742	8 78
Charles Tool To Toolog E				
STAIL VOL. V, PERE 5	1020	1020	053	200
Canadian	1020	252	722	17/
California	321	433 402	10/ 120/	<u>, 403</u>
El PESO	212		430	
Rocky Kountain	v	Ň	30	50
Solid Waste Conversion	· <u> </u>			
	2060	1876	1653	922

Note: California produced gas under contract to PG&E is variously referred to as "California Gas", "Contract Volume" and "California". Canadian gas delivered by Pacific Gas Transmission Company (PGT) is referred to as "P.G.T.", "Canadian" or included in "Base Supply". El Paso deliveries also included in "Base Supply" (RPA). A. 57626 et al.

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TABLE 2

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-- Southern California Base Case Supply Comparison of Estimates (Base supplies include Traditional, Fed. OCS, Pac Interstate)

	<u>1978</u>	1980	<u>1985</u>	1990
	Million	a Cubic 1	leet per	Day)
SACET Frainfr C-40 Table 1	•		-	-
California Producers	104	88	45	25
Receipts from Other Utilities	8	6	_2	2
El Paso	1374	1188	971	622
Transwestern	40 <u>5</u>	270	124	91
Federal Offshore	7	15	79	121
Pac Interstate			<u> </u>	
•	1911	1587	1248	921
ERCDC Summary Fig. IV-8, Case A				
California	113	94	47	27
El Paso, Case A	1216	1040	879	759
Transwestern, Case A	384	302	206	T03
- OCS (Traditional)	12	2	2	*0
Pac Interstate	12	20	25 50	5
OCS (Supplemental)	<u>*</u>			
	1733	1467	1209	1070
ERCDC Summery Fig. IV-8, Case B		A /	/ -	
California	113	94	47	27
El Paso, Case B	1230	1103	200	20/
Transwestern, Case B	7	2446	230	2,4
	12	20	25	30
OCS (Supplemental)	1	-6	50	65
	3.770	1572	1/10	1323
	1//0	12/2	7472	
RPA Exhibit 2.c				600
Base Supply	1680	1313	701	156
El Paso	32 47	100 1100 1100	114	· 119
	4 /	16	21	· 20
	2	24	146	~ 1 66
Seu Totetete	5	25	29	37
	1766	1572	1188	1006
Chaff Tal T Dags 5	1100		4.4	2000
ELLI VOL. V, FAXE J	1364	1182	933	676
Transvestern	406	330	240	233
California	113	94	47	27
Pac Interstate	12	20	27	30
Ted. OCS (Traditional)	7	5	2	O
Yed. OCS (Supplemental)	1	5	38	68
Short-Term Conventional Gas				<u> </u>
	1928	1636	1287	1034

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Beyond any insight provided by the comparisons set forth on page 31, the combined statewide supply estimates have no value for they imply that the supplies available to PG&E and SoCal are fungible. As discussed in detail <u>infra</u>, the implied fungibility does not now exist in either a physical, or a regulatory sense.

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A. Differences in Traditional and Base Case Supply Estimates

An examination of the comparisons of statewide traditional and base case supply estimates set forth on page 31 discloses no substantial differences in the estimates of various parties through 1985. After 1985, utility and RPA estimates show a greater rate of decline in the gas available to California from traditional sources than either the staff or ERCDC.

In developing forecasts of supplies available from the southwestern United States, the utilities relied on projections of the interstate pipelines which acquire and transport the gas to California from this traditional source. In its estimates of the gas available from Transwestern Pipeline Company (Transwestern), SoCal assumed that no net reserves would be added to the system during the forecast period. The assumption that this major interstate pipeline will acquire no new gas from the southwestern producing basins over the next 12 year period contributes significantly to the lower estimates of the utility, and is not supported by the record.

Both the staff (see Exhibit C-1) and a Rand Corporation employee retained by ERCDC (see Exhibit C-82), made detailed evaluations of the potential for reserve additions in the southwestern producing basins serving California. The studies included projections of expected levels of overall reserve additions in each of the producing basins, and the estimated portion of such additions expected to be acquired by the pipelines serving California.

The staff estimates of levels of deliveries from traditional sources submitted in Exhibit C-1 on September 30, 1977, and the ERCDC recommended levels shown on Table 4 of its concurrent brief submitted May 30, 1978, are essentially identical, and both are better supported on the record than the estimates of other parties. Either of the estimates forms a reasonable supply base on which to consider the need for supplemental supplies. However, the staff estimates clearly present the necessary breakdown between northern and southern California and will be adopted.

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IV. ESTIMATED CUSTOMER REQUIREMENTS

A. Priority Rights for Customer Classes

Historically, the California distribution utilities under the jurisdiction of the Commission provided service to customers on a firm/interruptible basis. By Decision No. 85189, dated December 2, 1975, we eliminated the firm/interruptible distinction and established end-use service procedures. By Decision No. 86357 we made minor modifications to the procedures established in Decision No. 85189. Under the end-use procedures, customers and use are classified as follows:

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<u>Priority</u>	Definitions
l	All residential use regardless of size.
	All other use with peak-day demand of 100 Mcf/d or less.
2A	Where primary use is as a feedstock
	Non-residential use with peak-day demands greater than 100 Mcf/d and previously classified as firm: where alternate fuel is not feasible where alternate fule is feasible*
	Electric utilities start-up and igniter fuel.
23	Customers with LPG or other gaseous fuel stand-by facilities and peak-day demands greater than 100 Mcf/d and where an alter- nate fuel is not feasible.
3	All use not included in another priority.
4	Boiler fuel use with peak-day demand greater than 750 Mcf/d.
	All use in cement plant kilns.
5	Utility steam-electric generating plants 👡 and utility gas turbines

^{*} Uses classified as 2A and alternate fuel feasible were to be transferred to an appropriate lower priority by December 2, 1977. By Decision No. 87784 the Commission extended the deadline for transfer to October 1, 1978, and in Decision No. 88664 further extended the deadline to October 1, 1979.

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Under the Act high priority requirements of natural gas mean requirements that, when satisfied, will maintain employment, essential residential consumption levels, and air quality (Section 5560). ERCDC assumes that Priority 1 (P1), Priority 2 (P2), Priority 3 (P3), and Priority 4 (P4) are within the definition of high priority requirements for natural gas (See ERCDC Concurrent Brief - Page 2), and characterizes any gas estimated to be available to Priority 5 (P5) -electric utility requirements - as surplus. There is no evidence on the record in this proceeding to support the classification of P5 deliveries as "surplus" or "low priority". In fact, the air quality evidence that is on the record tends to support the contrary (See Exhibit C-46).

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It is our ultimate desire to serve as much P5 demand as we may be capable of meeting. Such use has enormous social, financial, and health benefits for the people of this state. Mere deferral of added capital investment in new plant is one such benefit, the air quality issue, of which southern Californians should be so aware over the last two weeks when power generating plants would have been shut down, in the absence of gas for boiler fuel, causing loss of air conditioning capability in the midst of a heat wave is another. Japan is now importing high priced LNG for just such use because its leaders are well aware of the benefits to the public of a clean burning fuel for electric generation.

B. <u>Priority 1 and Priority 2A Requirements</u>

The Pl category includes residential and small commercial, institutional and industrial customers. The P2A category includes large commercial and institutional customers with gas using equipment incapable of using a non-gaseous fuel, large industrial applications requiring precise temperature controls and precise flame characteristics, and industrial feedstock requirements.

There are approximately 6.7 million customers in the Pl, P2A categories, or over 99 percent of all customers served by the utilities under Commission jurisdiction. The essential distinction between the Pl, P2A categories and the P3, P4, P5 categories is that the

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Pl, P2A categories are occupied by customers with gas using equipment incapable of being technically or economically converted to a non-gaseous fuel while P3, P4, P5 users have the ability to use fule oil in the absence of natural gas.

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The residential, commercial and institutional sectors within the Pl, P2A categories use a large portion of their total requirements

for space heating, resulting in wide swings in annual requirements as the weather varies. As an example, the ADA report states that based on the coldest and warmest year in the last 30, demand could vary in a range of 398 MMcfd (Exhibit C-66, page 3). The Commission staff report dated February 1, 1978 sets forth a detailed analysis of weather effects on Pl, P2A requirements (Exhibit C-31, pages III-38, 39, 40). The staff report projects Pl, P2A requirements for each year through 1990 on a warm year, average year and cold year basis.

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The staff presented a comparison of the estimated natural gas requirements of the parties (Exhibit C-70). The comparisons are expressed in annual average daily quantities for an average weather year.

Table 3 (from Exhibit C-70) sets forth northern and southern California Pl, P2A estimated requirements comparisons. Table 4 sets forth northern and southern California P2B, P3, P4 requirements comparisons.

TABLE 3

P1 & P2A NATURAL GAS REQUIREMENTS AVERAGE WEATHER YEAR COMPARISON OF ESTIMATES

Northern California

	1 <u>978</u> (Million	<u>1980</u> Cubic	<u>1985</u> Feet per Day)	<u>1990</u>
PG&E Exhibit C-33, Table IX	1118	1148	1190	1179
ERCDC Appendix A, Table II-3 ERCDC Appendix B, Tables 1 & 2	1127 0	1131 65	1139 _129	1147 141
ERCDC Estimates with Conservation	1127	1066	1010	1006
ADA Table 3.2, Page 3-13	1167	1194	1285	1364
Staff Exhibit C-31, Page III-38	1036	1036	1096	1179

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Southern	California

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	<u>1978</u>	<u>1980</u>	<u> 1985</u>	<u>1990</u>)
•	(Million	Cubic	Feet per	Day)	
PLS Exhibit C-43	1507	1538	1665	1819)
ERCDC Appendix A, Table II-5 ERCDC Appendix B, Tables 1 & 2	1529	1527 84	1495 157	1468 170	3
ERCDC Estimates with Conservation	1529	1443	1338	1298	3
ADA Table 3.2, Page 3-13	1526	1545	1620	1716	5
Staff Exhibit C-31, Page III-38	1436	1445	1529	1650	5

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TABLE 4

P2B, P3, P4 Natural Gas Requirements Average Weather Year Comparison of Estimates

Northern California

	<u>1978</u>	<u>1980</u>	<u> 1985</u>		1990
	(Million	Cubic	Feet per	Day)	
PG&E Exhibit C-33, Table IX	505	487	493		505
ERCDC Appendix A, Table II-3 ERCDC Appendix B, Tables 1 & 2	465 0	450 50	440 		445. 94
ERCDC Estimates with Conservation	465	400	363		351
ADA Table 3.2, Page 3-13	640	640	640		640
Staff Vol. V, Page 20	580	593	593		593
Southern California	ornia				
	<u>1978</u>	<u>1980</u>	<u>1985</u>		1990
	(Million	Cubic	Feet per	Day)	
PLS Exhibit C-43	582	601	595	•	589
ERCDC Appendix A, Table II-5 ERCDC Appendix B, Tables 1 & 2	448 0	437 54	425 83		428.
ERCDC Estimates with Conservation	448	383	342		327
ADA Table 3.2, Page 3-13	620	620	620		620
Staff Vol. V, Page 18	574	570	570		569 [.]

A. ...

In Tables 3 and 4 the Commission staff used ERCDC estimates from Appendix A (Exhibit C-78) and Appendix B (Exhibit C-79) of the ERCDC report filed March 15, 1978. This ERCDC report did not set forth recommended forecast. The ERCDC brief dated May 30, 1978 sets forth the ERCDC recommended base case demand (Table 4, Col. 9). The ERCDC recommended base case demand is a statewide Pl through P4 demand forecast. It does not provide a breakdown of demand between northern and southern California, or between priorities. Further, no warm or cold year estimates are provided.

Although the ERCDC recommended base case demand forecast did not provide a sectional or priority breakdown, the combined statewide Pl through P4 requirements from Appendix A (Exhibit C-78), as reflected on Tables 3 and 4, match the ERCDC recommended base case forecast and we can therefore derive comparisons as follows:

COMPARISON OF STATEWIDE DEMAND ESTIMATES

Pl, P2A Requirements

	<u>1980</u>	1985	1990
	(Million	Cubic Feet	per Day)
PG&E -SoCal	2686	2855	2998
ERCDC (Recommended)	2658	2634	2615
ADA	2739	2905	3080
Staff	2481	2625	2829

The ERCDC statewide base demand forecast of Pl, P2A requirements is identical to the Commission staff estimates by 1985, although lower in the early years. Both are significantly lower, throughout the forecast period, than the estimates of the utilities and ADA. The Commission staff estimates include warm and cold year Pl, P2A requirements as well as the requirements listed in the above comparisons. The range of the staff Pl, P2A forecast is 2215-2700 MMcfd in 1980 increasing= to 2512-3088 MMcfd by 1990. (Exhibit C-31, pages III-38, 39, 40)

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In Section V we will develop base case supply-demand relationships over_the entire range of Commission staff estimates which will encompass_the entire range reflected above.

C. Priority 2B, Priority 3, and Priority 4 Requirements

The P2B category is primarily industrial process use with applications requiring precise temperature controls and precise flame characteristics. P2B end-users could not be equipped to use fuel oil without damage to the equipment or a sacrifice of product quality. The P2B process use is identical to the process use included in P2A, and both are classified as simply P2 at the federal level. The distinction made at the state level results from the fact that certain process users had liquified petroleum gas (LPG) standby facilities and, consequently, greater flexibility - at the time the state procedures were adopted; hence the P2B distinction.

The P3 category includes industrial process users capable of using fuel oil without damage to existing gas burning equipment or a sacrifice of product quality. P3 also includes commercial, institutional, and industrial boiler fuel use with peak-day requriements between 100 and 750 Mcf.

Priority 4 includes commercial, institutional and industrial boiler fuel use with peak-day requirements in excess of 750 Mcf. P4 also includes cement plant kilns which have - subsequent to the adoption of state curtailment procedures - largely converted, or plan to convert, to the use of coal.

P5 requirements are large boiler fuel requirements for electric generation and includes electric utility gas turbine requirements. The P5 requirements are not analyzed herein, because the gas available has not been sufficient to serve the total needs of P5 for a number of years, and, since P5 is the first priority curtailed, the amount of gas available is simply the amount left over after the P1 through P4 requirements are satisfied.

Fundamental differences in the nature of Pl, P2A requirements ⁻⁻ and requirements in the lower categories emphasize the necessity to consider such requirements separately.

A comparison of the P2B, P3, P4 requirements estimates of various parties appears below. The data are derived from Table 4, combined to be consistent with the ERCDC final recommended base case demand forecast.

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COMPARISON OF STA	LEWIDE DEMA	ND ESTIMAT	ES		
P2B, P3, P4 Requirements (Million Cubic Feet Per Day)					
	1980	<u>1985</u>	1990		
PG&E - SoCal	1088	1088	1094		
ERCDC (Recommended)	887	865	873		
ADA	1260	1260	1260		
CPUC	1163	1163	1162		

The ERCDC final recommended P2B, P3, P4 requirements forecast is significantly lower than all other parties although, as in the case of all other parties, its forecast remains essentially constant after 1980.

The CPUC staff did not forecast P2B, P3, P4 requirements but, instead, provided the actual 1976 calendar year requirements adjusted to eliminate the requirements of cement plants (Exhibit C-63, page 20). The CPUC staff assumes that future P2B, P3, P4 requirements will be at the 1976 level as adjusted for the elimination of cement plant requirements.

There is merit to the ERCDC contention, implicit in its forecast, that actual P2B, P3, P4 requirements will drop significantly by 1980. In fact, a significant drop has already occurred. The initiation of crude oil deliveries from Prudhoe Bay and the reduced fuel oil requirements for electric generation - resulting from favorable hydro conditions - have contributed to a residual fuel oil "glut" on the west coast. This glut, in turn, has resulted in residual Ξ fuel oil "spot" prices significantly lower than the price of natural gas delivered to the P3 and P4 customer, as set by this Commission.

Consequently some large customers have opted for the use of the lower cost_fuel oil, although they remain connected to the gas distribution systems.

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It is clear that the policy of regulatory Commissions could make low forecasts of P3, P4 requirements for natural gas, and a consequent reliance on fuel oil, a "self-fulfilling prophecy". That policy is not our policy, and it would therefore, be a mistake to extrapolate the present dynamics into the 1980's - a period critical to this decision. The two major areas where regulatory actions will have an effect on future P3, P4 requirements are: 1) Rate Design, and 2) Curtailment procedures.

In the first area, we made our policy clear in letters dated July 12, 1978, to the Joint House/Senate Conference Committee on Natural Gas Pricing and to the Members of the California Congressional Delegation. In our letter we joined Dr. Charles J. Cicchetti, Chairman of the Wisconsin Public Service Commission, in opposing certain incremental pricing provisions contained in the proposed National Energy Act. We expressed a policy of pricing gas to P3, P4 customers consistent with alternate fuel costs. In doing so, we noted that to impose incremental costs solely on industry would result in industries switching to imported fuel oil rather than paying both a higher price for gas and accepting the low priority they receive, as well as the uncertainty concerning gas availability. We also noted the backlash on residential customers as a greater portion of distribution fixed costs will be necessarily ground into residential natural gas rates.

The appropriateness of continuing the moratorium on connecting new P3 and P4 customers established by Decision No. 85189, consistency of state curtailment criteria with federal curtailment criteria, and the incorporation of energy efficiency considerations into the state curtailment procedures, are matters that we must consider in the near future.

The moratorium on connecting new P3, P4 customers was established by_Decision No. 85189 dated December 2, 1975. The reasoning behind the establishment of the moratorium included reports from Canada indicating a strong possibility of curtailment of the existing export permits. The projected curtailment of Canadian deliveries combined with the existing, and continuing, decline in gas available from domestic sources introduced the possibility of a serious decline in the gas available for the existing P3 and P4 customers. It later became apparent that the effective Canadian export permits would likely be honored - a likelihood clearly supported on the record in this proceeding. Continued deliveries of Canadian gas at contract levels and the conservation achieved by the higher priorities, combined with our order herein, will assure continued high levels of service to P3, P4 customers and we will consider, in the appropriate proceeding (Case No. 9642), a lifting of the moratorium.

The curtailment procedures adopted by Decision No. 85189 and modified by Decision No. 86357 were established as interim procedures, and are modeled on the federal procedures applicable to California's major interstate supplier, El Paso Natural Gas Company (El Paso). El Paso's curtailment procedures are also interim in nature. Although the structure of the two curtailment plans is similar, the criteria for the classification of various users and/or uses differ substantially. An example is the D. C. Circuit remand of FPC Opinions Nos. 697 and 697A - the Opinions underlying El Paso's interim procedures - wherein the court held, among other things, that electricity generating turbines must not be classified with boilers, in P4 and P5 but are entitled to a higher priority. As shown on page 35 herein, electricity generating turbines are still classified as P5 at the state level.

The necessity to maintain consistency with the federal priority criteria stems from the requirements of Section 2771 of the Public

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Utilities_Code, which requires the Commission to establish priorities, and provides in pertinent part, as follows:

"The Commission shall establish no such priority after the effective date of this Chapter which will cause any reduction in the transmission of gas to California pursuant to any federal rule, order or regulation."

The allocation mechanics under the federal procedures are such that the assignment of a lower priority at the state level for a given end use can result in a reduction in California's share of El Paso's supplies. We therefore will consider changes in the state criteria in a manner consistent with the federal criteria. The reclassification of electric utility gas turbines from P5 to P3 would increase P3 requirements significantly.

By Resolutions Nos. G-2210, G-2228 and G-2231 we recently approved natural gas service for cogeneration plants with peak-day gas requirements of 32.5 MMcf in the P3 category. The approvals for service were requested as a deviation from the effective procedures. We will give consideration to modifications that will result in providing gas for future cogeneration projects under the effective procedures without the necessity to approve deviations on a case by case basis.

1. Conclusions on P2B, P3, P4 Requirements

The level of future P2B, P3, P4 requirements will largely be determined by regulatory policy and regulations in the area of rate structure and curtailment procedures. Unlike P1, P2A forecasts, mere mechanical forecasting is of little value. Since the parties to this proceeding could not have anticipated future regulatory actions, we do not have before us an acceptable estimate of future P2B, P3, P4 requirements. For purposes of the base case supplyrequirements relationships which we develop in Section V herein, we will use the P2B, P3, P4 requirements provided by the staff. We² recognize that such requirements are nothing more than recorded requirements for the year 1976 excluding cement plant kiln requirements, and, because of the present "soft" market for residual fuel

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oil, may be overstated for the short-term. The only conceivable result of a short-term overstatement of P2B, P3, P4 requirements is the delivery of higher than estimated quantities to other "high priority" users who would otherwise be forced to use fuel oil. D. Gas Savings Attributable to Conservation Programs

The staff provided estimates of the potential gas savings attributable to various state mandated and Commission/utility related conservation programs. (Exhibit C-31, Chapter 4). These estimates were used to reduce the staff's forecast of gas requirements.

The ERCDC also provided estimates of gas savings from various conservation programs and measures ("Concurrent Brief of the California Energy Commission", May 30, 1978, Table 2). Natural gas savings included in the ERCDC base case demand reflect those from state mandated standards, and water heater and swimming pool retrofits. Savings from other programs and measures, including solar savings, are not reflected in the ERCDC's base demand case.

The tabulation below summarizes the gas savings estimated by the staff and ERCDC to be achievable by 1990.

Residential	Staff	ERCDC-	
	(Million C	ubic Feet per Da	y)
State Standards Residential Bldgs. Residential Appliances	118 90		
Subtotal	208	408 *	
Staff/Utility Programs			
Ceiling Retrofit Wall Retrofit Furnace Pilot Turn Off & Relight Retrofit Water Heating Programs Swimming Pool Heating Miscellaneous Space Heating Program	122 15 8 30 106 ns <u>65</u>	83 17 4 ** 58	
Subtotal	346	162	

Also includes water heater retrofits and swimming pool retrofits

****** Included in state standards

<u>c</u>/ Table 2, "Concurrent Brief of the California Energy Commission", May 30, 1978

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Solar Water Heating Solar Thermal Applications ^d	69	119-161
Total Residential	623.	689-731
Non-Residential		
Commercial and Industrial Programs Total	<u>105^a</u> / 728	<u>346</u> 2/ 1035-1077

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<u>a</u> /	P1	and	P2A	savings
<u>Þ</u> /	Pl	- P ¹	i san	rings

d/ Solar water and space heating

V. BASE CASE SUPPLY-REQUIREMENT RELATIONSHIPS A. Average, Cold, and Warm Year Relationships

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The adopted base case supply and base case requirements forecasts are used to develop the supply-requirement relationships in Tables 5, 6 and 7. The purpose of developing base case relationships is to determine the curtailment that would occur if <u>no</u> supplemental supplies are acquired and, thus, the quantity of supplements needed to avoid the derived curtailment.

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The range of essential data derived from Tables 5, 6, and 7 are as follows:

Southern California

Warm Weather Conditions

- 1. P5 is totally curtailed in 1979 and P4 curtailment begins.
- 2. P2B, P3, P4 is totally curtailed by 1984 and transfers from PG&E begin.
- 3. P2A curtailment begins in 1987.

Cold Weather Conditions

- 1. P5 is totally curtailed in 1978 and P4 curtailment begins.
- 2. P2B, P3, P4 is totally curtailed by 1981 and transfers from PG&E begin.
- 3. P2A curtailment begins in 1986.

Northern California

Warm Weather Conditions

- 1. P5 is substantially curtailed in 1978.
- 2. Transfers to SoCal begin in 1984.
- 3. P5 is totally curtailed in 1986, and P4 curtailment begins.
- 4. P2B, P3, P4 is totally curtailed by 1987.
- 5. P2A curtailment begins in 1990.

Cold Weather Conditions

- 1. P5 is substantially curtailed in 1978.
- 2. Transfers to SoCal begin in 1981.
- 3. P5 is totally curtailed in 1982 and P4 curtailment begins.
- 4. P2B, P3, P4 is totally curtailed in 1986.

5. P2A curtailment begins in 1987.

	Ē	C	old Weat (MMo	ber Year :fd)			
	Requir	rements		Base Case	North to South #	Sbortfall Pl-P4	Deliveries to
Year	P1&P2A	P23&P3&P4	Total	Supplies	Transfers	Rquts	P 5
	,	Noz	thern (California		• •	
1978 1979 1980	1,115 1,125 1,119	580 599 593	1,695 1,724 1,712	2060 1966 1876	000	000	365 242 264
1981 1982 1983 1984 1985	1,130 1,141 1,153 1,172 1,188	593 593 593 593 593 593	1,723 1,734 1,746 1,765 1,781	1804 1741 1700 1663 1653	(73) (171) (243) (321) (390)	0 164 289 423 518	8 0 0 0
1986 1987 1988 1989 1990	1,204 1,221 1,239 1,254 1,279	593 593 593 593 593 593	1,797 1,814 1,832 1,847 1,872	1453 1140 1125 1076 922	0 0 (573)	593 674 707 771 950	00000
		<u>Sc</u>	nthern	California			
1978 1979 1980	1,565 1,574 1,581	574 574 570	2,140 2,148 2,151	1928 1765 1636	0 0 0	212 383 515	000
1981 1982 1983 1984 1985	1,600 1,619 1,639 1,658 1,677	570 570 570 571 570	2,170 2.189 2,209 2,229 2,247	1527 1448 1396 1337 1287	73 171 243 321 390	570 570 571 571 570	000000
1985 1987 1988 1989 1989	1,703 1,730 1,756 1,783 1,809	570 569 570 569 569	2,273 2,299 2,326 2,352 2,378	1236 1169 1131 1088 1034	249 0 0 0	788 1130 1295 1264 1344	00000

TABLE 5

BASE CASE SUPPLY REQUIREMENT

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RELATIONSHIPS

* Transfer necessary to satisfy Southern California Pl and P2A requirements.

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Note: The staff analysis assumed that P2B customers were to be protected under the mutual assistance provisions of D.85189. In the order berein the provisions for mutual assistance will be modified and clarified.

	7 <u>-</u> 2	Norn	Mcfd)	Year			
M	510 524	Requirements	Total	Base Case Supplies	North to South # Transfers	Shortfall Pl-P4 Romts	Deliveries to P5
Test	r taren						-
		Nort	thern Calli	Ornic			
1978 1979 1980	1,036 1,044 1,036	580 599 593	1,616 1,643 1,629	2060 1966 1876	000	000	144 323 247
1981 1982 1983 1984 1985	1,045 1,055 1,064 1,082 1,096	593 593 593 593 593 593	1,638 1,648 1,657 1,675 1,689	1804 1741 1700 1663 1653	0 (31) (99) (175) (242)	0 56 187 278	166 62 0 0
1986 1987 1988 1989 1990	1,111 1,126 1,142 1,155 1,179	593 593 593 593 593 593	1,704 1,719 1,735 1,748 1,772	1453 1140 1125 1076 922	(317) (14) 0 0 0	568 593 610 672 850	00000
		Sou	thern Cali	fornia			
1978 1979 1980	1,436 1,441 1,445	574 574 570	2,010 2,015 2,015	1928 1765 1636	с о о	82 250 379	000
1981 1982 1983 1984 1985	1,462 1,479 1,495 1,512 1,529	570 570 570 571 570	2,032 2,049 2,065 2,083 2,099	1527 1448 1396 1337 1287	0 31 99 175 242	505 570 570 571 570	0000
1986 1987 1988 1989 1989	1,553 1,577 1,602 1,626 1,650	570 569 570 569 569	2,123 2,146 2,172 2,195 2,219	1236 1169 1131 1088 1034	317 14 0 0	570 963 1041 1107 1185	00000

TABLE 6

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BASE CASE SUPPLY REQUIREMENT RELATIONSHIPS

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Transfers necessary to satisfy Southern California Pl and P2A requirements.

BASE CASE SUPPLY REQUIREMENT RELATIONSHIPS

Warm Weather Year (MMcfd)

			Base Case	North to South *	Shortfall Pl-P4	Deliveries to PS			
Year -	PIAPZA	P256P36P4	Total	Supplies	Transfers	Kdmre	£ 2		
Northern California									
1978 1979 1980	927 932 922	580 599 593	1,507 1,531 1,515	2060 1966 1876	0 0 0	0 0 0	553 435 361		
1981 1982 1983 1984 1985	929 935 942 956 968	593 593 593 593 593 593	1,522 1,528 1,535 1,549 1,561	1804 1741 1700 1663 1653	0 0 (10) (74)	00000	282 213 165 104 18		
1986 1987 1988 1989 1990	981 994 1,008 1,019 1,041	593 593 593 593 593 593	1,574 1,587 1,601 1,612 1,634	1453 1140 1125 1076 922	(147) (146) (117) (57) 0	268 593 593 593 712	0000		
Southern California									
1978 1979 1980	1,291 1,292 1,293	574 574 570	1,865 1,866 1,863	1928 1765 1636	000	0 101 227	63 0 0		
1981 1982 1983 1984 1985	1,307 1,320 1,334 1,347 1,361	570 570 570 571 571	1,877 1,890 1,904 1,918 1,931	1527 1448 1396 1337 1287	0 0 10 74	350 442 508 571 570	00000		
1986 1987 1988 1989 1990	1,383 1,405 1,427 1,449 1,449	570 569 570 569 569	1,953 1,974 1,997 2,018 2,040	1236 1169 1131 1088 1034	147 146 117 57 0	570 659 749 873 1005	00000		
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Transfers necessary to satisfy Southern California Pl and P2A requirements

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B. Impact of Curtailment

A number of parties presented testimony on the environmental and economic impact of a decline in natural gas supplies. No party suggested that residential and commercial use must not be protected. The disagreement among the parties arose over the magnitude of losses (or costs) associated with curtailment of lower priority customers (P2A(t), P3, and P4).

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The disparity in the figures presented is not surprising. The evidence presented by GM was based upon the critical gas shortages of the past winter. The staff used the results of a survey of P2A(t), P3, and P4 customers of PG&E, SoCal, and SDG&E (over 70 percent replied).

A witness on behalf of GM described the short range effects of curtailment on GM operations resulting from unusually severe weather-related gas shortages during the winter of 1976-77. In . the winter of 1976-77, GM faced gas curtailments in nine states (Ohio, Indiana, Wisconsin, New York, Georgia, Kansas, New Jersey, Maryland, and Alabama). At the peak of the shortage, GM had seven plants completely shut down while 22 others maintained limited production schedules. The FEA estimated employee layoffs nationally at close to 2 million in 19 states. Layoffs of GM employees peaked at about 93,000. Through mid-February 1977, GM lost 4 million man-hours in production of some 150,000 cars and trucks. The GM witness estimated that the cost to convert 85 percent of GM's gas requirements to coal-fired steam facilities, exclusive of the cost of coal and associated emission-control facilities, at \$118 million. The annualized cost spread over GM's present P2 consumption in California yields a base energy cost of \$8.45 MBtu, exclusive of the cost of emission-control hardware and fuel.

The ADA report estimated the cost of undersupply for residential and small commercial customers is an excess of \$10/Mcf based on the total cost of alternate fuels (including conversion cost and possible fuel shortages). (Exhibit C-66, page 2-7.) The need to supply gas to such customers is clear.

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The staff evaluated the effect of a failure to meet P2A, P3, and P4 customer requirements (Exhibit C-47). The staff report was based upon a customer survey covering alternate fuel facilities, alternate fuel plans, and associated costs under full P3 and P4 curtailment. Replies were received from over 70 percent of the customer survey. The staff alleges a complete curtailment of P3 and P4 customers will result in requirement for new capital investment in alternate fuel facilities amounting to almost \$213 million, the direct loss of 91,876 jobs by affected industries, and over \$116 million in increased operations and maintenance costs statewide.

Three witnesses appeared on the air quality impacts resulting from curtailment of natural gas. A witness on behalf of the California Air Resources Board presented Exhibit C-46. Estimates were based upon the full curtailment of P3 through P5 end users, resulting in the burning of distillate and fuel oil. The ARB witness estimated that in the San Francisco Bay Area particulate would increase 9 percent and sulfur dioxide would increase 44 percent from 1976 levels. The South Coast (Los Angeles Area) increases from 1976 would be 3 percent and 20 percent for particulate and sulfur dioxide, respectively. Witnesses on behalf of PG&E and SoCal expressed general agreement with the ARB judgment. Increased emissions in the involved air basins will unfavorably affect air quality and will delay air pollution abatement programs.

A consultant appeared as a witness on behalf of SoCal and presented an evaluation of the impact of complete curtailment of P3 and P4 customers in southern California (Exhibit C-50 and C-51). The witness, Sherman H. Clark, was a former director of energy and resources economics at Stanford Research Institute (SRI), a position he had held for most of his 21 years in that firm. His analysis was essentially static, based on present conditions 1f there were complete curtailment of P3 and P4 customers. The witness alleged complete curtailment would have adverse economic effects on southern California in excess of \$1 billion a year

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initially and continuing at that level indefinitely. The adverse economic effects excluded environmental considerations and the loss of the gas supply available to protect Pl and P2 customers. Significant impacts included higher fuel costs to the Pl and P2 customers since fixed cost of gas service would increase by \$121 million a year as a result of the total loss of revenue from P3 and P4 customers. Based on the results of a survey of P3 and P4 customers conducted by SoCal, the witness estimated a loss of new and expanded plants amounting to \$50 million a year in manufacturing activities and plant closures amounting to an additional \$250 million a year in manufacturing activity. Manufacturing employment would be affected by the loss of 12,000 jobs in industry. In addition to the estimated \$300 million loss in manufacturing activity, the witness estimated that such manufacturing is a basic economic activity, and there would be a multiplier effect on the goods and services directly required by such manufacturer, with an additional reduction in economic activity of \$900 million annually.

1. North-South Sharing

By Decision No. 85189, we ordered PG&E and SoCal to enter into an agreement to protect Pl and P2 requirements. Our orignial OII in Case No. 10342 directed SoCal and PG&E to file preliminary estimates of facilities necessary to develop the capability of diverting gas to the SoCal system from the PG&E system at specific volumes. (Case No. 10342 dated June 1, 1977, Ordering Paragraph 2, page 4.) The ability of PG&E to transfer gas to the SoCal system is limited. In order to accomplish the transfers required by the base case, additional facilities would have to be constructed. The staff reviewed the utility data and reported on the modification of transmission facilities (Exhibit C-47, Chapter III).

The staff report states that existing interties, with minor modifications, have a transfer capacity of 280 MMcfd. By

upgrading these interties at a cost of approximately \$5 million, a total intertie capacity of 560 MMcfd can be developed. The latter figure is the volume of gas that could be transferred from PG&E to SoCal on a given day, provided that PG&E has gas to deliver at the intertie points and provided that PG&E has that volume of gas surplus to its own high-priority requirements on that day (Exhibit C-47, page III-1).

The gas that could be transferred directly to SoCal from PG&E is that received from El Paso. All other gas, except minimal local production, is delivered to PG&E in northern California. The dual transmission pipelines which run from the California-Arizona border near Needles in a westerly direction to near Bakersfield and in a northwesterly direction to the San Francisco Bay are designed to carry El Paso gas to PG&E only one way. The lines are tapered and have a MAOP (Maximum Allowable Operating Pressure) at the northern end considerably lower than in the southern portion. The lines could not be reversed without substantial reinforcement except to carry small amounts (Exhibit C-47, page III-2).

PG&E's southern service area is presently supplied almost entirely by the El Paso gas. Should El Paso supplies be cut off and transferred to SoCal, there are no existing facilities to send gas from northern California to PG&E's southern area customers. In addition to the cost of \$5 million to increase total intertie capacity, a new pipeline would be required under average temperature conditions in 1983 to protect SoCal's Pl and P2 customers. This new pipeline would be used in the absence of supplemental gas supplies being available to SoCal in the estimated time frame and would have the capacity to carry PG&E gas from northern California to SoCal. The estimated cost for such a pipeline in 1977 dollars is \$60.5 million plus \$11.8 million in compressor cost. These are order of magnitude costs and not the result of detailed engineering study.

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The sbaff estimate is that if there are no supplemental gas supplies available to southern California, such a pipeline would be needed under cold year conditions in 1982 to protect Pl and P2 requirements in southern California. Under the assumption of no new supplemental supplies, starting in 1985, PG&E's contracts for Canadian gas would begin running out. PG&E would need all of its available supplies for its own Pl and P2 customers. Under these "worst" case assumptions, the pipeline would have a useful life of approximately three years.

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Assuming supplemental supplies come on stream in 1982 or 1983, a new pipeline might never be used. Supplemental gas supplies from Mexico, Algeria II, PacAlaska, or PacIndonesia would tie into the existing El Paso system or PG&E's southern system and would foreclose the need for a north-south pipeline. The Canadian "bubble gas" would be delivered to the SoCal system.

The record indicates that the intertie system should be upgraded as soon as possible. A new pipeline should not be constructed unless it is required to protect Pl and P2A customers. However, should a pipeline ultimately be required, any delay in construction could result in Pl and P2A curtailments. Processing of an application is time consuming. Therefore, in order that the preliminary work associated with constructing a pipeline will be completed in a timely manner, we will order PG&E and PLS to file a joint application for a certificate of public convenience and necessity for a north-south pipeline.

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VI. POTENTIAL SUPPLEMENTAL GAS SUPPLIES A. Introduction

The parties in this proceeding identified a number of supply supplements which have the potential to reverse the continuing decline in gas available from traditional sources. The potential supplements include synthetic natural gas (SNG), base load supplemental supply projects presently awaiting approval by regulatory bodies, and short-term purchases of gas which may, from time to time, be surplus to the needs of others. The ERCDC also identified Elk Hills Naval Petroleum Reserve, and the overproduction of northern California "dry" gas as supplements.

B. <u>Synthetic Natural Gas</u>

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Dr. D. B. Peterson, a witness on behalf of the ERCDC, presented evidence on the availability of SNG from coal, a potential supplement to California's natural gas supplies to 1990. Dr. Peterson's evidence established that there are a number of significant advantages from production of SNG from coal (Exhibit C-16, pages 12-14). However, when estimating the availability of SNG from coal in the future, we must recognize the absence of large-scale plants capable of converting coal to SNG and the present technical and financial problems facing such projects.

Dr. Peterson concluded that no SNG from coal is likely to be available to California until after 1985. He further pointed out that it is possible no SNG from coal will be available to the state by 1990, with the possibility that 80-120 MMcfd would be available by 1990 (Exhibit C-16, page 12). These estimates were apparently based upon the potential production from either El Pazo Natural Gas Company's proposed plant at Burnham, New Mexico, or completion of the WESCO project of PLC and the Texas Eastern Transmission Corporation. Both projects have been shelved. Both plants originally had an anticipated capacity of 250 MMcfd. Without = a federal loan guaranty program, it appears that these programs will not be carried forward. Moreover, it is not clear what size plants will qualify as demonstration plants for federal loan guarantees (Exhibit C-16, page 8). Dr. Peterson advised us that present second

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generation gasifiers have not resulted in a significant technological breakthrough. In his judgment, a third generation technology may be appropriate. This technology would now be in a very early pilot stage. We can only hope that SNG proponents obtain the necessary support to continue efforts in the important area of coal gasification. We cannot at this time assume that significant quantities of SNG from coal will be available to the state of California in the forecast period.

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The staff evaluated the availability of SNG from petroleum feedstocks and the use of LPG/air mixtures as a substitute for natural gas (Exhibit C-10, pages 27-37). The staff concluded that FEA (now DOE) policy indicates that SNG should only be considered as a short-term solution in the absence of other supply, including LNG. Supplemental supplies of SNG from petroleum feedstocks or LPG/air mixtures require federal approval. Such approval would be based upon a need for short-term supplies to P3 and above, primarily during winter periods. It does not appear that these potential supplies should reasonably be included in an analysis of base load supplies (Exhibit C-10, page 33, page 37).

C. <u>Base Load Supplmental Supply Projects</u>

Base load supplemental supply projects include Canadian "bubble gas" (gas surplus to the needs of Canada), Mexican gas available from the Reforma area of southeastern Mexico, El Paso Algeria II-LNG, Indonesian-LNG, South Alaska LNG, and Alaskan North Slope gas (Prudhoe Bay). Potential gas supplies from these sources are discussed in detail below.

1. <u>Canadian "Bubble Gas"</u>

The staff's initial report on the Canadian supplies reviewed a Canadian National Energy Board (NEB) decision issued on July 4, 1977. At that time, the NEB concluded that supply deficiencies could occur by 1983 if export permits were continued at authorized levels. The NEB noted that deliverability could be increased from the Alberta reserves by 400 Bcf in 1977 and a similar amount in 1978 although 2 the excess capacity would disappear by 1985. The NEB at that time

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concluded that such deliveries of the "bubble gas" would require a guaranty that the gas would be replaced at a later date by Alaskan gas_(North Slope) dropped off in Canada or by curtailing export commitments in later years. PG&E's present gas supply from Canadian sources is dependent upon export permits which commence expiring October 31, 1985. The basic gas supply estimates for PG&E incorporate the expiration of these Canadian permits.

Later developments established that gas exploration and development in Alberta, Canada had substantially improved the potential for short-term gas exports. A gas sales contract dated March 9, 1978 (C-Item F) and a gas purchase agreement dated March 9, 1978 (C-Item E) provides for the sale of 240,000 Mcf per day of natural gas from Alberta, Canada, for delivery to the SoCal system. In addition, it appears that the parties to the gas sales contract (see C-Item F) have also provided for an additional 800,000 Mcf per day to be resold to U.S. purchasers in the eastern United States. The terms of the contract provide for a six full-year term, with a right to renew by the buyer for an additional six-year term. The total quantity of export gas appears to be slightly below 400 Bcf per year.

In order to deliver the gas under the contracts, it will be necessary to prebuild a portion of the Western Leg of the transportation system referred to as the Alaska Highway Pipeline Project (the transportation system necessary to deliver natural gas from the Alaskan North Slope). The Western Leg of the Alaska Highway Pipeline Project would be prebuilt to Stanfield, Oregon. At that point, the gas would be received by the Northwest Pipeline system and ultimately delivered to SoCal via the El Paso system. The cost of prebuilding the Western Leg is estimated at \$110 million and the modification required for the Northwest Pipeline system to accommodate the gas to El Paso is estimated at \$130 million (Exhibit C-68, page 12).

The gas sales contract is subject to necessary governmental approval, both in Canada and the United States. The Canadian government still may impose a pay-back condition for the delivery of "bubble gas" to the United States. Since the contract average
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daily quantity of 240,000 Mcf per day would be delivered near Kingsgate, British Columbia, the net quantity (after fuel use) was estimated at approximately 215 MMcf when delivered to SoCal.

The contracts call for a delivery date upon or as soon as possible after September 1, 1979, Experience indicates that regulatory and construction delays may push the starting date to 1980 at the earliest.

2. Imports from Mexico

The staff report dated December 15, 1977 on potential gas imports from Mexico (Exhibit C-10, pages 9-13) presented a strong possibility of increasing volumes of natural gas from Mexico in the early 1980's. Mexico had new discoveries of oil and gas in the Reforma (Tabasco-Chiapas area) oil fields and in the offshore Gulf of Campeche leading to an accelerated program of oil and natural gas production over the next six years by Petroleos Mexicanos (Pemex), Mexico's government-controlled petroleum industry. Proved and probable gas reserves were estimated to be 9.7 TCF, with potential reserves of an additional 20.6 Tcf in reservoirs in the discovery area. During 1976 Mexican natural gas production reached 2.2 Bcfd and was projected to double by 1982 under a sixyear production program.

On April 3, 1977, a group of six United States natural gas transmission companies signed a Memorandum of Intentions with Pemex to purchase surplus natural gas from Mexico. Pemex planned construction of an 850-mile, 48-inch diameter natural gas pipeline from the Reforma area to the international boundary at the Texas-Mexican border at Reynosa, Mexico. Construction of the pipeline was expected to take approximately two years at a cost of \$1.2 billion. Initial rate of delivery of the pipeline was estimated at 1 Bofd with volumes to increase to a maximum of 2 Bofd. The initial contract provided for a six-year term plus an additional six years. The entitlements

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of two of the six American firms (Texas Eastern and El Paso) would be delivered to El Paso and Transwestern interstate pipelines and the natural=gas available for delivery to California was estimated at approximately 18 percent of the gas available before compressor fuel and line losses.

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In late 1977, it appeared that the major problem would be to secure financing. Because of Mexico's high foreign debt, the International Monetary Fund (IMF) had committed the Mexican government to limit deficit spending and to limit net borrowings. In an effort to secure the funds needed to commence construction of pipeline, the U.S. Export-Import Bank tentatively approved \$590 million in loans to Pemex, including \$250 million for the purchase of equipment in the United States and \$340 million for pipeline construction. Additional transmission lines would be necessary in the United States in order to handle anticipated greater volumes and in order to connect El Paso and Transwestern Pipeline Company (a subsidiary of Texas Eastern) to the international boundary delivery point. Based on the available information in late 1977, the staff estimated increasing volumes of deliveries from this supplemental supply.

By March 15, 1978, the situation regarding the importation of natural gas from Mexico had deteriorated. The staff reported (Exhibit C-68, page 14) that the Memorandum of Intentions between the United States interstate pipelines and Pemex had been terminated due to the disagreement of Mexican and U.S. authorities on price provisions. The original agreement had provided that the gas at the Texas border would be priced at the equivalent heating value price of No. 2 fuel oil in New York Harbor. This price in December of 1977 was estimated at \$2.61/MDtu and under the federally proposed crude oil equalization tax, could escalate to \$3/MDtu, equivalent to \$3.15 Mcf at 1,050 Btu/scf. (Exhibit C-10, page 13).

After submission of Case No. 10342, the Mexican government announced its present intention not to export natural gas to the A. 57626 et al MEB*

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United States at this time. Instead, Mexico claims that it intends to use the matural gas for domestic purposes to replace current imports of-liquified petroleum gas and to substitute it for oil.

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At the present time it is difficult to estimate if, and when, Mexican gas will be available to California.

3. Algeria II-LNG

The El Paso Company plans to import additional LNG from Algeria through the Algeria II Project. Under an agreement with Sonatrach (Algeria), affiliates of El Paso would import approximately one billion cubic feet per day for a period of 20 years. Gas would be delivered from a terminal near Port O'Connor on the Texas gulf coast. Sixty-five percent of the gas (at 1,148 Btu/scf) would be sold to El Paso. Based on allowances for system losses and estimated federal allocations, the Commission staff report dated December 15, 1977 estimated deliveries commencing in 1983, with full deliveries in 1984, at approximately 485 MMcfd. (Exhibit C-10, page 85.)

The contract provisions provide for escalation of the price paid to Sonatrach by adjustment for the prices paid for No. 2 fuel oil and No. 6 residual fuel oil in New York Harbor. The ERA refused to approve the price of Pemex gas when the agreement tied the price of the gas to the price of No. 2 fuel oil in New York Harbor. The best estimate of the staff was that Algeria II gas would be available, if at all, in 1984.

An initial decision by an FPC Administrative Law Judge in late 1977 approved the Algeria II project. Under existing federal legislation, the matter is now before the ERA of the Department of Energy for final approval. The ERA has not issued a decision. The contract provides that all necessary government authorizations must be received by April 30, 1977, or either party may terminate the contract. A second termination date is December 31, 1977, by which time all necessary financial arrangements must be made. These deadlines have not been met, and the ERA still has not taken any action with respect to the approval of the Algeria II contract.

At the present time it is extremely doubtful that California will receive natural gas from Algeria by 1984.

4. Alaskan North Slope-Prudhoe Bay

The staff's initial report on the Alaskan North Slope gas was issued December 15, 1977 (Exhibit C-10, pages 3-6). On September 20, 1977, Canada and the United States signed an Agreement on Principles Applicable to a Northern Natural Gas Pipeline (Agreement), and on September 22, 1977 the President submitted his Decision and Report to Congress on the Alaskan Natural Gas Transportation System (Decision and Report). On November 2, 1977, both Houses of Congress approved President Carter's decision. The Agreement contemplates that the pipeline capacity would be 2.4 Bcfd for Alaskan gas and 1.2 Bcfd for northern Canada gas. The northern Canada gas refers to Mackenzie Delta gas which is to be delivered by a pipeline spur (Dempster Line) connecting Mackenzie Delta gas fields in the Northwest Territory to the Alcan pipeline at or near Whitehorse, Yukon. The total pipeline length of the project (excluding the Dempster Line) is 4,787 miles. A Western Leg of the pipeline would include looping of PGT's and PG&E's existing systems.

The gas pipeline system is required to recover the gas reserves in the Prudhoe Bay field, estimated as having proved salable gas reserves of 20.6 to 22.8 trillion cubic feet (Tcf) in the main pool. The three largest field operators estimate that the total salable gas reserves are between 25 and 26 Tcf. The President's <u>Decision and Report</u> estimates the gas supply from the project to be 2.0 Bcfd by 1985 and 2.4 Bcfd by 1990.

On March 15, 1978, the staff reported that contracts for Prudhoe Bay gas had not been negotiated and the timing of the construction of a Prudhoe Bay delivery system is unknown. The initial report of the Commission staff noted that it was impossible to determine exact quantities of North Slope gas to be delivered by the Western Leg. The <u>Decision and Report</u> assumed 30 percent of the Alaskan gas would be delivered to the Western Leg. The staff initial report made nominal estimates for North Slope gas deliveries

to California totaling 600 MMcfd for 1984 through 1990. The Commission staff subsequently reported that a 1984 commencement date under-present circumstances did not appear reasonable, and the earliest date that North Slope Alaskan gas might be received would be 1985 or 1986.

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Major uncertainties are involved in the Alaskan natural gas transportation system project. There is no established wellhead price for the gas on the North Slope. Financing arrangements must be made for the Alaska highway pipeline. Project construction costs set forth in the <u>Decision and Report</u> appear to be approximately \$10.3 billion (based on 1977 dollars).

5. Indonesian LNG

The supplemental gas supply available from Indonesia is a portion of the LNG supply involved in Application No. 57626 in these consolidated proceedings. Western Terminal is the applicant for a permit pursuant to the Liquefied Natural Gas Terminal Act of 1977. As stated above, PG&E and SoCal have established PacIndonesia, which has authorization from DOE/ERA for importation into the United States by PacIndonesia of LNG from Indonesia over a 20-year period. The evidence is that Pertamina, the national oil and gas company of Indonesia, has sufficient reserves to supply the contract quantity of 500 MMcfd for the 20-year term of the contract. DOE/ERA Opinion No. 1 dated December 30, 1977 authorized importation of the gas pursuant to the agreement between PacIndonesia and Pertamina (Exhibit A-20).

DOE/ERA Opinion No. 1 did not, however, approve the price escalation provisions of the contract. At this time, PacIndonesia has been conducting meetings with Pertamina in an effort to arrive at price provisions for the LNG contract which would be acceptable to Pertamina and to the ERA. The contract has a provision which allows for either party to terminate if certain conditions have for not been met by specified dates. The cut-off date for authorizations from United States authorities was passed on October 6, 1977 after three separate extensions.

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The original contracts for the PacIndonesia gas were entered into on September 6, 1973. The contracts were subsequently amended on January 9, 1975 to provide a pricing formula acceptable to the Indonesian Government and further amended on October 28, 1975 to provide a minimum pricing provision to insure the recovery by Pertamina of certain costs during the financing period. Both amendments received approval of the Indonesian Government.

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The facilities at Arun, Indonesia, will deliver LNG necessary for the Japanese and PacIndonesia projects. The SoCal witness responsible for the PacIndonesia gas supply contracts testified that construction of facilities at Arun are running ahead of schedule. Moreover, the construction includes more LNG storage tanks than are needed for the Japanese project.

The SoCal witness testified that the representatives of Pertamina indicated very strongly in the past that they desire to complete the project with the United States. However, in view of the delays in securing necessary approvals for terminal siting, as well as the outstanding problem of the price escalator in the contract, applicant's witness indicated that failure of this Commission to reach a decision on terminal siting by July 31, 1978 would, in his judgment, result in cancellation of the contract. Pertamina is anticipating a profit from the contract to begin sometime in the first half of 1982 and has those revenues planned.

The staff report indicates the construction of facilities in Indonesia for the PacIndonesia Project will not commence until after U.S. Government approvals are obtained and requisite financing is secured. Construction will take 34 months to start up with an additional 18 months before all facilities will be completed. PacIndonesia has entered into contracts for cyrogenic tankers to

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transport the LNG. Three are already constructed and construction of the others will begin following PacIndonesia's obtaining all governmental approvals of financing arrangements.

The initial staff report (Exhibit C-10, page 65) estimated initial volumes in 1982, building up to full volumes by 1984. The staff witness testified that a delay of one or two years would mean that the proposed Indonesia LNG would no longer be a viable project.

The evidence supports the conclusion that the representatives of Pertamina and the Indonesian Government have negotiated in good faith with representatives of PacIndonesia (and its predecessors) over an extended period of time. The condition requiring Pertamina to obtain all approvals of the Indonesian Government by September 6, 1975 was satisfied by Pertamina. The condition requiring authorizations from authorities in the United States has not been satisfied and has been extended on three separate occasions. The last extension expired October 6, 1977. The last extension by Pertamina specifically provided that "because of the increased concern of Pertamina and the Government of Indonesia about the delays in obtaining the required authorizations from the appropriate authorities in the United States, it is understood that any further extensions of the date beyond October 6, 1977, would acquire approval by governmental authorities of the Republic of Indonesia."

Since October 6, 1977, Pertamina has had the option of terminating the existing contract. There has been no further extension or termination of the contract.

6. South Alaska-LNG

The South Alaska-ING Project involves gathering natural gas in the Cook Inlet area of South Alaska, and transporting it by a cryogenic ship to a regasification terminal in California. The applicant seeks authorization for a single terminal to regasify both Indonesian LNG and PacAlaska ING. The Commission staff reports that in order to support gas volumes of 200 MMcfd Phase I of the project, would require approximately 1.6 Tcf

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in reserves. Full volumes under Phase II of the project are to be 400 MMcfd and would require total reserves of approximately 3 Tcf. In its initial report dated December 15, 1977, the staff stated that commitment of production from additional reserves (other than those available) were necessary in order to support the Phase I volumes at 200 MMcfd. (Exhibit C-10, page 44).

It is quite clear from the record that the staff position is correct, and that the delivery of PacAlaska gas may well be delayed because of the problem of acquiring the necessary gas reserves. The staff estimate is that Phase I volumes of PacAlaska gas may commence in 1984 with potential delivery of full volumes (Phase II) following in 1985.

The evidence supports the conclusion that there are uncommitted proven reserves in the Cook Inlet area to support both Phase I and Phase II of the PacAlaska Project. There is no assurance when sufficient reserves might be committed and when a necessary FERC decision on the PacAlaska project might be issued. Applicants are presently before the FERC requesting authorization for the project under Section 7 of the Natural Gas Act. A. 57626 et al. - bf

D. Short-term Supplemental Supplies

1. Introduction

Volume.1 of the staff report (Exhibit C-1) identifies gas supplies available from Northwest Pipeline Corporation (Northwest), an interstate pipeline company, as a short-term supplement presently available to SoCal. After the completion of hearings in this proceeding, Pacific Interstate Transmission Company (Pac Interstate) an affiliate of SoCal contracted for short-term supplements from Michigan Consolidated Gas Company (Consolidated).

The ERCDC identifies supplies it expects to be surplus to the intrastate Texas market as a supplement available to California under short-term contracts. The ERCDC also provided estimates of the amount of gas that might be available from Elk Hills Naval Petroleum Reserve on an emergency basis, and from northern California dry gas production by over-producing the gas purchase contracts. A discussion of the various sources of short-term supplements follows:

2. Interstate Surplus

The agreement with Northwest provides for deliveries of up to 200 MMcfd, by displacement, to SoCal through October 31, 1978. There is no obligation on the part of Northwest to deliver specific volumes. Daily deliveries can be from zero to 200 MMcfd depending on Northwest's system requirements on a given day. The cost of the gas at the California border is \$2.35 per million Btu or approximately \$2.46 per Mcf.

An application for certification of an agreement with Michigan Consolidated Gas Company (Consolidated) has been filed with FERC in <u>Pacific Interstate Transmission Company</u>, Docket No. CP78-398 et al. The agreement is an exchange agreement and provides for firm deliveries to the SoCal system at the California border averaging 106 MMcfd during the period November, 1978 through March, 1979. The agreement further provides for deliveries, on a "best efforts" basis, averaging 33 MMcfd during the period

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November, 1978 through March, 1979 and 110 MMcfd for the period April, 1979 through March, 1981. The SoCal system is obligated to take 50 percent of the "best effort" offerings. The average cost of the gas at the California border is approximately \$3.00 per Mcf. The subsequent return of gas would be at the option of Consolidated, and conditioned on the availability of LNG to the SoCal system at the Western LNG terminal. If no LNG is available, there is no payback.

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3. Intrastate Surplus

The ERCDC presented a number of witnesses and exhibits leading to a projection of the amount of gas expected to be surplus to the Texas <u>intrastate</u> market and the portion of such surplus gas that could be made available to California.

Consultant Report - Appendix G (Exhibit C-84) was provided by the ERCDC on March 15, 1978. Exhibit C-84 includes material prepared by a Texas energy consultant and an evaluation of the energy consultant's material prepared by an employee of A. D. Little, a consulting firm. The material, prepared by the Texas energy consultant, consists primarily of a number of illustration's depicting Texas natural gas supply-demand relationships through the period ending 1985 plus a brief text. The amount of gas projected to be surplus to the Texas intrastate market by the ERCDC consultant ranges from approximately 610 MMcfd in 1978 to approximately 3000 MMcfd by 1985. Using this total surplus, the ERCDC witness responsible for certain material in the ERCDC summary report derived the portion of Texas intrastate surplus available to southern California as 61 MMcfd in 1978 increasing to 300 MMcfd by 1985 in the low case, and 170 MMcfd in 1978 increasing to 835 MMcfd by 1985 in the high case (Exhibit C-75, page 110).

The consultant retained by the ERCDC to evaluate the projections of Texas <u>intrastate</u> surplus gas testified that, "Given the short time available to us we were unable to make a thorough analysis of the subject." (Sherff, Tr. p. 4732.)

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The development of <u>specific</u> volumes of gas available to California from supplies surplus to the needs of the Texas <u>intra-</u> <u>state</u> market over the period ending 1990 would require extremely detailed studies of future supply and demand within Texas. Such studies are not present in the record of this proceeding. However, sufficient evidence was presented to support an assumption that significant volumes might be available, from time to time, over the short-term. Moreover, the terms and conditions under which such gas could be obtained is a more important consideration, at this point, than specific volumes.

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The method suggested by the ERCDC for obtaining surplus intrastate gas is included in provisions of the Natural Gas Act (NGA). Section $7(\overline{c})$ of the Act provides for emergency sales of gas for periods of up to 60 days for which issuance of a certificate under FERC regulations is not required. Section 2.68(a) further extends the exemption to include sales of intrastate gas to the interstate market under certain conditions without subjecting the sale to federal regulation. The purpose of Section 2.68 is to provide aid to distribution and pipeline companies in need of temporary emergency supplies by making exempt intrastate gas available for short-term sales for periods of up to 60 days. The intent of the NGA regarding emergency sales is clearly not to circumvent the established procedures for the sale of gas to the interstate market. As pointed out in the CPUC staff brief, the intent has been clearly defined in the courts:

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الأبياز يبرون وبالجار الأساميني وبالاسكار أتومه

والمروقي والمراجل والمتحصص مساولي ومعاصر والأ

"What we can say, and do say, is that the legislative history makes plain that it was never contemplated that the modest emergency proviso in Section 7 for orders without hearings would be employed to excise large-volume, long duration, widespread deliveries of gas" <u>Consumer Federation</u> of <u>America v. F.P.C.</u>, 515 F.2d 347, 355.

The FERC is currently reevaluating its policy and procedures (FERC Docket No. 78-7) on emergency purchases. However the reevaluation would become moot if provisions contained in the proposed National Energy Act are enacted. On June 13, 1978 the House and Senate Conferees completed their deliberations on issues not resolved by the compromise that was approved on May 24. The document issued on June 13 included the provisions on emergency sales which were adopted. (Copies were sent to all parties in Case No. 10342 by the CPUC staff counsel on July 20, 1978.) Under the compromise provisions sales would be limited to two years with possible extensions of not more than two years per extension. The compromise further provides that deliveries would be subject to interruption to the extent that the seller required the gas for his own customers.

The availability of short-term supplies that may, from time to 2 time, be surplus to the <u>intrastate</u> market or interstate pipelines serving other area's, cannot be considered in the same context as base load supplements. It is precisely because of the failure, to date, to obtain base load supplements, that a reliance must now be placed on short-term deliveries where the quantity made available is left, each day, to the discretion of the seller.

4. Elk Hills Naval Petroleum Reserve

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Substantial quantities of natural gas exist in the Naval Petroleum Reserve No. 1 (NPR-1) at Elk Hills. These reserves are entirely under federal control. Elk Hills production is authorized for six years ending in 1982, but three year extensions are permissable at the President's request, subject to Congressional approval. Despite the urgings of California utilities and regulatory bodies to make the gas available for sale, present plans call for reinjecting all of the gas in order to maintain pressure for maximum oil production (Exhibit C-11 and C-22). These plans are consistent with the Congressional mandate to maximize production based upon sound engineering judgment.

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In their 1977 Biennial Report, the ERCDC reported that, "The quantity of gas potentially available from NPR-1, is, at 400-600 MMcfd, very significient." However, in its showing in this proceeding, ERCDC estimated that 100 MMcfd would be available to California under short-term emergency conditions (Exhibit C-25). This assumption is based upon speculation as to future federal policy. Even as a potential emergency supply, the record indicates that no determination has been made as to the terms under which any gas may be made available to anyone.

5. Over Production of California Gas

Differences arise between Commission staff estimates and other parties from the assumed levels of production of northern California gas. At the present time PG&E contracts for Californiaproduced gas at a relatively low-load factor. PG&E's contracts may obligate PG&E to take gas at an annual average-load factor of one-third. PG&E then takes such gas at high load factors during seasonal winter peak-demand period and shuts the gas wells down during the summer.

The Commission staff does not recommend increased production. ERCDC argues that future supply/demand conditions are likely to require significant transfers of gas from northern to southern California and the cost of increased production of California gas should be compared with the marginal cost of supplemental gas supplies.

As we-understand PG&E's gas purchase policy California gas is taken up to contract obligation, and above contract obligation, to the extent practicable, if Pl and P2A customers would otherwise go unserved. Since we expect the same policy to be followed in protecting Pl and P2A service statewide, the need for a regulatory mechanism does not exist.

E. <u>Cost of Supplemental Supplies</u>

The staff report dated March 15, 1978 set forth estimates of the cost of gas from traditional sources and from base load supplemental supply projects. The staff material is reproduced as tables 8 and 9 herein.

The estimates are based on the best information available to the staff concerning natural gas pricing provisions contained in the proposed National Energy Act and costs of supplemental supplies contained in filings presently before regulatory bodies. The estimated cost of gas from Prudhoe Bay is from federal sources and includes <u>no</u> allowances for cost overruns.

All costs are in 1977 dollars and are increased only to reflect escalations that are expected to occur over and above the inflation rate.

TABLE .8.

COST OF GAS FROM TRADITIONAL SOURCES

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Southern California Gas Company \$/Mcf

Source	<u>1977</u>	<u>1980</u>	1986	<u>1990</u>
El Paso				
Old Gas New Gas Weighted Average Other Gas Supply Expenses Transmission California Border Price	\$0.80 	\$0.84 <u>2.13</u> 1.07 .15 <u>.23</u> \$1.45	\$0-93 2-47 1.58 .15 <u>.30</u> \$2.03	\$1.01 2.86 2.13 .15 .37 \$2.65
<u>Transwestern</u> Old Gas New Gas Weighted Average Transmission California Border Price	\$0.63 -63 -61 \$1.24	\$0.69 2.13 1.03 .82 \$1.85	\$0.75 2.47 1.70 1.10 \$2.80	\$0.76 2.86 2.19 1.13 \$3.32
Weighted Border Price Distribution	\$1.15 61	\$1.54 .78	\$2.19 1.00	\$2.82 1.24
Unit Cost of Service (Average System Rate)	\$1.76	\$2.32	\$3.19	\$4.06

Pacific Gas and Electric Gas Company \$/Mcf

El Paso				
See Above	\$1.12	\$1.45	\$2.03	\$2.65
Canadian Source	\$2_44	\$2.84	\$2.84	\$2.84
California_Source				•
Old Gas New Gas Weighted Average	\$1.12 \$1.12	\$1.12 2.13 \$1.30	\$1.12 2.47 \$1.84	\$1.12 2.86 \$2.49
Weighted Price to PG&E System Distribution	\$1.73 47	\$2.06	\$2.36 64	\$2.36 1.16
Unit Cost of Service (Average System Rate)	\$2.20	\$2.61	\$3.00	\$3.52

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*Exhibit C-68, page 27

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COST OF GAS FROM SUPPLEMENTAL SOURCES \$/Mcf at 1050 Btu/scf

· (1977 Dollars)

Source	1985	7000
Indonesia	<u> </u>	<u> </u>
Purchased LNG	\$7 E7	47 E77
Transportation	רד ר	
Terminalling and Vaporization	52	•90
Total Cost Out of Plant	\$3.21	\$2.82
Transportation to Existing System	-08 -08	- 06
Unaccounted for, Franch. & Uncoll., 3%	.10	- 09
Unit Cost to Customer	\$3.39	\$2.97
PacAlaska		-
Purchased Gas (Incl. 10% Tax)	\$7 88	· +- 99
Liquefaction	1.26	83 م۳۰00
Transportation	- 65	50
Terminalling and Vaporization	-10	- 52
Total Cost Out of Plant	\$3.80	\$3.34
Transportation to Existing System		
Unaccounted for, Franch. & Uncoll. 32	.12	
Unit Cost to Customer	\$4.01	\$3.44
Algeria		
Purchased LNG	47 EA	47 F-
Transportation	ダエーラリ	\$1.50
Terminalling and Vaporization	4+4C 37	•92
Shrinkage and Boiloff	- 51	-28
Total Cost Out of Plant	* <u></u>	• <u>- 12</u>
Transportation to Waha	47•77 24	⇒∠.02 ⊃"
Additional Mainline Compression, El Paso	.20	-24
Unaccounted for, Franch. & Uncoll. 32	10	- 09 _ 00
Unit Cost to Customer	\$3.57	\$3.24
Mexico	-	
Purchased Gas	40 m-	**
Transportation to Permiss Bacin	\$2.75	\$2 . <u>75</u>
Additional Mainline Compression Fl Pass	• 12	-15
Unaccounted for Franch & Unacil 24	- 00	-08
Unit Cost to Customer	* <u>2 67</u>	* <u>3 69</u>
	43+01	43 •∪/
Pruchoe Bay		
WELLACIA FFICE	\$1.52	\$1.52
Transportation to Canadian Border Processing	1.61	1.05
Transp from forodian product to the second	• 32	•32
Total	.28	<u>.28</u>
Unaccounted for Franch & Wassis of	\$3.73	\$3.18
Unit Cost to Customer	\$2 R/	-10
	₩ ₽ ∙₩ ₩ .	₽ 5-20
Canadian "Bubble"	4 - - +	
Durger frice Transmostate	\$2.74	
Tansportation Tatsi	1.25	
Hugecounted for Proper 1 Wagers of	\$3-99	
Unit Cost to Customer	<u>-13</u>	
	\$4.12	

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F. <u>Contingency Plans on Interruption of LNG</u>

Both SoCal and PG&E presented contingency plans in the event of both short- and long-term interruptions of LNG gas supply (Section 5601(h)). The gas supply contingency plan is to ensure continued gas supply to Pl and P2A customers during a short-term LNG service interruption even if it were to occur on an abnormal peak day - a day equivalent to the system's coldest day of record. The utilities also plan to ensure supply continuity to Pl and P2 customers, and to P3 customers on a best efforts basis during a long-term LNG service interruption, even if it should occur during the winter months.

The primary emergency measures, in order of implementation, are: (1) emergency conservation measures; (2) curtailment of interruptible customers; and (3) withdrawal from under ground storage facilities. PG&E has scheduled separate LNG peak shaving facilities to protect Pl and P2A customer demand. PG&E and SoCal have an agreement which provides for mutual assistance to the extent possible to protect their Pl and P2 customers in the event of an emergency. (Exhibits C-53, C-73.)

As the utilities stated, addition of new gas supplies in the future would ameliorate the effect of an outage or interruption of LNG service. PG&E and SoCal plan to maintain primary gas supply to support and retain interruptible lower priority customers. The extent to which they succeed in retaining P3 and P4 customers will determine the margin of protection available to P1 and P2 customers from interruptible gas customers.

G. Base Load Supply-Requirement Relationships

The base case supply and base case requirements forecasts are combined with forecasts of base load supplemental supplies to develop the supply-requirements relationships in Tables 10, 11 and 12. These Tables are developed to demonstrate the supply levels that would occur if long-term deliveries from Prudhoe Bay, Mexico, Algeria, Indonesia, South Alaska and the Canadian "bubble" were obtained in the quantities and at the times shown in Appendix B. A. 57626 et al. MEB*

Whether any or all of these supplemental supply projects eventually reach fruition is uncertain. As pointed out by the staff, "California's acquisition of any supplemental gas supplies remains contingent upon a number of future events each without guarantee of occurrence." (Exhibit C-68)

While not eliminating them from consideration, recent developments concerning the Mexican and Algerian projects, as reported in various press releases and mailed to all parties in this proceeding by CPUC staff counsel on July 20, 1978, deepens the uncertainty.

The range of essential data derived from Tables 10, 11 and 12 are as follows:

Southern California

Warm Weather Conditions

- 1. P5 is totally curtailed in 1979 and 1982 and substantially curtailed in the other years through 1983.
- 2. Large quantities of gas become available to P5 beginning in 1984.
- 3. No significant curtailment of P4 and above occurs.

Cold Weather Conditions

- 1. P5 is totally curtailed in 1978 and P3, P4 curtailments begin.
- 2. P3, P4 curtailments are eleminated in 1984 and large quantities of gas become available to P5.

Northern California

Warm Weather Conditions

1. Gas is available to P5 in all years.

Cold Weather Conditions

1. Gas is available to P5 in all years.

TABLE 10

BASE LOAD SUPPLY-REQUIREMENTS RELATIONSHIPS

(Base Case Supplies plus Total Base Load Supplements) -

Cold Weather Year (MMcfd)

	-	I	Requirements		Base Case	Shortfall Pl_P4	Deliveries to	
Year	:	P1&P2A	P2B&P3&P4	Total	Plus Supp.	Rquts	P5	
	Northern California							
1978 1979 1980		1,115 1,125 1,119	580 599 593	1,695 1,724 1,712	2,060 1,967 1,887	000	365 243 175	
1981 1982 1983 1984 1985		1,130 1,141 1,153 1,172 1,188	593 593 593 593 593	1,723 1,734 1,746 1,765 1,781	1,863 1,816 2,036 2,481 2,577	. 0000	140 82 290 716 796	
1986 1987 1988 1989 1990		1,204 1,221 1,239 1,254 1,279	593 593 593 593 593 593	1,797 1,814 1,832 1,847 1,872	2,399 2,128 2,105 2,062 1,936	00000	602 314 273 215 64	
			Souther	n Califo	mia			
1978 1979 1980		1,566 1,574 1,581	574 574 570	2,140 2,148 2,151	1, <i>9</i> 28 1,772 1,893	212 7.376 258	000	
1981 1982 1983 1984 1985		1,600 1,619 1,639 1,658 1,677	570 570 570 571 570	2,170 2,189 2,209 2,229 2,247	1,902 1,853 2,082 2,837 2,902	268 336 127 0 0	0 0 608 655	
1986 1987 1988 1989 1990		1,703 1,730 1,756 1,783 1,809	570 569 570 569 569	2,273 2,299 2,326 2,352 2,378	2,855 2,780 2,752 2,703 2,630	000000	582 481 426 351 252	

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Base case supplies plus supplies from base load supplemental supply projects as shown in Appendix B.

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BASE LOAD SUPPLY-REQUIREMENTS RELATIONSHIPS

(Base Case Supplies plus Total Base Load Supplements)

Normal Weather Year (MMcfd)

	F	equirements		Base Case*	Shortfall Pl-P4	Deliveries to
lear	F1&P2A	P28&P3&P4	Total	Plus Supp.	Routs	P 5
		Northern	Califor	nia		
1978	1,036	580	1,616	2,060	0	<u> 24 24 34</u>
1979	1,044	599 502	1,643	1,967	0	324
	کرک وید	232	x , x ,	1 ,00,	v	230
1981	1,045	593 503	1,638	1,863	0	225
1983	1,064	593	1.657	2.036	0	379
1984	1,082	593	1,675	2,481	õ	806
1985	1,096	593	1,689	2,577	0	888
1986	1,111	593	1,704	2,399	0	695
1987	1,120	593	1,719	2,128	0	409
1989	1,142	273- 593	1,748	2,105	0	370 314
1990	1,179	593	1,772	1,936	0	164
		Souther	n Califo	mia		
1978	1.436	574	2 010	1.928	82	0
1979	1,441	574	2,015	1,772	243	ŏ
1980	1,445	570	2,015	1,893	122	0
1981	1,462	570	2,032	1,902	130	0
1982	1,479	570	2,049	1,853	196	0
1983	1.512	571	2,083	2,002	0	17 751
1985	1,529	570	2,099	2,902	õ	803
1986	1,553	570	8.123	2,855	0	732
1987	1,577	569	2,146	2,780	0	634
1980	1,602	570	2,172	2,752	0	580
1980	1,650	569	2,219	2,630	ŏ	411
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* Base case supplies plus supplies from base load supplemental supply projects as shown in Appendix B.

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BASE LOAD SUPPLY-REQUIREMENTS RELATIONSHIPS (Base Case Supplies plus Total Base Load Supplements) -----•

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1. *

		. ((MMCFD)		•	
- Year -	Requir PlyP2A	ements P2REP2EPL	Total	Base Case	Shortfall Pl-P4	Deliverie to
		-	TOURT	rius Supp.	RQMCS	P 5
		Northern	2 Californ	<u>lia</u>		
1978	927	580	1,507	2,060	0	553
1979 1980	932 922	599 593	1,531 1,515	1,967 1,887	0	436 372
1981	929	593	1,522	1,863	0	341
1983	932	293 593	1,528	1,816	0	288
1984	956	593	1,549	2.481	ŏ	201
1985	968	593	1,561	2,577	õ	1,016
1986	981	593	2,574	2,399	0	825
1987	994	593	1,587	2,128	0	541
1989	1,000	273 593	1,001	2,105	0	504
1990	1,041	593	1,634	1,936	0	450 302
		Souther	n Califor	nia		
1978	1,291	574	1,865	1,928	0	63
1980	1,292	574 570	1,865	1,772	94	0
		210	2,000 -	, C95	U	30
1981 1982	1,307	570 570	1,877	1,902	0	25
1983	1,334	570	1,090	2,082	51	0 178
1984	1,347	571	1,918	2,837	õ	919
1985	1,361	570	1,931	2,902	0	971
1986	1,383	570	1,953	2,855	0	902
1987	1,405	569	1,974	2,780	0	806
1988	1,449	569	2.018	2,752	0	755 685
1990	1,471	569	2,040	2,630	ŏ	590

Warm Weather Year

Base case supplies plus supplies from base load supplemental supply projects as shown in Appendix B.

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VII. POTENTIAL FOR LOSING TRADITIONAL SUPPLIES IF SUPPLEMENTAL SUPPLIES ARE ACQUIRED

Both the Act and our Order Instituting Investigation in Case No. 10342 required a legal analysis of the potential for California losing gas-supplies from traditional sources if supplemental supplies in excess of high priority needs are acquired. Western Terminal and the staff submitted their legal opinions on the question. The bulk of existing gas supply (excluding California intrastate gas production) is subject to federal jurisdiction. The Natural Gas Act gives the FERC authority to allocate gas transported by natural gas companies between customers on their individual systems. Under existing federal law, there are no rights which California has or can assert which will assure 1) the allocation of adequate supplies of natural gas to consumers in this state from sources other than the applied for LNG terminal, or 2) that consumers in this state will receive full compensation for any losses of supplies of natural gas costing less than gas converted from LNG that may result from federal allocation policies.

Both Western Terminal and the staff agree, however, that current federal policy encourages the acquisition of supplemental gas supplies. We are aware of no state which has ever had its allocation of supplies from traditional sources reduced due to the acquisition of gas from supplemental sources. On the contrary, we believe that current federal policy as stated in FPC and FERC Opinions and Orders makes it clear that California's share of available supplies would not be reduced because of the acquisition of LNG.

The FERC exercises its authority over allocations through the administration of curtailment plans for the interstate pipeline companies. Of the three interstate pipeline companies that serve California, only El Paso's curtailment plan raises any possibility of California losing traditional source gas due to acquiring supplemental supplies. In its 1974 Opinion No. 697-A which approved that curtailment plan the FPC specifically stated:

"In our view, this curtailment plan will not act as a deterrent to the development of any new storage or peak-shaving nor to the acquisition of natural gas supplies

from other sources. Furthermore, customers who plan to develop such additional supplies will neither be penalized nor preferentially treated as a result of the operations of this curtailment plan ... therefore the extent of a customer's seasonal entitlements from El Paso is not linked to nor dependent upon any increase or decrease in the customer's alternate gas supply sources, his storage, or his peakshaving capability." El Paso Natural Gas Co., 52 FPC 1885.

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A recent FERC ruling supports our belief that California will not be in jeopardy of losing traditional supplies upon receipt of LNG. In <u>Pacific Interstate Transmission Company</u>, Docket No. CP77-38 et al., the FERC approved Pacific Interstate's acquisition of a short-term supplementary supply of gas from Northwest Pipeline Corporation. In doing so the FERC exempted this gas supply from the operation of the curtailment provisions of El Paso's gas tariff and noted that this exemption was consistent with the FPC's expression in Opinion No. 697-A of the desirability of encouraging El Paso's customers to develop new gas supplies.

Although now expired, the Emergency Natural Gas Act of 1977 (ENGA) gave the President authority, among other things, to allocate gas between interstate pipeline companies. The provisions with respect to compensation to the companies supplying gas are as follows:

"The party making emergency deliveries ... (A) indicates a preference for compensation in kind, the President shall direct that compensation in kind be provided by August 1, 1977, to the maximum extent practicable, ... (B) indicates a preference for compensation, or the President determines ... that any portion thereof cannot practicably be compensated in kind, the President shall calculate the amount of compensation ..., based upon the amount required to make the interstate pipeline delivering such natural gas and its local distribution companies whole for loss of sales resulting therefrom; including the actual amount paid ... for the volumes of natural gas or higher cost gas which were needed to replace natural gas delivered ... and for transportation, storage, and other expenses. ... " (Emergency Natural Gas Act of 1977, Section 4 (f) (2).)

During the effective period of ENGA, California utilities were able to provide gas to other pipeline companies and subsequently received replacement in kind (Exhibit C-1, page 24) without suffering economic loss.

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VIII. SUMMARY AND CONCLUSIONS ON GAS SUPPLY AND REQUIREMENTS. A. <u>Summary and Conclusions</u>

د . . معرف مع The gas supply presently available to respondent gas distribution utilities is at a level too low to meet high priority requirements in the state of California. The level of service to P5 since 1972 appears in the tabulation below.

NATURAL GAS SERVICE TO P5 (1972-1977)

		•••••••		
Year	Requirements	Deliveries	Curtailments	Level of of Service
1972 1973 1974 1975 1976 1977	769 799 556 687 1034 1245	723 700 364 565 643	46 99 192 227 469 602	94% 88% 65% 55% 52%
	South	ern California	2	
1972 1973 1974 1975 1976 1977	1416 1597 1229 1295 1325 1793	856 488 378 251 215 306	560 1109 851 1044 1110 1487	60% 31% 31% 19% 16% 17%

Northern California (MMcfd)

The estimated base case supply levels include estimated supplies available from traditional sources and relatively assured supplements from the Rocky Mountains, California offshore, and utility sponsored exploration and development projects. The estimated levels of deliveries from such sources through 1990 are set forth in Appendix B.

Base case requirement estimates are the requirements of Priority 1 through Priority 4. The estimated range of such requirements through 1990 is set forth in Appendix C.

The level of supply estimates and the range of Pl through P4 requirements set forth in Appendices B and C form a reasonable base upon which to consider the need for deliveries from supplemental supply projects.

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Base case supply-requirement relationships indicate that, if no supplemental supplies are acquired, curtailment of natural gas service would occur as follows:

Southern California Warm Weather Conditions

1. P5 is totally curtailed in 1979 and P4 curtailment begins.

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- P2B, P3 and P4 are, as a total, over 50% curtailed by 2. 1981 and totally curtailed by 1984.
- 3. Transfers from PG&E to protect Pl and P2A service begin in 1984.
- 4. P2A curtailment begins in 1987.

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Cold Weather Conditions

- 1. P4 curtailment begins in 1978.
- P2B, P3 and P4 are totally curtailed by 1981. 2.
- 3. Transfers from PG&E to protect Pl and P2A service begin in 1981.
- 4. P2A curtailment begins in 1986.

Northern California Warm Weather Conditions

- P5 is substantially curtailed by 1980 and totally cur-1. tailed by 1986.
- 2. P2B, P3 and P4 curtailments begin in 1986 and total curtailments result in 1987.
- 3. P2A curtailment begins in 1990.

Cold Weather Conditions

- 1. P5 is totally curtailed by 1982.
- P4 curtailment begins in 1982 and P2B, P3 and P4 are 2. totally curtailed by 1986.
- 3. P2A curtailment begins in 1987.

Six long-term base load supplemental supply projects are presently being considered to alleviate the unacceptable decline in natural-gas service itemized above. These base load supply projects are:

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- 1. Canadian "Bubble Gas"
- 2. Mexico
- 3. Indonesia LNG
- 4. S. Alaska LNG
- 5. Algeria II
- 6. North Slope-Prudhoe Bay

The potential quantities and timing associated with the six projects are set forth in Appendix B. Quantities and timing are uncertain. No contracts exist for North Slope or Mexican gas and the reserves under contract for the S. Alaska project are, as yet, insufficient to support the scheduled volumes. None of the projects has final regulatory approval.

In addition to the long-term base load projects discussed above, short-term supplements may be available, from time to time in unpredictable amounts, from supplies under contract and temporarily surplus to the needs of others. An affiliate of SoCal has entered into separate agreements providing short-term deliveries from suplies temporarily surplus to the needs of two interstate pipeline companies. Additional short-term supplements may be available from the <u>intrastate</u> market, particularly if the present provisions of the proposed National Energy Act are enacted. Short-term supplements cannot be considered in the same context as long-term base load supplements but, instead, provide a backup supply until long-term supplements come "on stream", or a "last resort" if needed longterm supplements fail to materialize.

Supply-requirement relationships based on the assumption that <u>all</u> long-term base load supplemental supply projects come on stream, at the times and in the quantities listed in Appendix B, indicate that curtailment of natural gas service would occur as follows:

Southern California Warm Weather Conditions

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- 1. Insignificant quantities of gas are available for P5 until 1984.
- 2. No significant curtailment of P4 throughout the forecast period.
- 3. Large quantities of P5 gas available beginning 1984approximately 64% of average 1972-77 requirementsand declining to approximately 41% of such requirements by 1990.

Cold Weather Conditions

- 1. P5 is totally curtailed through 1983.
- 2. P3 and P4 extensively curtailed through 1983, and no curtailment thereafter through 1990.
- 3. Large quantities of P5 gas available beginning in 1984-42% of average 1972-77 requirements-and declining to approximately 17% of such requirements by 1990.

Northern California Warm Weather Conditions

1. P5 gas available in all years through 1990.

Cold Weather Conditions

1. P5 gas available in all years through 1990.

Even under the unrealistic assumption that all base load supply projects come on stream, the SoCal P3 and P4 customers still face the possibility of extensive curtailment during the period ending 1983. Delays in the Mexican and Canadian "bubble" projects would potentially extend curtailment to the P2A category. Shortterm supplements may be available in sufficient quantities to fill the supply "gap". However, the assurance of relatively continuous service to P1 through P4 customers requires that modifications be made to the PG&E-PLS intertie system and the mutual assistance agreement ordered by D. 85189.

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Commission policy on Long-term Natural Gas Service в.

The parties in Case No. 10342 have provided the Commission with forecasts of the natural gas available to California through the period ending 1990. Although the forecasts differ in detail, all agree in a fundamental area: The natural gas available to the state from traditional domestic sources has been declining since 1972 and will continue to decline.

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The result, to date, of the decline in available natural gas has been the utilization of fuel oil to satisfy a large portion of the state's enormous fossil fuel requirements for electric generation - a portion once satisfied by natural gas. Absent supplemental gas supplies, the continued decline in natural gas from traditional sources would, in the short-term, force fuel dependent industrial facilities in California to coal or oil, and, in the long-term, force small commercial concerns and residences to petroleum products or electricity.

As a matter of policy the Commission concludes that an economy which depends largely on solar and other clean, renewable energy sources is in California's best long-term interest and should be our ultimate goal. Because of the importance of this long-term energy goal as a basis for our decision on the issues in this investigation, we have not been deterred from referring to it here by the lack of adequate evidence in this record as to the prospects for future use of such energy forms

Our commitment to a position favoring long-term dependence on solar and other clean, renewable energy sources is associated with a corollary decision as to this state's choice of a primary source of energy in the interim. We believe that California can best reach its long-term energy goal by making direct use of natural gas,

Evidence has been submitted and solar energy possibilities are - being assessed by this Commission in another proceeding. See •/ CPUC Case No. 10150, Joint Investigation by California Public Utilities Commission and California Energy Resources, Conservation and Development Commission into Availability and Potential Use of Solar Energy, filed August 3, 1976.

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including LNG and SNG rather than by turning to oil and coal. To this end, we are pursuing a policy of furthering acquisition of maximum available quantities of gas, to reduce to the lowest possible level the need for California to convert from direct use of gas to either direct or indirect (for electric generation) use of coal and oil.

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We have chosen natural gas use as the interim period primary energy source for this state principally because of the adverse effects of most alternative fuels on our environment, in particular on California's air quality. However, we have also been impressed by the weight of other evidence, which in our view overwhelmingly supports the gas use option as the one which is in the best interests of both the consumer and the economy. When gas use is compared with use of the available alternate energy sources for the interim period, the unacceptability of the alternatives becomes immediately apparent:

<u>Oil</u> - Substituting increased use of oil for gas in California would adversely affect air quality, require development of improved distribution systems and worsen the U.S. balance of payments and national security problems by increasing our dependence on oil imports.

<u>Coal</u> - Turning to coal in place of gas, while it would use abundant American coal resources, would also, like oil use, result in added pollution - both by dispersion as dust while being transported and as particulate matter resulting from burning as fuel for electric generation. Movement of coal from distant locations to California would also put a strain on the national rail system, and deface some areas within California with unsightly coal stockpiles. Furthermore, coal use would require the construction of costly facilities to reduce polluting emissions and dust dispersion.

The use of natural gas as the interim fuel, on the other hand, offers significant advantages. For example, in California gas comes with an in-place, efficient gas transmission, distribution and storage system. This system serves us well. Moreover, even though LNG must be imported it has a less adverse impact on balance of trade than the importation of oil.

The economics and logistics of LNG also make it superior to

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oil in terms of security factors. LNG requires massive capital investments on the part of the producing nation. In addition, the design of Mquefaction and terminal facilities and tankers are closely integrated for any given project, to minimize costs, so that diversion of LNG shipments is more difficult than diversion of crude oil and related products. The fact that the cost of providing for extended storage of LNG is prohibitive, when taken with the other factors mentioned, makes interruption in LNG supply unlikely, in contrast to chances of interruption of oil deliveries from OPEC countries.

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The Commission's selection of gas as a primary fuel for Califormia, to the extent possible, until renewable energy sources can come into play, meets the <u>specific needs</u> of this state. This choice diverges from the monolithic approach to energy use which has until recently characterized federal energy policy. We are hopeful that recent federal initiatives (as in the first of five sections of the National Energy Act relating to coal conversion), indicate a realization on the part of federal energy policy-makers that various regions of the United States can solve the energy problems related to their areas <u>only</u> when they are able to use different energy mixes. Though we acknowledge that some areas can readily and economically rely on coal or oil rather than gas, we are convinced, as we have indicated above, that other areas, such as California, are better served by continued direct use of gas to the fullest extent possible.

We regret that our evaluation of the gas supply options open to this state has been impeded by failure of the Department of Energy (DOE) and the Federal Energy Regulatory Commission (FERC) to decide many of the important issues relating to gas supplies from sources other than Indonesia and South Alaska, including Algeria and Mexico. We had hoped that many of these applications still pending before the DOE and FERC would have been decided by the time the investigation in Case No. 10342 concluded. Failure of the federal government to act expeditiously in these important cases has made our decision on Western Terminal's application much more difficult. The need for a coherent DOE ING policy is pointed out in the recent

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U.S. Comptroller General's <u>Report to Congress</u>. After an extensive investigation, the report recommended to the U.S. Congress that it should "require the Secretary of Energy to report within a given time period the role liquefied natural gas should play in satisfying U.S. energy needs. This should be supported by a systematic analysis of the various alternative energy sources or natural gas substitutes."

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The Comptroller General's report notes that in the absence of a federal policy "California, for example, recently implemented a comprehensive review process for deciding on a proposal to import LNG and legislatively established siting criteria for this LNG receiving terminal." It points out that "lack of established Federal criteria and guidance for proposals to import LNG and to construct receiving terminals has caused concern at the State and local levels and contributed to the time-consuming processing of LNG import proposals." The report comments that other countries which it examined in its LNG review "seem to be moving more quickly" than the United States to import LNG.

Although we are disappointed in regulatory delays at the federal level, we share with federal regulatory agencies the problems resulting from the delay of the U.S. Congress in passing national energy legislation.

The Commission believes that the natural gas policy expressed herein is not only rational, but achievable. For example, if California acquires all of the long-term supplemental supplies identified in Case No. 10342, by 1985-86 natural gas service to California consumers could return to 1972 levels. Then, additional LNG from Australia and Chile or other areas in the Pacific basin, and SNG from coal, could provide the time necessary to convert to renewable sources, such as solar.

*/ United States General Accounting Office, Report to the Congressby the Comptroller of the United States, Need to Improve Regulatory Review Process for Liquefied Natural Gas Imports. ID 78-17, July 14, 1978, p. 29.

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IX. PROPOSED POINT CONCEPTION PROJECT Α. Site Description

The Point Conception area is a promontory where the California coastline, which generally runs north-south, turns eastward forming the Santa Barbara Channel between the mainland and a chain of islands approximately 20 miles offshore. Point Conception and the offshore islands offer the site some protection from the open waters of the Pacific Ocean. The water offshore is deep and navigable with a 50-foot mean lower low water (MLLW) depth at approximately 4,600 feet from land. An existing buoy mooring system is located a short distance west of the property for loading crude oil from a small storage facility west of Little Cojo.

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The terrain in the vicinity ascends from a rocky beach to the foothills of the Santa Ynez Mountains approximately three miles to the north. This range runs generally in an east-west direction and has a maximum elevation in this vicinity of 1,600 feet. The Santa Ynez Mountains rise steeply from the coastal terrace and generally restrict man's use of the land to a narrow strip between the ocean, the first foothills of the Santa Ynez range, and a portion of the inland Jalama Valley. Much of this land is used for pasture and cultivation. On some of the higher portions of the coastal terrace, and against the foothills, citrus crops are grown. There are a few scattered farmsteads.

For the most part, the soils of the area are relatively recent deposits derived from the underlying bedrock through the normal process of weathering and mass wasting. Because of their comparatively recent origin and mode of accumulation, the surficial deposits tend to be loose, porous, unconsolidated, or poorly consolidated. The soil or topsoil consists chiefly of clayey and sandy loams, ranging in thickness from less than one foot to greater than five feet. Terrace deposits form a thin mantle, generally less : than 60 feet in thickness on the wave-cut erosional surface of the underlying Sisquoc shale bedrock. A linear depression which transects the site has recently been identified as a possible fault.

An elevated wave-cut bench, ranging from 0 to 50 feet above sea level, is exposed in the sea cliffs. Wave action continues to erode the sea cliffs.

The proposed site is in a coastal drainage region that extends from the crest of the Santa Ynez Mountains to the Santa Barbara Channel coastline. The major drainages for the site are Canada del Cojo on the west and Barranca Honda on the east. Water beneath the land surface collects in large underground basins. It can be assumed that the water table will be near the surface during parts of the year.

The wildlife resources of the site itself are not considered expecially significant; however, because the area is remote and relatively undeveloped, it is in general, an important wildlife habitat. Terrace vegetation at the site is presently disturbed by cattle grazing. The riparian woodland in Canada del Cojo is an important regional resource and, in addition, provides habitat for mule deer, coyotes, raptors, and other large animals.

The Point Conception area is considered a sacred place to local Chumash Indians, as well as other Native American groups. Religious ceremonies continue to be conducted on, or near, the proposed site. A number of archaeological sites have been identified in the area of the site, including the historic village of Shisholop. These sites are important because they are relatively undisturbed and some are thought to contain cemeteries.

The proposed ING terminal site is situated approximately 3.5 miles east of Point Conception on the coastal terrace between two canyons, Canada del Cojo to the west and Barranca Honda to the east. The ship berthing facility, together with the seawater intake and discharge pipelines, will occupy approximately 30 acres of leased offshore sub-tidal lands. Most of the land within a five-mile radius of the site is open and undeveloped. The storage and vaporization plant will be located on a 209-acre parcel. Approximately 120 acres of this parcel will be developed. The site terrain slopes to the north with a 15 percent gradient after abruptly rising to the 40-foot level from the rocky beach. A mainline of the Southern

Pacific Railroad crosses the property, running along the coastline just north of the sea cliff. The plant will be constructed north of the railroad track. The roadway and pipe rack to connect the dock and trestle with the onshore facilities will cross under the track.

The site is part of a 975-acre parcel of undeveloped property owned by Southern California Edison Company (Edison). This property and most of the nearby area are now being used for cattle grazing. Edison estimates that a maximum of 200 head of cattle may use its property.

Situated within the local area are oil storage facilities near Government Point and a Coast Guard Reservation at Point Conception. The Coast Guard facility, located approximately 3.1 miles from the site, is fully automated, with no permanent personnel. A small, unpaved, private airstrip marked unsafe is located approximately half a mile east of the site.

Little residential development exists in the local area. The nearest residence to the proposed plant site is located approximately 4,000 feet to the east. This appears to be a small summer cottage or "second" home, situated between the railroad right-of-way and the coastal bluffs. Other structures near the site include: (1) a small beach cabana just to the west of the mouth of Canada del Cojo and 500 feet south of the site which is occupied intermittently during warm months; (2) oil storage tanks, equipment sheds, and a caretaker's shack clustered on the coast 2,000 feet west of the site; and (3) residences, barns, and sheds at the Cojo Ranch approximately 9,000 feet northwest of the site. Most of the existing residences are located on the Hollister Ranch, north and east of the site. The Hollister Ranch Corporation controls the largest of the few large land holdings in the area.

Public access to the Hollister Ranch is rigidly controlled, and recreational use of the beaches is denied to the public by the property owners who hold title to the land to the mean high tide line.

Scuba diving is popular in the Point Conception area because of the concentrated abalone, spiny lobster, and fish populations. Access for diving is by small boat from launching facilities at Gaviota Beach State Park situated approximately 11 miles east of the proposed site.

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The offshore area immediately adjoining the proposed LNG site, Cojo Reef, has been ranked by the Western Surfing Association as "fair". Cojo Point, west of the site, is considered "classic". Lefts and Rights, east of Barranca Honda and Gato, is rated "good". These areas are used by surfers, despite the vehicle access restrictions across the Hollister Ranch, which makes it necessary for surfers to boat to local beaches.

The main portion of the proposed LNG plant site has been zoned by the County as 100-AL-O, a Limited Agricultural District. Permitted uses include normal agricultural and farming operations (but with special limitations upon certain animal raising activities) and single-family residences. The minimum lot size is 100 acres, and the height limit of structures is 35 feet. The portion of the site lying between the mean high tide line, and the base of the bluffs overlooking the ocean is zoned BD (Beach Development). The BD district is highly restrictive in the uses permitted and according to Ordinance 661 (Santa Barbara County), as amended July 16, 1973, is "designed and intended to preserve and protect a limited natural resource, ocean beaches, which are an important resource in the economy of the County for the benefit of the general public, and of beach and bluff property owners...."

The 1966 General Plan for Santa Barbara County envisages the continuation of the existing open space and grazing uses throughout the local area. The plan does allow for oil-related activities in the local area subject to conditional use permits and review by the County. However, this does not constitute automatic approval for all oil-related development.

Section 5582 of the Act establishes the criteria to be applied for determining "remoteness" from human population. The recent

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population survey made by Western Terminal, detailed in Exhibit A-8 submitted pursuant to Subsection 5601(a), shows that the Point Conception site meets these criteria. According to Western Terminal's survey there are an estimated seven people, or four persons per square mile, living within one mile of the terminal site. An estimated 84 people, or 3.3 persons per square mile live within four miles. No evidence to the contrary was presented by any party.

The terminal site is also remote in terms of transient populations. There are no public roads nearby and rail passenger operations include only two trains daily.

No current efforts are being made by local, state, or federal agencies to acquire nearby lands for public recreational purposes. The Open Space and the Recreation Elements of the Santa Barbara County Comprehensive Plan (published in November 1974 and December 1974, respectively) both recommend continued low-intensity use and continued public access restrictions for the Point Conception area.

B. Description of the Proposed Facilities

1. Design of the Terminal

The proposed terminal is designed to receive LNG transported by ship; to unload and transfer the LNG into insulated storage tanks; and to withdraw, vaporize, odorize, and deliver the regasified LNG into a gas transmission pipeline. In addition to its ultimate average daily input capacity of 1.3 billion cubic feet per day (Bcfd) of natural gas, the plant will have a vaporization peaking capacity of an additional 300 MMcfd. This base load capacity will require three 550,000-barrel storage tanks for the LNG. The capacity of the plant, as set forth in the design and the requested permit, complies with the capacity limitations set forth in the Act.

As proposed in Application No. 57626, the project would be built to an initial (and final) average input capacity of 1.3 Bofd. As developed on the record herein, however, Western Terminal in fact, intends to build the project up to that capacity
in several construction stages, each of which would be related in magnitude and timing to the development of additional increments of gas supply In Indonesia and Alaska. As now envisioned, Western Terminal will first construct a terminal complex with an average input capacity of 500 MMcfd, the volume expected to be received at the outset from Indonesia under a 20-year contract. In the expectation that it will be able to contract for sufficient reserves in south Alaska, as well as to obtain increased deliveries from Indonesia, Western Terminal has applied to this Commission for a permit for a facility with expansion capability up to the full 1.3 Befd average input capacity.

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As designed, the project facilities consist of the following elements: (1) marine facilities, (2) LNG transfer facilities, (3) LNG storage tanks, (4) LNG regasification system, (5) onsite terminal support systems, (6) offsite terminal support facilities, and (7) gas transmission pipeline system. Summary descriptions of these facilities are set forth below.

(1) Marine Facilities

The marine facilities will consist of one ship berth located about 4,600 feet offshore at the seaward end of a concrete trestle supporting a roadway, utilities, and piping. The ship berth will be provided with a loading platform equipped with articulated arms, a service platform with a crane to load stores aboard ship, a control tower, gangways, berthing dolphins, walkway bridges, and mooring dolphins. Deck elevation will be 40 feet above MLLW.

Alongside the trestle a small boat dock will be situated for use by service craft. It will be equipped with boat darts to secure the line-handling boats when they are not in use. Buoys will be placed shoreward on the LNG berth, east of the trestle, to moor three tugboats, one work boat, and for small craft seeking a harbor of refuge.

The marine facilities are limited by the number of ships that _ can be offloaded. An estimated berth occupancy of 40 percent of berthing capacity is required to handle ships carrying an LNG input averaging 1.3 Bcfd.

(2) LNG Transfer Facilities

The ship berth will have five articulated unloading arms. Four of the arms will be for unloading LNG from the ship. They are to connect to a 32-inch insulated cryogenic line to carry the LNG along the trestle to the onshore storage tanks. The LNG unloading line, when not in use, is kept cold by recirculating LNG from the storage tanks. The fifth arm is to be connected to a 10-inch vapor return line. A vapor compression system is designed to handle the LNG vapors produced by displacement, heat leak, and pump energy. During ship unloading some of the vapor will be returned to the dock for use as makeup gas for the ship's cargo tanks and the remainder will be handled by absorption into the sendout LNG. (3) LNG Storage Tanks

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The LNG will be stored onshore at minus 260 degrees Fahrenheit (°F) at slightly above atmospheric pressure in 550,000-barrel cryogenic tanks, each of which will be constructed within an earthen basin that will serve as secondary containment. Each tank will be protected from frost heaving by an electrically heated base. The tanks will be double-walled steel with insulation in the annular space between walls. Two tanks will be required initially, and a third tank will be required for the full 1.3 Bcfd sendout. As originally proposed, the three tanks were to have been in a quadrature configuration. Western Terminal has revised the design of the plant so that they will be in an east-west linear arrangement. Each tank will be approximately 240 feet in diameter and 145 feet high.

(4) LNG Regasification System

Regasification will be accomplished by seawater-heated vaporizers supported by gas-fired vaporizers. Transformation of the LNG into gas will be accomplished by heat exchange with seawater for base load volumes and by gas firing for load leveling up to 300 MMcfd. Nine seawater vaporizers and three gas-fired vaporizers will be provided for operation at the 900 MMcfd level. Four additional seawater vaporizers will be added later to increase the capacity of the regasification system to the ultimate base load of 1.3 Bcfd. The total fuel gas usage of the terminal will be approximately 2 MMcfd, based on an average daily input of 1.3 Bcfd.

The LNG will be initially pumped out of the storage tanks by means of submerged primary LNG pumps which will supply secondary LNG pumps located outside the tanks. The secondary pumps will raise the LNG pressure sufficiently to achieve the required sendout pressure while also providing for the internal pressure drop within the regasification system.

The system will require the intermittent operation of a gas-fired trim heater to ensure that the gas temperature is no lower than 50°F upon delivery to the gas transmission system. The gas will also be odorized and metered prior to sendout.

Seawater will be pumped to the LNG vaporizers through a 9-foot diameter concrete pipeline extending seaward 2,500 feet from the onshore pump to an intake at an ocean depth of 30 feet below MLLW. The seawater return line will be an 8-foot diameter concrete pipeline extending 4,600 feet from shore to a depth of 50 feet below MLLW. The lines will be buried through the surf zones to points offshore where littoral sand drift is not affected.

After heating and vaporizing the LNG, the seawater effluent will be returned to the ocean in a once-through mode approximately 12°F lower in temperature as a result of being circulated through the LNG regasification system. A hypochlorite compound will be used to prevent fouling of the regasification system. The volume of water required to vaporize the ultimate base-load capacity of 1.3 Bofd will be on the order of 160,000 gallons per minute (gpm). (5) Onsite Terminal Support Systems

The onsite terminal facilities will be grouped within a 120-acre portion of the 209-acre property. The onshore elements will be enclosed by a security fence. Access will be controlled. Paving will be limited to internal roads and accessways for equipment. A system of open ditches with some underground piping and culverts will collect and discharge rainfall. Areas where hydrocarbon spills may occur will be graded for drainage to a containment area.

The terminal will be monitored by a continuously operating control system with an automatic shutdown capability. Emergency

shutdown stations will be located throughout the terminal at strategic operating points. Critical valves will be designed to shut down in a safe position in the event of failures. Detectors to identify unusual conditions will be installed throughout the terminal.

An earthen wall containment basin will be constructed around each LNG storage tank to confine any spill. Each basin will have a containment capacity in excess of the storage volume of the related tank. Equipment will be designed and positioned to isolate outbreaks of fire and fire-resistive coating will be used on critical equipment. Foam and chemical fire extinguishing systems which can be activated manually or automatically will be positioned at critical locations. A conventional seawater fire protection system will provide protection throughout the terminal. This system will also afford fire protection to the LNG tankers while moored at the terminal. Two fire trucks will be provided, one with water and foam capability, and the other with dry chemical capability.

A night illumination system will serve the berth, trestle and work areas of the terminal.

A liquid nitrogen system will be provided for terminal use, supply to the LNG tankers, and purging and inerting the LNG unloading facilities. The liquid nitrogen will be produced onsite by an air separation unit and delivered by truck to a storage tank on the trestle.

Plant and instrument air will be supplied by three air compressors. Two will normally be operating and one will be on standby. Any two of the machines will be capable of satisfying all of the air needs of the entire terminal, excluding the marine facilities which will use nitrogen as described above. The nitrogen system will be tied in with the instrument air system to serve as an additional backup. An air drier capable of drying twice the volume of the instrument air requirement will be provided. It will be regenerated $\frac{x}{2}$ by electric heating elements.

Diesel fuel for the tugs and other service craft, emergency equipment, and certain uses on the LNG tankers will be delivered to the site via railroad tank car or coastal tanker. The diesel fuel

will be stored onshore in a 5,000-barrel tank, which will be connected to the ship berth and small-craft service dock by a diesel fuel line.

Bunker[®]C fuel oil for the LNG ships will be delivered to the site by railroad or coastal tanker. The Bunker C fuel will be stored onshore in a 100,000-barrel tank, which will be connected to the LNG tanker berth by pipeline.

Natural gas will be used for the gas-fired vaporizers, the trim heater, and for the Bunker C fuel storage tank. The natural gas will be taken from the terminal product stream with a backup source from the odorized stream.

The water supply system for general terminal purposes will be served from onsite wells. Water storage will be provided by a 5,000-barrel tank. Potable water requirements for the terminal and LNG ships will be met by treating the well water and storing it in a 20,000-gallon onshore tank.

Raw sewage from the terminal and LNG ships will be collected and treated in a waste treatment system. The treated effluent will be discharged into the seawater return system.

A helicopter pad will be constructed at a point near the edge of the site.

(6) Offsite Terminal Support Facilities

The offsite support facilities consist of the access road, railroad spur and rail service, and an electric power transmission line.

As finally proposed by Western Terminal, the access road route follows the existing Hollister Ranch Road and is located near the coastline in the Point Conception area. It extends approximately ll.3 miles in a generally east-west direction from Gaviota Beach State Park to the proposed LNG site. A staging area adjacent to an existing commercial development along Highway 101 and about one mile east of Gaviota Pass will be developed for the LNG facilities' construction work force to park its vehicles; workers will be bused = from this area to the LNG site along the access road. The purpose of the road is to provide needed access for construction and operation of the LNG facilities. The staging area will be required only during the period that the latter facilities are being constructed.

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The proposed access road involves upgrading the existing Hollister Ranch Road to accommodate an average speed of 25 mph. The road will be a two-lame black top and will be upgraded to accommodate the volumes and vehicle weights of traffic required for project construction. Western Terminal proposes to continue the limited-access character of the road by restricting traffic to the Hollister Ranch and the LNG project vehicles.

The single rail line track which serves as Southern Pacific Railroad's main coastal corridor between northern and southern California passes adjacent to the proposed site. Temporary spurs will be constructed for rail delivery of construction materials and equipment. A permanent spur will be built to serve the terminal upon completion of construction activities.

An electric transmission line to the Point Conception site is proposed as a necessary ancillary part of the LNG project to provide up to 50 megawatts (mw) of power for operation of the terminal facilities at the ultimate delivery volume of 1.3 Bcfd with 3000 MMcfd of load leveling. Gas turbine generators will be installed onsite to provide electric power to meet the full load of the terminal in the event of interruption of service over the transmission line. In the event of total power failure, a battery powered system will instantly provide power to all instrumentation, control, and emergency lighting.

Edison will construct, own, and operate the power line as part of its electric utility system. The line will operate at 66 kilovolts (kv) and will extend approximately 35 miles from Edison's existing Goleta substation to the terminal. The general route Edison favors is in the vicinity of the coastline in the area from Goleta, west of Point Conception. The route proceeds in an eastwest direction from north of Glen Annie Reservoir to about Canada del Cementerio, turns south to approximately Vista del Mar School, heads west to Gaviota Pass, turns north and parallels Highway 101 to its intersection with Highway 1, and then crosses Highway 101 and continues in an east-west and finally north-south direction to the LNG site.

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As conceived by Edison, the power line will be supported on steel tower structures that may vary in height from 80 to 120 feet. The distance between structures is expected to range from 100 to 4,500 feet, depending on specific topographic characteristics along the route. Edison states the proposed power line will necessitate modifications to the existing Goleta electrical substation and the construction of a new substation near the Point Conception site. Edison has a 66-kv steel-tower structure right-of-way (50-foot width) between Goleta and Gaviota, with the exception of a gap of about two miles. If Edison's concept is followed, a rightof-way will have to be obtained from Gaviota to the intersection of Highways 101 and 1. A 500-kv steel tower structure right-ofway (500-foot width) exists from Highway 101 to the LNG site. (7) Gas Transmission Pipeline System

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PG&E and PLS propose to construct, own, and operate a buried 34-inch natural gas transmission pipeline that will receive the regasified LNG from the metering station at the outlet of the LNG terminal. The proposed pipeline will transport the odorized natural gas to connections first with an existing SoCal pipeline at Buellton, then with an existing PLS 34-inch transmission line at Coles Levee through the planned Ten Section gas storage field, and finally with an existing PG&E twin 34-inch pipeline near Gosford. The line will be designed to operate at allowable pressure of 1,440 pounds per square inch gauge (psig). No compressor stations are proposed.

Only one 34-inch line will be required for the first phase of the project. When the ING project is brought up to its ultimate planned level of 1.3 Bcfd (plus 300 MMcfd load-leveling capacity), a second 34-inch pipeline will be required beginning at a point 67 miles from the ING terminal and continuing for the balance of the ll2-mile route to its termination at Gosford, 1.5 miles southwest of the city limits of Bakersfield.

Right-of-way will be acquired as an easement. For the first phase of the pipeline, a 100-foot right-of-way will be required for construction and a 50-foot right-of-way will be maintained as

a permanent right-of-way. When the second 34-inch parallel pipeline is constructed, a right-of-way 100 feet wide will again be required, but this can be expected to extend the original construction right-of-way by only 25 feet, the normal spacing between the two lines. The permanent right-of-way maintained for the double pipeline will thus be approximately 75 feet.

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2. <u>Construction Schedule</u>

Western Terminal states that the actual onsite construction of the project will begin at Point Conception on March 1, 1979 with installation of support facilities. In August 1979 excavation will be undertaken to prepare the site for the LNG tank foundations. This step will include all necessary surveying of the site for construction. In November 1979 pouring of the foundations for the LNG tanks will begin.

According to Western Terminal's schedule the next step will commence in January 1980 with the construction of the marine facilities and the seawater system. The marine facilities will be completed by August 1981 and the seawater system will be completed by January 1982. The ING tanks will be individually erected beginning in February 1980. The completion of the last of the three tanks will be completed by July 1, 1982, following project startup. One month after the start of construction of the first ING tank, installation of the vaporization system, as well as construction of the utilities and offsites, will begin.

If Western Terminal is able to achieve this construction schedule, startup of the terminal will occur on, or about June 1, 1982, and the plant will become operational November 1, 1982.

3. Service Life of the Terminal

The physical service life of the terminal is estimated to be not less than 25 years. Individual components of the terminal facility may not have a 25-year life, but their periodic replacement will be a part of the normal maintenance of the terminal.

4. Gas Supply for the Terminal

The ING which will be received at the proposed ING terminal will originate from natural gas liquefied in Indonesia and natural gas liquefied in south Alaska.

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PacIndonesia has entered into a 20-year contract with Pertamina for the purchase of an average of 620 billion Btu of LNG per day in Indonesia. PacIndonesia will receive the LNG at shipside in Arun, Indonesia. The LNG will be transported to Western Terminal's facilities in southern California by LNG vessels chartered by PacIndonesia. This will result in the delivery of the equivalent of approximately 500 MMcfd of gas at Point Conception.

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Construction of the liquefaction facilities in Indonesia will not commence until the necessary federal approvals are obtained by Western Terminal, and the required financing is secured by Pertamina. It is reasonable to conclude that a delay in securing a permit from this Commission to construct a receiving terminal would correspondingly delay start of construction of the liquefaction facilities in Indonesia.

The condition of the Pertamina contract requiring all necessary United States permits and authorizations to be obtained before the project may proceed has been extended on three separate occasions. The last extension expired October 6, 1977. Thus, Pertamina now has the right to cancel the contract at any time, but has not yet done so. The SoCal vice president responsible for the gas supply contract between PacIndonesia and Pertamina, addressed this matter as follows in his testimony in Case No. 10342:

"Based on discussions that we have had with them (Pertamina), not only within the last two weeks, but within the past year...I think that would cause them to cancel the contract because they know that there would be further delays there, and they're anticipating a project that begins sometime in the first half of 1982. They have those revenues planned.

"And they recognize that if the California site at Point' Conception is not chosen in that time frame, it's unrealistic to expect those revenues to begin.

"So, from the state standpoint that's the critical thing with them."

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Pacific Alaska LNG Associates (Pacific Alaska)^{*}/ has entered into contracts with several natural gas producers in the Cook Inlet are a contract alaska. The gas will be delivered to Pacific Alaska at a central point in the various producing fields. It will then be transported via pipeline to Pacific Alaska's proposed liquefaction facilities at Nikiski, Alaska. After liquefaction, the LNG will then be transported in LNG ships to Western Terminal's facilities by Pacific Marine Associates.**/

Pacific Alaska has also entered into separate agreements with PG&E and SoCal agreeing to deliver and sell at the tailgate of the LNG receiving terminal to each utility one half of all quantities of gas Pacific Alaska is obligated to take and/or pay for under the terms of its gas purchase agreements less the amount of gas consumed in transporting, liquefying, shipping, and regasifying such gas. Through these gas purchase agreements, the south Alaskan gas producers have agreed to sell and deliver to Pacific Alaska and it has agreed to take or pay for an average daily quantity of gas determined by dividing the quantity of estimated proven reserves in the field by 7,300 days (20 years). This obligation commences on the date of the first deliveries, or June 1, 1981, whichever is earlier.

Both parties to these contracts have rights to terminate if the Federal Energy Regulatory Commission (FERC) approvals are not received by July 1, 1978. The buyer has six months after receipt of the FERC approval, but not later than January 1, 1979, to receive all state and local approvals or additional rights to terminate arise. Thus, the contracts for South Alaskan gas could be lost by delay beyond January 1, 1979.

Pacific Marine Associates is a partnership, the parties to which are Pacific Gas Marine Company, a wholly owned subsidiary of PG&E and Pacific Lighting Marine Company, a wholly owned subsidiary of PLS.

Pacific Alaska is a partnership consisting of PacAlaska, a PLS affiliate, and Alaskan California LNG Company, a PG&E subsidiary. Pacific Alaska will own and operate a liquefaction terminal in Alaska. It will purchase and liquefy south Alaskan natural gas and sell the regasified LNG to SoCal and PG&E.

It is Western Terminal's position that if Point Conception is not approved as the site for the LNG receiving terminal, the existing gas supply contracts will be lost. Western Terminal's president testified:

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"If we don't get Point Conception in this permitting process, if the CPUC recommends another site, we have lost the gas supplies that cause our urgency in going forward."

C. Construction Costs

1. Phased Construction Contemplated

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As developed on the record, the Phase I of terminal construction will provide for importation and regasification of an average daily volume of 500 MMcfd gaseous equivalent of Indonesian LNG. Western Terminal's exhibits show that this phase of construction will be completed by April 1982. Phase II will accommodate the PacAlaska LNG project. The first increment of the PacAlaska project will require facilities to process an additional 200 MMcfd and is scheduled for completion in November 1982. However, as stated above, it does not appear likely that PacAlaska will secure sufficient gas supplies for Phase I of its project until at least 1984. The second increment of the PacAlaska project will require terminal capacity for another 200 MMcfd. Western Terminal's showing indicates completion of Phase II in November 1983. Completion of Phase III, the final stage of construction, increasing terminal capacity of 1.3 Bofd, however, will occur only after Western Terminal is able to secure additional supplies of LNG. This final phase will bring the terminal up to its ultimate capacity.

2. Construction Costs of Terminal

Western Terminal estimates terminal construction costs to process Indonesian LNG (Phase I) will be about \$334.8 million in mid-1977 dollars. It will cost an additional \$13.1 million to increase the terminal capacity to handle the first 200 MMcfd

The cost figures in this paragraph are base construction costs which do not include the following: contingencies, start-up costs, filing fees, in-house costs, spare parts, financing fees, working capital, and allowance for funds used during construction.

increment of the PacAlaska ING project. Handling the second increment of the PacAlaska project will cost another \$4.3 million, resulting in a terminal capacity of 900 MMcfd (Phase II) costing an estimated \$352.2 million. Increasing the terminal to its ultimate capacity of 1.3 Bcfd (Phase III) will cost \$39.8 million, bringing the total construction costs to \$392.0 million.

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Phasing of project construction adds approximately \$13.2 million over what it would cost to construct the ultimate 1.3 Bcfd terminal in one phase. The cost of phasing of project construction has been included in the above figures since we believe this would be the manner in which construction would actually proceed. (Exhibit A29)

3. Construction Cost of the Pipeline

In consonance with the phased construction of the terminal, PG&E and PLS plan to construct initially only a single transmission pipeline over the ll2-mile route from Point Conception to Gosford in Kern County. The single pipeline will provide sufficient capacity to transport up to 1.2 Bofd of regasified LNG - 900 MMcfd base-load and 300 MMcfd peaking. Thus, the single line will allow the two utilities to transport to their gas distribution systems the full output of the terminal through the construction of Phase II - 500 MMcfd from Indonesia and 400 MMcfd from south Alaska. When additional volumes of gas supply are obtained (Phase III), PG&E and PLS will loop 45 miles with a second pipeline. The line will then be capable of transporting (without requiring compressors) the ultimate output capacity of the terminal - 1.3 Bofd base load and 300 MMcfd peaking. Western Terminal estimates the construction cost of the looped pipeline with three metering stations to be \$107.8 million.

Western Terminal subsequently submitted Exhibit A-99 which provides costs associated with the addition of certain environmental impact mitigating measures. The mitigation measures haves a total estimated cost impact of \$4,555,000 for the 1.3 Bcfd terminal. This additional cost is associated with those measures planned to reduce adverse air quality impacts, reduce access road environmental impact, minimize effects of the seawater system on fish population, and minimize disturbance of archaeological deposits.

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4. <u>Staff Review of Project Costs</u>

The Commission staff presented an analysis of the reasonableness of the cost estimates presented by Western Terminal. Staff made its review by evaluating the high cost components of the LNG terminal. The component costs reviewed by the staff included the LNG unloading system, LNG storage, the LNG regasification system, the seawater system, utilities and offsites, and the dock and trestle.

The Commission staff basically agrees with the cost estimates made by Western Terminal for the LNG unloading system, for the LNG regasification system, and for the utilities and offsites. Staff also believes that the cost estimates for the LNG storage tanks are reasonable. It noted, however, that these tanks are presently designed to a 0.4 gravity (g) seismic criterion. If these tanks were designed for a 0.6g seismic criterion as recommended by staff's environmental consultants, the costs of the tanks could increase substantially. Based upon a work paper supplied to the staff by Western Terminal, the costs for three storage tanks could increase as much as \$34 million. Ingrounding of the tanks would cause the costs to go even higher.

With respect to the seawater system cost estimate, staff found the material cost, \$14 million, to be fairly accurate. The staff noted, however, that the installation cost of the system, estimated to be \$47 million, could vary considerably. The staff pointed out that the installation cost estimate is based upon a sandy ocean floor soil condition. The staff concluded that if the soils investigation revealed a rocky ocean bottom, or if the location of the seawater system was moved, substantial cost increases could occur. The staff also noted that the fish return system was conceptual only, and its costs could be accurately estimated only when a final design was made.

As to the dock and trestle cost estimates, \$78 million, the staff believes "there exists the potential for a large cost overrun". The staff pointed out that the cost estimate for this

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component was made by Fluor Ocean Services located in Houston, Texas. Although requested, the staff did not obtain access to the design basis used and the work papers developed in sufficient time to prepare its report. The staff also noted that the cost estimate shown in the application was based on a steel piling supported trestle as designed for Oxnard, whereas Western Terminal testified that it planned to construct a concrete trestle for Point Conception. The staff also noted Western Terminal had, at that time, only recently signed a contract with Raymond Technical to design the trestle for Point Conception, but that this design has not been completed and was not the basis for the cost estimate as it appears in the application. Staff requested to review the design developed by Raymond Technical and the resultant cost estimate for the dock and trestle. This information was provided subsequent to preparation of the staff report on cost analysis.

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In its report staff also pointed out that the exact seawater and seismic conditions to be used in the design of the trestle have not been established, nor had the soils report for the ocean bottom been completed. The staff engineer testified that soil conditions will affect the installation of the piles and their length, thus their costs. Based upon the foregoing, he made the reasonable conclusion that there was a potential for a large cost overrun on the dock and trestle.

The staff believes that Western Terminal's cost estimate is adequate for a preliminary estimate. However, the staff also believes a number of contingencies could occur before construction of the project is completed which would affect the construction costs. Such contingencies include revised seismic design criteria, revised LNG safety requirements, relocation of terminal facilities, and construction problems and delays. The staff pointed out that each of these factors presents the potential for significant cost overrun, and that only when final location, design criteria, and safety standards have been established, can reasonably accurate

cost estimates be made. Western Terminal seems to agree. One of its witnesses testified that appropriate contingency for construction cost estimates could be as high as 15 to 16 percent.

The staff takes the position, however, that once a final site has been chosen and a final design has been made for the terminal, Western Terminal may be able to construct much of the terminal without experiencing substantial cost overruns. This conclusion is based on staff's review of the type of contract Western Terminal intends to enter into with its main contractor, Fluor Engineers and Constructors, and the manner in which Fluor Engineers and Constructors intend to carry out the actual construction of the terminal. Staff also believes that its role in monitoring construction costs will also help prevent significant cost overruns. The staff points out that the truly relevant cost test to be utilized in determining whether to issue a permit to construct and operate, is the relative unit costs of gas from an LNG project as compared to other gas supply projects.

Staff recommends that Western Terminal be required to submit updated cost estimates when authorization is sought by SoCal and PG&E to guarantee the construction loan of Western Terminal.

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D.

Cost, Safety and Construction Monitoring Plans

The Act requires the Commission to "establish a monitoring system to ensure that any terminal authorized . . . is constructed and operated in compliance with all applicable regulations adopted and terms and conditions established . . . " (Section 5637) and to "monitor costs incurred in the construction . . . of any terminal . . . in order to determine if the costs are in the best interests of the ratepayers." (Section 5638)

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In response to these provisions, the staff introduced the following exhibits into evidence in these proceedings. Exhibit A-46, "Report on Cost Monitoring," is a plan which would establish a staff cost monitoring team composed of auditors and other professionals assigned to the project on an ongoing basis to assure that all costs are prudently incurred in accordance with the plans and specifications approved for the project. Exhibit 0-76, "Report on the Safety and Construction Monitoring Program of Western LNG Terminal Associates' Liquefied Natural Gas Facilities at Point Conception," proposes the establishment of a staff monitoring team to ensure that the plant is designed, constructed, and operated in a safe and reliable manner.

Cost Monitoring Plan 1.

The staff's cost monitoring plan would establish a cost monitoring team composed of auditors and other professionals assigned to the project on an ongoing basis to assure that all costs are prudently incurred in accordance with the plans and specifications approved for the project. Under the staff plan, the members of this team would need to be thoroughly familiar with the scope of the project and the project's budget. They would need to be made aware of changes in the scope of the project so that they could identify potential cost overruns, budget changes, or problem areas as they arise. The staff states that the intent of its plan is to work closely with Western Terminal's project management team, conferring on any problems as they arise, thus giving Western Terminal the

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opportunity to address the problem areas before incurring costs which could conceivably be disallowed for ratemaking purposes.

Under-its plan, the staff proposes to submit to the the Commission and other regulatory authorities, monthly progress reports which would state the percentage of project completion, percentage of time elapsed in the overall schedule, summary of work accomplished, cost overruns or potentials for cost overruns and any other facts necessary to determine whether the construction costs of the terminal were prudently expended in the ratepayers' interest.

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According to the staff, Western Terminal has not considered interaction with the Commission in the preparation of its management plan. The staff recommends that, if Western Terminal is granted a permit for construction of the project, it submit a management plan to the Commission which would include the following:

- Organization charts identifying project management staffing to the project.
- A list of all contractors, subcontractors, and major equipment suppliers, accompanied by performance criteria for each company.
- 3. Western Terminal's latest cost estimates including any necessary supporting documents.
- 4. The latest detailed construction schedules including network plans.
- 5. Provisions in all specifications for prospective bidders that the Commission reserves the right to audit their records should they be granted a contract to perform a portion of the work or supply some of the materials or equipment.
- 6. Complete documentation for each change requiring a contract change order.
- 7. Provision for weekly meetings between Western Terminal and/or its contractors with the Commission Cost Monitoring Team.

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8. Provisions for onsite office space for the Commission Cost Monitoring Team.

While no party presented evidence in opposition to the staff's cost monitoring plan, Western Terminal in its Interim Brief voiced exception to the portion of the staff monitoring report which provides "the CPUC staff should be present at all meetings where changes in scope are being proposed". Even though, on cross-examination, the staff granted that its only interest at any such meetings would be to observe, Western Terminal takes the position that staff's view is entirely unacceptable, and that such an intrusion into the management of the terminal is unwarranted and totally outside the scope of the monitoring envisioned by Section 5638 of the Act. Western Terminal contends that, because it is willing to provide all the information necessary for the timely and proper functioning of the Cost Monitoring Team, there is no reasonable basis for this procedure suggested by the staff.

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Staff presence at meetings where changes are being proposed is essential to its ability to form a valid judgment as to the reasonableness of the action taken and therefore to make appropriate recommendations to the Commission with respect to the proper ratemaking treatment that should be utilized. We are not indicating that staff should be any more than a silent observer at these meetings, staff members should not become involved in any way in the discussions and resultant action. Providing minutes of these meetings to staff is not an adequate alternative to attending the meetings. Minutes structured after the fact, would do nothing more than bootstrap the decision reached after verbal give and take.

We conclude that the staff's cost monitoring plan is reasonable and should be adopted.

2. Safety and Construction Monitoring Plan

During Phase I of OII-I, Western Terminal was not prepared to cross-examine or prepare direct evidence with respect to the staff's safety and construction monitoring plan. Based on applicant's request, this matter was deferred to Phase II.

The terms and conditions and the environmental mitigation measures adopted in this decision require that the impacts of the

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construction of the terminal, access road, gas transmission pipeline, and electric transmission line be monitored during construction so that procedures, locations, and/or methods employed can be modified to mitigate these impacts to the extent feasible. Based upon the record in this proceeding, it is clear the Commission must monitor the costs, safety, and environmental aspects of the project. We are, therefore, ordering that Phase II of OII-1 shall consider the extent to which staff's proposed monitoring program (safety and environmental) shall be implemented.

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The record also shows that to obtain the necessary expertise for this endeavor, the Commission will have to go outside of its own staff occasionally and contract with private consultants, other state agencies, and appropriate county agencies to assist the Commission staff in reviewing the plans and specifications and to provide other services as required.

The monitoring programs will help to ensure that the ratepayer receives a reliable and safe source of gas at the minimum cost possible. The ratepayers will receive the benefits from any new gas supplies received by PG&E and SoCal and should, therefore, bear the cost of the new supplies, including the cost of establishing and implementing the programs. These monitoring programs are mandated by the Act and apply only to this specific project and, therefore, should be subject to reimbursement by the applicant (Western Terminal).

Therefore, Western Terminal will be required to reimburse the Commission for the continued costs of processing these applications and investigations, as well as the costs associated with the establishment and implementation of the cost, safety, and environmental monitoring programs ultimately adopted by the Commission.

E. Financing

1. Capital Requirements

The instant application addresses only the construction of an ~ ING terminal and its associated pipeline in California. However, the ING terminal is merely a part of an overall project to deliver

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LNG to California from Indonesia and South Alaska. When analyzing the financial requirements of the terminal project, it is necessary to review the financing requirements of the applicant and its sponsors PG&E⁻ and PLC for all aspects of the PacIndonesia and Pac-Alaska LNG projects.

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Western Terminal's Exhibit A-17 shows the total investment for PacIndonesia project will be \$596 million and for the first and second phase of the PacAlaska project to be \$886 million and \$386 million, respectively (based on mid-1977 dollars). The cost of the gas transmission pipeline from the terminal has not been included in those investment requirements.

The following tabulation shows a breakdown of the various elements of these two LNG projects:

	Plant		II A & VIII A		
			Capital	Capital Total	
PacIndonesia Project		(M1d-1977	\$/Thousan	ids)	
Pac Indonesia Project . Western Terminal	\$	564,544	\$24,000 7,556	\$	24,000 572,100
	\$	564,544	\$31,556	\$	596,100
PacAlaska Project					
Phase I		•			
PacAlaska LNG Associates Liquefaction Facilities Alaskan Pipeline System Pacific Marine Associates Western Terminal	\$	466,255	\$29,592	\$	663,500
		195,720 24,250	1,471 1,250		197,191 25,500
Total Phase I	\$	853,878	\$32,313	\$	886,191
Phase 2					
PacAlaska LNG Associates Liquefaction Facilities	\$	140,097	\$14,081	\$	186,500
Pacific Marine Associates		197,921	1,476	_	199,397
Total Phase 2	\$	370,340	\$ <u>15,557</u>	\$	<u>385,897</u>
Total PacAlaska Project	\$	1,224,218	\$ <u>47,870</u>	\$]	,272,088
Total LNG Projects	\$	1,788,762	\$79,426	\$]	,868,188

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The above tabulation indicates that the total investment in the PacIndonesia and PacAlaska LNG projects will be \$1.87 billion. Exhibit A-T8 of Western Terminal shows that of the \$1.87 billion, the amount of \$1.65 billion will be cash requirements that must be financed. Also, Exhibit A-18 indicates that \$188 million will be the required equity investment of both PG&E and PLC.

The pipeline facilities for the transmission of the regasified natural gas from Point Conception to PG&E's line at Gosford, California, is estimated to cost \$117 million. (Ex. A-14, p. 4) This pipeline will be jointly owned 50% by PG&E and 50% by PLS. The pipeline will be financed conventionally with no special financing earmarked for the pipeline construction. Rather, the capital will be provided from general corporate financing as part of PG&E's and PLC's overall construction programs.

2. Project Financing Proposed

Western Terminal proposes to finance the terminal facilities with project financing. In project financing, lenders rely chiefly on assurances of adequate revenues flowing from the project itself through contractual arrangements or tariffs, rather than on the direct general credit of the sponsoring companies, in this case, PG&E and PLC. Although the sponsors' credit is indirectly involved, the chief recourse of the security holders is through operations of the project.

Moreover, project financing of this LNG terminal will permit the project to be financed while at the same time permitting the financial integrity of the sponsoring companies to be preserved. Project financing is particularly appropriate for new, single-purpose endeavors such as herein proposed.

The record shows that project financing is the least costly feasible method to finance the terminal. Both staff and Western Terminal's financing analyses demonstrated that project financing results in lower costs to the consumer because it permits the use of a greater portion of lower cost debt in the capital structure

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of the project in comparison to other conventional types of financing. The proposed capital structure is 25 percent equity, to be invested by PG&E and PLC, and 75 percent debt. Western Terminal has estimated a 10 percent cost of debt for these LNG projects.

The record shows, however, that such financing will be available only if the required revenues assurances for lenders are built into Western Terminal's contractual arrangements and tariffs.

Western Terminal's financial witness testified that to be able to project finance these LNG supply projects, it will be necessary for PG&E and SoCal to obtain authorization from this Commission to guarantee the Western Terminal construction loan. Commission approval will also be necessary to allow the sponsoring companies to recoup all of their reasonable costs. He stated these assurances must be forthcoming before actual financing takes Place, and that the lenders will require assurances that the sponsoring companies will be able to meet their equity investment requirements. He said, "The fact of equity having to go in concurrently or just ahead of debt is just a fact of life . . . your equity is going to have to be in there. That is just a basic principle."

While it is not necessary for us to resolve this issue in this decision inasmuch as PG&E and SoCal will have to file a separate application with the Commission to obtain such assurances, we would be remiss if we did not clearly point out to all concerned that this Commission does not intend to deviate from its policy of delineating the rights and duties of investor and consumer.

We have stated in the past that the California consumer will not be required to become an involuntary investor, with no control over management, in projects that lawfully must be initiated by the utility owner or debt holder. The project financing that we will approve by subsequent decision, after all other regulatory approvals have been obtained, <u>must</u> be able to meet the foregoing criteria.

3. <u>Review of the Financing Plan</u>

The staff introduced a number of exhibits on the financial aspects of The application. It should first be pointed out that staff's analysis of the financing techniques proposed for the LNG projects clearly establishes that project financing is the best method to utilize. The key economic indicators reviewed by the staff in its analysis are highest in those tables assuming project financing. Also, staff asserted that PG&E will, even assuming its large capital A. 57626 et al. acb 🕈

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requirements over the next five years, be able to finance its equity investment in the LNG projects.

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Staff^Ts presentation indicated that it is concerned about the ability of PLC to finance its share of its investment in LNG projects. Staff raises this issue because applicant has stated that before any financing of LNG projects takes place, the equity investment must be tied down. This concern was based on PLC's statement to staff that its investments in gas supply projects will be financed with common stock and that in escalated dollars, this financial burden over the next five years will be \$708 million. In light of this response, it appeared to staff that when realizing PLC presently has 23 million shares of outstanding stock, PLC might experience difficulty in marketing 37 million additional shares. Staff was concerned that if at some point PLC was unable to market its stock to raise capital for its equity investment in the projects, SoCal would require extraordinary rate relief which would have significant effects on SoCal's ratepayers.

Based upon rebuttal testimony of Western Terminal, it now seems that some of staff's concerns are unwarranted.

Western Terminal's rebuttal shows that PLC has financed approximately \$75 million already for proposed gas supply projects. These amounts will serve to reduce the amount of new equity required to be issued after construction starts. Moreover, it also demonstrates that PLC will finance its portion of the required investment in the LNG projects with issues of common stock, preferred stock, or convertible debentures. Also, straight debt will likely be used on a short or medium term basis to lengthen the period over which equity funds are to be obtained.

This rebuttal also indicated that it is unlikely that the convergence within the next five years will occur as stated in the capital budgets submitted to the staff. Western Terminal's witness indicated that its submittal to staff represented PLC's goals and ______ did not necessarily reflect real world conditions. A. 57626 et al. acb *

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In fact, Western Terminal's financial witness testified to the current status of the various gas supply projects of PLC. It is not necessary to describe the various stages of the projects identified. It does appear, based on the testimony of Western's financial witness, that due to delays being experienced with other gas supply projects, PLC will not require all the financing within the time frame shown in the projected capital budgets supplied to the staff. The record is not clear when the other gas supply projects of PLC will reach the stage of requiring additional financing of the magnitude indicated in the capital budgets supplied the staff. When PG&E and SoCal come before this Commission for authorization to guarantee Western Terminal's construction loans, more definitive facts may be available to indicate the status of all PLC's gas supply projects.

The PacIndonesia project has been determined to be in the public interest by the DOE. In Opinion No. 1 of ERA, an all-events, costof-service tariff as requested by applicants was found not to be in the public interest. This finding and conclusion was in agreement with this Commission's continuing position on the subject and as reflected in the Commission's briefs in the PacIndonesia filing before the appropriate federal regulatory bodies (FPC, ERA, FERC). The Commission adopts the positions set forth in its briefs before the FPC, ERA and FERC in the <u>PacIndonesia</u> proceedings (Dockets Nos. 77-001-LNG; CP74-160, CP74-207, CP75-83-3.)

The PacIndonesia project, including the Point Conception terminal, appears to be the most viable gas supply project, and the first project that will have to be financed. The evidence is convincing that the proposed terminal can be financed, assuming that market conditions are normal, that security arrangements and return on equity are deemed adequate by the investors, and that regulatory authorities approve the tariffs and other matters essentially as proposed. Given the same conditions, the record indicates that the_ PacAlaska project, which will follow PacIndonesia, can also be financed. A. 57626 et al. ' acb*

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> In this proceeding, it is the contention of Western Terminal that costs had been incurred to date for the development of terminal sites other than Point Conception. There were two sites mentioned in particular, Los Angeles Harbor and Oxnard, that had been under consideration for an LNG Terminal in California. The record indicates that the costs incurred for these two potential sites include elements of the development of a terminal that would be applicable to the Point Conception site. Since the filing of this application, expenditures for other sites have also been incurred by Western Terminal.

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It is the intention of this Commission to recognize all prudently expended costs for Los Angeles Harbor, Oxnard, Point Conception or any other potential sites as part of any LNG terminal project ultimately constructed in California. However, in connection with the staff's Cost Monitoring Plan, all costs being incurred for the development of an LNG terminal in California are being examined and will continue to be examined to determine their prudency.

F. Cost of Service

Western Terminal's Exhibit A-29 presents an estimate of investment requirements and cost of service for 500, 700, 900, and 1,300 MMcfd capacity incremental expansions of the LNG terminal facilities in mid-1977 dollars. The total investment requirements for each phase of development of the LNG facilities is: \$572,100,000 for 500 MMcfd; \$591,276,000 for 700 MMcfd; \$597,600,000 for 900 MMcfd; and \$650,100,000 for 1,300 MMcfd. Should the facilities be constructed without phasing them, as shown in Exhibit A-14, the total investment requirement is \$681,000,000 for 1,300 MMcfd.

Under the phased approach of Exhibit A-29, the fifth-year unit cost of service of the terminal, not including the pipeline, is 56 cents per million Btu (MMBtu) for 500 MMcfd; 45 cents per MMBtu for 700 MMcfd; 36 cents per MMBtu for 900 MMcfd; and 31 cents per MMBtu for 1,300 MMcfd. Assuming no phasing of construction, the fifth-year unit cost of service is 34 cents per thousand cubic feet (Mcf).

A. 57626 et al. acb *

Exhibit A-14 shows that the estimated annual cost of service related to the pipeline is \$11,662,000 in the first year of operation, and \$18,561,000 in the fifth year of operation. According to Exhibit A-14, the unit cost of service for the pipeline is \$0.02 per Mcf in the first year, and \$0.04 per Mcf in the fifth year.

Exhibit A-37a illustrates the cost impact on SoCal's average consumer price of gas in mid-1977 dollars. This exhibit demonstrates that in the anticipated first calendar year of full operations (1984), the cost impact of 450 MMcfd^{*} upon SoCal's average consumer price of gas is 27 cents per Mcf; in the fifth year the cost impact is 13 cents per Mcf.

Exhibit A-47 illustrates the LNG cost impact on PG&E's average consumer price of gas. In the first calendar year of full operations (1984), the cost impact from receiving 450 MMcfd is 19 cents per Mcf; in the fifth year the cost impact will be 21 cents per Mcf.

Exhibit A-48 sets forth the cost impact of the Indonesian LNG alone on SoCal's average consumer price of gas in mid-1977 dollars. The cost impact in the first year of full operation is 20 cents per Mcf and in the fifth year the impact is 12 cents per Mcf. Exhibit A-47 demonstrates the cost impact of the Indonesian LNG alone on PG&E's average consumer price of gas. In the first full year of operations, the average consumer cost impact is 12 cents per Mcf and 21 cents per Mcf in the fifth year of operations.

The evidence presented by Western Terminal shows the LNG projects' impact on the rates that the gas distribution companies will charge the natural gas consumers in California. This impact depends upon the cost of new gas supply to the distribution companies and upon the then existing quantities and costs of all their other supplies of gas.

*/ This represents SoCal's 50 percent charc of the project gas supply of 900 MMcfd gas from the PacAlaska and PacIndonesia projects.

A. 57626 et al. Alt-RDG-im

This opinion presents an opportunity to put Western Terminal on notice with respect to an important cost of service element, federal income tax expenses. The cost of service passed from Western Terminal to its public utility affiliates (PG&E and SoCal) will receive careful scrutiny. Potential for abuse exists wherever regulated utility monopolies have procurement transactions with non-public utility affiliated companies. Accordingly, when Western Terminal commences delivery of gas to PG&E and SoCal we must decide if the price paid by the public utilities to their supplier affiliate is a reasonable expense for ratesetting purposes.

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Western Terminal will have the option to account for accelerated depreciation and investment tax credit (ITC) by either flow through or normalization. If Western Terminal flows through the tax deferral and savings from taking accelerated depreciation and ITC, it will have a reduced revenue requirement and gas users will have lower rates. The normalization route, if elected, will mean the effect of accelerated depreciation and ITC are largely ignored, and the consumer gets the prize of higher gas rates resulting from fictitious tax expense being passed his way. We are certain that the public utility partner s in Western Terminal are aware of our longstanding position on the normalization versus flow through issue.

Western Terminal is hereby put on notice that if it elects to normalize we will make a ratemaking adjustment to SoCal and PG&E expense for Western Terminal gas to reflect the flow through of tax savings. We may not make Western Terminal adopt flow through and we may not direct PG&E and SoCal to not pay their affiliate a gas price that reflects normalization. But we can impute tax savings available to Western Terminal and pass the benefits on to California's ratepayers in our ratemaking process.

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X. THE ALTERNATE SITES

A. <u>Camp Pendleton</u>

1. <u>Site Description</u>

This site is ranked first among four in the final report of the CCC. It is on a southwest-facing coastal terrace in San Diego County within the boundaries of the Camp Pendleton Marine Corps base, about 10 miles north of Oceanside and five miles south of the Edison nuclear power plant at San Onofre. It is bounded by Highway 5 on the east and Horno Canyon on the north. The site itself is barren except for scrub grasses.

The site encompasses about 100 acres of the coastal terrace which has a gentle southwestern slope of less than 5 percent. Bluffs having an average height of 90 feet front the beach, which ranges in width from 40 to 100 feet.

The terrace deposits of Salinas clay loam tend to be loose, porous, unconsolidated or poorly consolidated, and expansive. They average three to five feet in depth and are underlain by Monterey formation and San Onofre formation bedrock materials. This area is prone to soil creep, soil expansion, and large landslides. The cliffs are actively eroding, largely as a result of landslide activity. Landslides ranging from a few feet to 400 feet are not uncommon in this region.

The site is not located within any major groundwater basin. Surface drainage is effected predominately through sheetflow (off the terrace to the ocean) and through Dead Dog Canyon, the southwest trending barranca that transects the site. This barranca has shown an average erosion rate of 15 feet per year.

No active faults have been identified within the Camp Pendleton area. The nearest active fault is the South Coast Offshore Zone of Deformation which is six miles west and is ascribed a maximum credible earthquake (MCE) of 7-1/4 magnitude (0.5 to 0.67g). The Cristianitos fault lies three miles north of the site. It exhibits _ no evidence of any fault movement in the past 500,000 years.

Winds exceed 25 knots five days a year. Wave heights exceed six feet nine days each year.

2. Conceptual Layout of Terminal

At the request of the staff, Western Terminal produced conceptual layouts for a terminal at each of the alternative sites ranked by the CCC. In each case the terminal is designed to receive, store, regasify, and deliver to a transmission pipeline the same ultimate capacity as planned for Point Conception. As the basis for developing the conceptual layouts, Western Terminal used the engineering design for the proposed Point Conception terminal modified to fit the topographical, environmental, and other peculiarities of each particular site.

There are certain major modifications in design involved in mitigating measures desired by local and state authorities at each site; therefore, the staff requested Western Terminal to provide design and cost data on these modifications. At Camp Pendleton these mitigating measures concern: building an undersea tunnel in lieu of a trestle between ship berth and onshore facilities, placing the LNG storage tanks below grade, and utilization of nuclear power plant cooling water in the vaporization process.

In the following descriptions of conceptual layout at each of the three alternate sites only those portions of the terminal which are significantly different from the basic Point Conception design are discussed.

Marine Facilities

The ship berth at the Camp Pendleton site would be 8,700 feet offshore at the seaward end of the trestle. The cryogenic transfer line which carries LNG from unloading arms at the ship berth to the shore facilities would require a pipeline 36 inches in diameter because of the longer trestle length. The seawater intake line would have to extend 3,200 feet offshore to reach a water depth of 30 feet. The cooled seawater discharge line would extend 8,500 feet to reach a water depth of 50 feet. A. 57626 et al. - bf

Western Terminal's design for an undersea tunnel as an alternative to the trestle at Camp Pendleton calls for a two-chambered structure. One would be used for LNG transfer, recirculation, and vapor-return lines; the other would provide for maintenance, communications and electric lines, service piping, etc. A barge dock would be added to the berthing facilities for receiving and unloading ship stores and liquid nitrogen. During construction of the tunnel, a bulkhead and temporary marine trestle would have to be built in the surf zone.

In constructing such a tunnel at Camp Pendleton, one million cubic yards of sandy soil would have to be dredged and disposed of offshore. Also, one-half million cubic yards of backfill and 25 thousand cubic yards of foundation stone would need to be barged to the site. The requirement to construct the undersea tunnel would add 28 months to the construction schedule for a Camp Pendleton terminal, delaying the on-line date from October 1, 1984 until February 1, 1987. (See Figure 1., $\frac{*}{}$ infra.)

Seawater Exchange

This mitigation measure for Camp Pendleton would require the diversion of 137,000 gpm of heated seawater effluent from the San Onofre nuclear generating station. The original proposal for this mitigation measure envisioned obtaining the heated seawater discharge from the power plant, pumping the water 27,000 feet to the LNG plant, passing it through the vaporizers, then returning this water, 14°F cooler, to the power plant outfall system for discharge to the sea. This proposal was modified by Western Terminal to

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Figure 1 has been developed from the staff Exhibits A-115 and A-120, as well as related testimony. It assumes that all necessary regulatory approvals for an alternate site could be obtained in one year from the date of filing an application for the alternate site.



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PLANT AVAILABILITY COMPARISON

WITH MITIGATION MEASURES



eliminate returning the cooled seawater to the power plant by utilizing an independent outfall system for discharge directly from the LMG plant to the sea. The modified proposal would require pumps totaling 15,500 horsepower.

Construction of a seawater exchange system would not affect the overall construction schedule at Camp Pendleton.

LNG Storage Tanks

To reduce the hazards of locating the three 550,000-barrel LNG tanks in proximity to the highway and railroad, Western Terminal would construct concrete dikes around each tank. As a mitigating alternative, the tanks could be placed so that two-thirds of their outer wall height would be below plant grade. Under this arrangement, the tanks would be surrounded above plant grade by an earthen berm with a top elevation equal to the maximum LNG level. Ingrounding the LNG tanks in this fashion would add seven months to the time required to bring an LNG facility at Camp Pendleton on-line, moving the estimated operational date, as estimated by the staff, from October 1, 1984 to May 1, 1985. (See Figure 1.)

Electric Service

Electric service would be readily available from SDG&E. SDG&E has an existing 230-kv line running within 1,500 yards of the proposed Camp Pendleton site.

Access Road

Highway 5 and The Atchison, Topeka and Santa Fe Railway run along the coast adjacent to the site and would be available to transport personnel, material, and equipment to the site. Because present roadway access to the site is inadequate, Western Terminal would construct on the beach side of Highway 5 a new two-mile access road from the Las Pulgas interchange to the site.

Gas Transmission Pipeline

This pipeline would be constructed over an 84-mile route from the metering station at the Camp Pendleton terminal to the existing PLS twin 36-inch transmission lines at Fontana in San Bernardino Ξ County, with intermediate connections to existing SoCal 12-inch (30 MMcfd) and 16-inch (350 MMcfd) lines serving San Diego County.

A. 57626 et al. - bf

The new transmission line would consist of one 34-inch buried line, which would carry the peak output of the terminal without requiring compressor stations en route.

3. <u>Major Environmental Concerns</u>

The Camp Pendleton site has easy access to both an interstate freeway and a railroad line. Highway 5 is one of California's major highways. Approximately 68,000 cars per day pass directly by the site. The LNG facility would be visible from Highway 5. Two miles to the northwest of the site there is a customs-immigration check point, the operation of which causes northbound traffic frequently to be backed-up along the highway for a considerable distance.

Military operations at Camp Pendleton would interfere with the operation of an LNG terminal and vice versa. Camp Pendleton is one of two remaining Marine Corps bases in the United States; it is the only site on the west coast that can accommodate training exercises in amphibious landings. The Marine Corps is firmly opposed to use of the site for an LNG terminal. The Navy Department contends that continuation of the present use of the beaches near the site for combined marine and naval assault training is essential to the national defense.

Marine barracks are located 3.8 miles from the site. Including Marine Corps personnel, there are over 6,500 residents within four miles of the site. This density exceeds the population criteria of the Act. The record shows that it would cost 50 to 75 million dollars to qualify this site by relocating the Marine Corps facilities outside the four-mile radius.

The socio-economic impacts at this site would probably be minor. Camp Pendleton is within commuting distance of a large labor pool so the socio-economic impacts produced from in-migrant labor populations would be minimal.

There is extensive public recreational use in and around the proposed Camp Pendleton site. San Onofre State Beach, having an

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annual attendance of nearly half a million people, is within one mile of the site. Within two miles of the proposed site is a recreational vehicle campground, known as Red Beach, which accommodates approximately 2,000 recreational vehicles per year. Contiguous to the proposed site there is a highway turnout and viewpoint. Immediately northwest of the site is a bicycle path, and the site itself is within the one half-mile corridor proposed by San Diego County for riding and hiking trails.

In general, the site does not support significant marine resources, although Exhibit 00740 introduced before the CCC by the California Department of Fish and Game Report shows that the site is more heavily used by sport fishermen than the other sites. Also, the site does not support significant land resources and the majority of land crossed by the pipeline is disturbed land. Moreover, the development of an LNG terminal at Horno Canyon would have minimal or no impacts on archaeological or sacred/religiously significant sites.

It is clear to us that Horno Canyon, as with the other two CCC recommended sites, does not meet the spirit if the letter of S.B. 1081.

Section 5552 is crystal clear as to the need for, and reason for, requiring a remote site. Section 5582 provides specifically the limits of acceptable population density. If Section 5582 standards cannot be met the site is not lawful. Horno Canyon does not qualify because of the permanent personnel within the four mile limitation. Furthermore, we will not ascribe to the legislature the inconsistency of mandating a remote site ..."to provide the maximum possible protection to the public against the possibility of accident" while expecting the CCC and this Commission to ignore significant transient public exposure far beyond the 60 person per square mile limit of Section 5582 but f within the four mile proscription. No site can be remote that lies within the four mile range of heavily used state parks and an interstate highway with the volume of traffic set forth in our record. A. 57626 et al. - bf

At this time it appears that operation of an LNG facility at the site would not contribute significantly to the emissions inventory in the San Diego air basin. Emissions from ship traffic would be minimized somewhat since tankers would be berthed about two miles from shore.

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4. Investment Required and Cost of Service

The staff's Exhibit A-120 shows that the investment (in mid-1977 dollars) required for a terminal at Camp Pendleton would be \$1.016 billion. Ingrounding the LNG tanks would require an additional \$85 million, the submarine tunnel would require an additional \$366 million, and the seawater tie-in to the San Onofre nuclear generating station would require an additional \$29 million. Incorporating these three mitigating measures into the plant would increase the total investment requirement for a terminal at Camp Pendleton to \$1.435 billion.

According to Exhibit A-120 the fifth-year cost of service for the terminal at Camp Pendleton would be \$0.52/Mcf without the mitigating measures, \$0.55/Mcf with ingrounding of the LNG tanks, \$0.69/Mcf with substitution of a submarine tunnel for the trestle, and \$0.53/Mcf with a seawater tie-in to the San Chofre nuclear generating station. Incorporating all three mitigating measures into the project would increase the fifth-year cost of service to \$0.71/Mcf.

B. Rattlesnake Canyon

1. Site Description

Rattlesnake Canyon is ranked second among the four sites included in the final report of the CCC. It is located on a southwest-facing coastline in San Luis Obispo County, two miles northwest from Point San Luis and four miles southeast of PG&E's Diablo Canyon nuclear power plant. The site area is a 1-1/4-mile portion of a six-mile stretch of coastal terrace which is currently partially used for the cultivation of snow peas.

Terrace elevations vary from 50 to 100 feet at the top of the coastal bluff to 160 feet at the base of the mountains, increas-
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ing at a gentle slope of 2 percent. The terrace is incised to a depth of 30 feet through the center by Pecho Creek. The sea cliff stands near vertical at the surf line where a wave-cut bench in the bedrock protects the terrace from rapid erosion.

م الله المراجع المراجع من من المراجع. وراجع من مع مراجع الله - المراجع Alluvial terrace deposits are underlain by competent sandstone and claystone. The area north of Pecho Creek is well graded and soils are granular with low compressibility. South of Pecho Creek, deposits from Rattlesnake Creek exhibit landslides and slumping. These deposits are compressible. The surface soils average three to seven feet and are composed of sandy silt with a moderate percentage of clay. These soils are unsuitable for foundation materials and would have to be removed. The terrace materials would be subject to frost heave if exposed to extreme cold from LNG.

Ground water is probably as deep as the interface between the 60- to 70-foot terrace deposits and the underlying bedrock. However, there is water seepage at the 10-foot level south of Pecho Creek, and multiple lenses of water after heavy rains indicate a need for mitigating measures to preclude liquefaction problems.

The Hosgri Fault lies five miles offshore. It is ascribed an MCE of 7-1/2 magnitude with peak accelerations at the site of 0.5g to 0.62g.

Pinnacles abound in the offshore area, where the 60-foot depth is reached 3,500 feet from shore. Pecho Rock is plainly visible as are other rockeries for sea otters, seals, and birds.

Winds exceed 25 knots 41 days per year. Wave heights are in excess of six feet 34 days per year. Swells exceed safe limits 37 days per year.

2. Conceptual Layout of Terminal

As at Camp Pendleton, the conceptual layout for Rattlesnake Canyon was developed using the proposed Point Conception terminal, modified for local conditions. As an environmental mitigating measure, the conceptual layout includes the alternative of a seawater exchange system with PG&E's Diablo Canyon nuclear generating station. (a) A set of the se

Rattlesnake Canyon is unique among the four sites in that, because of its hostile marine environment, it would require construction of a massive breakwater, a major civil engineering undertaking, to protect berthing tankers from the sea.

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Marine Facilities

The ship berth at Rattlesnake Canyon would be 1,800 feet offshore at the end of a trestle. In Western Terminal's conceptual design, the breakwater would be L-shaped, with the combined length of its two legs totaling 9,300 feet. This breakwater would provide a 3,000-foot diameter turning basin for LNG tankers, as well as a protected area where tugboats could meet and maneuver the tankers. In order to develop the nearshore tanker berth, a number of pinnacles would have to be blasted and three reefs would need to be removed. An estimated total of 1.6 million cubic yards of underwater rock would have to be removed and barged to a disposal site.

Seawater Exchange

This mitigation measure for Rattlesnake Canyon would require the diversion of 137,000 gpm of heated seawater effluent from the Diablo Canyon nuclear generating station. The original proposal for this mitigation measure envisioned obtaining the heated seawater discharge from the power plant, pumping the water 22,000 feet to the LNG plant, passing it through the vaporizers, then returning this water, 14°F cooler, to the power plant outfall system for discharge to the sea. This proposal was modified by Western Terminal to eliminate returning the cooled seawater to the power plant by utilizing an independent outfall system for discharge directly to the sea from the LNG plant. The modified proposal would require pumps totaling 14,000 horsepower.

Construction of a seawater exchange system would not affect the overall construction schedule at Rattlesnake Canyon.

LNG Storage Tanks

Western Terminal's conceptual design at Rattlesnake Canyon calls for a concrete dike, rather than an earthen basin around each of the 550,000-barrel LNG tanks.

Electric Service

Electric power would be supplied by PG&E via a 17-mile long 115-kv line_which would parallel the 500-kv transmission lines from the Diablo:Canyon nuclear power plant. Connection to the 500-kv transmission lines, which pass within three miles of the LNG site, is precluded by the high cost of a transformer station required to step down 500 kv to a lower voltage and by a reduction in reliability which would result from dependence on those particular lines.

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Access Road

The PG&E access road, which was improved during the construction of the Diablo Canyon nuclear generating station, passes by the LNG site. The road should require no improvements other than the possible need for construction of a box culvert at Pecho Creek. This access road connects with Highway 1 via Avila Road.

Gas Transmission Pipeline

As proposed by Western Terminal, a transmission pipeline would be constructed from Rattlesnake Canyon to the existing PG&E twin 34-inch transmission lines at Gosford in Kern County, with intermediate connections to an existing SoCal 16-inch line serving Santa Barbara County and an existing PLS 34-inch line serving the San Joaquin Valley. The pipeline would be designed to carry a 1,300 MMcfd base-load and a 1,600 MMcfd peak load. From the metering station at the LNG terminal, 68 miles to the eastern edge of the Carrizo Plain, it would consist of one 34-inch buried line. From there, two 34-inch buried lines would traverse the remaining 33.4 miles to Gosford. No compressor stations would be required in the operation of this transmission line.

3. Major Environmental Concerns

San Luis Obispo Bay is two miles east of the Rattlesnake Canyon site. This is a popular recreation area which includes the Port San Luis Harbor District and the town of Avila Beach. The latter has a shoreline park used by almost one million visitors per year. The permanent population within a four-mile radius of the site is about 800. The growth of Port San Luis and surrounding areas would be impacted by the population density limits of the Act. A. 57626 et al. Alt-RDG-im*

As with Horno Canyon, the Rattlesnake Canyon site cannot be said to meet the "remoteness" criteria mandated by S.B. 1081. Avila Beach and Port San Luis lie within two miles of the site. Irrespective of the permanent population within the four mile exclusion area the recognized transient population at any given time must exclude Rattlesnake Canyon from qualifying as a remote site. A. 57626 et al. - bf *

High visual impact would result from the placement of an LNG terminal at Rattlesnake Canyon. This would be mitigated, in part, by the limited access that the public would have to the site and that it is hidden by the adjacent hills and mountains. The breakwater and trestle would be visible to the public south of Point San Luis.

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Construction activities would impinge heavily on Avila Road and Highway 1, which is used by 25,000 cars per day. No railroad facilities exist near the site; therefore, all construction equipment and materials would need to be transported by barge or truck. Furthermore, it appears that construction at this site would require in-migration of a significant number of construction workers and might result in periods of tight transient housing markets in the San Luis Obispo County area.

Archaeological remains of Chumash Indian villages are located on the site. These remains could not be avoided if a terminal were constructed on this site. Rattlesnake Canyon, moreover, is considered sacred by Native Americans (although less significant than Point Conception) and is used for such purposes as burial of the dead. It, therefore, is clear that the potential cultural resources impacts at this site should be considered to be very significant.

Severe environmental impacts at Rattlesnake Canyon would arise from the effects of construction of the breakwater and trestle on the diverse and abundant marine fauna and flora offshore of the site. Blasting of offshore pinnacles would have a significant effect on marine biology. Based on the experience at Diablo Canyon nuclear plant, harbor seals might not return. The greater throughput of seawater which would be required at this site, because of lower ocean temperature, would result in greater fish entrainment. Staff's EIR consultants asserted that marine biology impacts at this site would be greater than those at Point Conception.

Development of the site and pipeline would alter or destroy hundreds of acres of undisturbed land including riparian habitat.

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Also, operation of an LNG terminal at Rattlesnake Canyon would contribute pollutants to a large air basin with a high inventory of existing missions but with good assimilative capacity.

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As stated above, the NRC has advised this Commission that the siting of an LNG terminal at Rattlesnake Canyon may preclude the operation of a nuclear facility at Diablo Canyon because of the potential hazard to the nuclear facility from LNG vessel traffic.

4. Investment Required and Cost of Service

The staff's Exhibit A-120 shows that the investment requirement in mid-1977 dollars for siting an LNG terminal at Rattlesnake Canyon would be \$1.564 billion without, and \$1.578 billion with, the mitigation measure of a seawater exchange system with PG&E's Diablo Canyon nuclear power plant. The fifth-year costs of service incurred by these investments would be \$0.76/Mcf and \$0.77/Mcf, respectively.

C. Deer Canyon

1. Site Ranking

The Deer Canyon site is ranked fourth in the final report of the CCC, if several mitigation measures are adopted at Point Conception. If these measures are not adopted the Deer Canyon site is ranked third. This is specified on page 27 of the CCC final report dated May 27, 1978 (Appendix D to the Decision):

"With conditions 23 through 28 which prohibit a seawater intake system and electric transmission lines at the site, require partial ingrounding of storage tanks, and provide for public access to the area, the overall adverse impacts of a terminal at this site would be moderately more severe than at the higher ranked Rattlesnake Canyon site, but slightly less severe than the lower ranked Deer Canyon site. If the PUC does not impose the specific conditions recommended for a terminal at Little Cojo, Little Cojo would be ranked fourth, with moderately more adverse impacts on Coastal Act objectives than Deer Canyon, which would then be ranked third."

As discussed in Section XIV of this decision, the PUC is not adopting "the specific conditions recommended for a terminal at (Pt. Conception)." Therefore, the Deer Canyon site should be considered to be ranked third.

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2. Site Description

Deer Cgnyon is located on the Ventura County coast, 12 miles from Oxnard and two miles from the Los Angeles County line. It is 4.5 miles east of Point Mugu, between Point Mugu State Park and Leo Carrillo State Beach. The site is in a narrow, steep-sided canyon with complex and varied geology that is moderately susceptible to landslides. The canyon extends two miles inland from the coastline in a roughly north-south direction. It has a relatively wide bottom at its mouth for about 1,000 feet inland. There are many tributary canyons with slopes which rise steeply, as much as 500 feet. Ridges in the surrounding area reach heights of 1,500 feet.

Access to the site is via Deer Creek Road and Highway 1, which passes through the site near the shoreline. The site is privately owned and is not now developed or used.

The principal onshore geological formation is the Topanga formation which consists of moderately landslide-prone sandstones and conglomerates. It is locally intruded by igneous rocks. The soils range from a classification of highly erodible at the mouth of the canyon to very highly erodible further inland. A broad east-west trending, faulted anticline underlies the Santa Monica Mountains in the vicinity of the site.

No significant groundwater is present although minor amounts of perched groundwater appear after heavy rains.

Deer Canyon is on the upthrown block of the Malibu Coast Fault which passes one mile offshore and may dip beneath the area. The epicenter of the Point Mugu earthquake of 1973 was approximately two miles west of the site. The MCE for the Malibu Coast Fault is 6-3/4. An unnamed offshore fault, with an MCE of five, lies four miles from the site.

The 60-foot water depth is reached one-half mile offshore. Rocks and some pinnacles are exposed to the southeast. There are scattered kelp beds.

Winds exceed 25 knots six days a year, while wave heights in excess of six feet occur 11 days A year.

3. Conceptual Layout of Terminal

The high-relief terrain of the site requires a more complex design than is needed for the flat coastal terrace sites. At Deer Canyon, extensive grading would be required to develop a flat pad of 100 acres, or several pads totaling that area. The distribution of sedimentary and igneous rocks at Deer Canyon may complicate grading and may require development of borrow areas of unknown distances from the pad.

Western Terminal's concept would create over 22 million cubic yards of excess cut material because massive excavation would be required to develop terminal facilities to an elevation of 200 feet. The problems associated with disposal of excess cut material could be significantly reduced by a design layout that would put the LNG storage tanks at a higher elevation; however, this would require additional booster pump capacity.

Marine Facilities

The ship berth at Deer Canyon would lie 4,300-feet offshore at the end of a connecting trestle. It would carry a 32-inch cryogenic pipeline which would transfer the LNG to terminal facilities ashore. The Western Terminal concept would have the trestle and pipeline cross Highway 1 overhead. An alternative would be to have the LNG lines pass under the highway.

Seawater System

Western Terminal proposes a different seawater intake system than it proposes for the other sites. A caisson-type seawater intake structure would be constructed 2,000 feet offshore in about 30 feet of water. The screening and pumping equipment would be located in this structure. From this intake, seawater would be filtered and pumped to onshore vaporizers. After passing through the vaporizers, the cooled effluent seawater would be discharged through a 4,000-foot outflow line into a 50-foot water depth.

LNG Storage Facilities

Under the Western Terminal concept, concrete dikes would be constructed around each of the 550,000-barrel tanks to minimize the

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amount of blasting and excavating required. An alternative would be to create a higher level area for the tanks with fill material, thereby eliminating the need for the excavation and the construction of concrete dikes.

Electric Service

A 66-kv electric transmission line, 14.5 miles long, would be constructed between Edison's Ormond Beach generating station and Deer Canyon. The proposed route goes inland, rather than following the coast. Only 1.5 miles of the line would follow existing rights-of-way.

Access Road

Access to the site would be obtained by the construction of a short road to Highway 1. Highway 1, itself, would be altered by the elimination of a southbound passing lane and the construction of a 1,000-foot left-hand turning pocket. Actuated traffic signals would be installed, and they would remain in operation after completion of construction. No railroad facilities are available near the site.

Gas Transmission Pipeline

Western Terminal proposes a 141.3 mile pipeline from Deer Canyon to Arvin in Kern County. The line would be routed over the mountains to an intermediate connection with an existing PLS pipeline at Quigley. From there it would go northward to a termination at PG&E's twin 34-inch transmission lines at Arvin.

4. Major Environmental Concerns

Exhibit 00481 and other correspondence introduced in the CCC proceedings show that the commander of the Navy's Pacific Missile Test Center at Point Mugu takes a firm position that the siting of an LNG terminal at Deer Canyon would have a severe adverse impact on that naval facility, and that it would interfere with fleet maneuvers. This site is proximate to large urban populations and several state parks. Activity involved in developing the site would adversely affect nearby recreational areas. A. 57626 et al. - Alt. RDG - 1m*

The visual impact of an LNG terminal at Deer Canyon would be relatively low because the terrain would conceal much of the facility; however, the trestle and berth would be visible from Oxnard. A trestle crossing at Highway 1 would have a visual impact near the crossing, but this impact would be limited in extent by the winding character of the road. Visual impact would also be limited by virtue of the sparse local population consisting of six permanent residents within one mile and 304 within four miles of the site. Perhaps the greatest impact would be upon the users of nearby Leo Carrillo State Beach and Point Mugu State Park, each of which attracts over 300,000 visitors annually. The California Department of Parks and Recreation has expressed an interest in acquiring the entire coastline between the two state parks.

Once more we are faced with considering a site which clearly falls outside the standard of one that is remote. Lying between two state parks with a combined annual population of over 600,000 people, within less than one mile of one, and little over two miles of the other we find it inconceivable that anyone could believe we have complied with the legislative intent if we seriously considered Deer Canyon for an LNG facility.

The Deer Canyon site is within commuting distance of large labor pools and construction activities would not produce significant socio-economic impacts. However, since there is no rail service to the site, Highway 1 which passes adjacent to the site would experience significant increases in road traffic during construction of the LNG terminal.

Development at the site may also have major impacts, although probably less serious than at Point Conception and Rattlesnake Canyon, on sacred areas. Alteration or destruction of archaeological resources at the site could not be avoided during the construction ~ of the terminal. A. 57626 et al. Alt. RDG

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Kelp, commercial fish, and other marine resources are sparse near the site. The State Water Resources Control Board has designated the waters offshore to the 100-foot isobath as an Area of Special Biological Significance, but it has not yet determined a policy for controlling lowered temperature discharges in areas so designated. Furthermore, the massive earth movement required for preparing the site would also disturb the riparian community lining the canyon bottom, including two rare plant species and local populations of coyote, bobcat, and cougar. Air pollution emissions at Deer Canyon during Santa Ana wind conditions could make a significant contribution to worstcase smog formation in the Oxnard plain. Also, since the site lies between the Los Angeles and Ventura air basins, potential emissions from this project would be subject to broader regulatory review.

5. Investment Required and Cost of Service

The staff's Exhibit A-116 shows that the investment requirement in mid-1977 dollars of an LNG terminal at Deer Canyon, with the land facilities of the terminal at the 200-foot level as proposed by Western Terminal, would be \$1.50 billion. The investment requirement, with the land facilities at the 600-foot level, would be \$1.15 billion. The fifth-year costs of service related to the 600-foot level investments, as shown in Exhibit A-120, would be \$0.58/Mcf. Exhibit A-120 shows that if a submarine tunnel were constructed as a mitigation measure in lieu of an overwater trestle, the investment requirement for the 600-foot level would increase to \$1.29 billion, with a fifth-year cost of service of \$0.66/Mcf. A. 57626 et al. Alt. RDG

XI. SITE SELECTION

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A. The Feasibility Test

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1. Sites Considered in Order of CCC Ranking

This Commission must select the highest ranked site submitted by the CCC - <u>unless</u> it makes a specific finding that "with respect to each higher ranked site that it is not feasible to complete construction and commence operations of the terminal at such higher ranked site in sufficient time to prevent significant curtailment of high priority requirements for natural gas and that approval of the lower ranked site will significantly reduce such curtailment." Further, the Commission is precluded from issuing a permit for construction or operation of a terminal at any site unless it finds that to do so is "consistent with public health, safety and welfare."

2. Factors to be Considered

Contrary to the position taken by Hollister Ranch Owners Association (Hollister) that the only factor the Commission can consider is project timing and not such other factors as the relative costs of alternate sites, the Act requires the Commission to consider other factors. Section 5559 defines "feasible" as meaning "capable of being accomplished <u>in a successful manner</u> within a reasonable period of time, <u>taking into account</u>: (a) economic, environmental, social, technological, safety, and reliability factors, (b) gas supply contracts, (c) gas supply and demand forecasts, (d) federal regulatory requirements, and (e) alternative sources of natural gas." (Emphasis added.) Accordingly, we will make our selection by examining the sites in the order of CCC ranking and by taking into account those factors, among the ones designated, which are pertinent to each site in determining its feasibility as the location for an LNG terminal.

3. General Timing Consideration

In undertaking the site selection process, we are mindful of the general consideration that, as discussed above, a substantial amount of time would be required for preparing new or amended applications and obtaining regulatory approvals, particularly federal approvals for a site other than Point Conception. The resulting delay would <u>significantly increase</u>: (1) the potentiality of losing the LNG supply contracts, particularly the Pertamina contract; (2) the required investment in the project through escalation and increased allowance for funds used during construction (AFUDC); and (3) the likelihood of curtailment of high priority requirements for natural gas.

The principal item in the record relating to project timing is the staff's "Alternate Siting Report", Exhibit A-115.- Chapter III of this report develops estimated time schedules for bringing an LNG terminal on-line at each of the four CCC ranked sites. These time schedules are based upon a critical analysis by the staff of detailed estimates of project scheduling for design engineering and

During the hearings, on May 3, 1978, the presiding ALJ denied a motion by Fred H. Bixby Ranch Company (Bixby) to strike Chapters II and III of this report on the grounds that they consist of hearsay and conjecture. In its June 9, 1978 filing with the Commission commenting on the final CCC report, Bixby renewed this motion to strike. Bixby has furnished nothing in the interim to support a reversal of the earlier ruling. The motion is again denied.

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construction requirements for a 1.3 Bofd base-load LNG terminal at each alternate site. The detailed estimates were made at the staff's request by Western Terminal's engineering contractor and were based upon preliminary planning and conceptual plant layouts for each of the alternative terminal locations. The report qualifies the estimated time schedules for the alternate sites as being "based upon extremely tight engineering and construction schedules and with the assumption of an exceptionally optimistic regulatory approval process."

Were we to select an alternate site in this decision. Western Terminal, if it so chose, would have to prepare and file an amended application, and this Commission would be required to schedule and hold further hearings. Although preparation time would be reduced somewhat because part of the environmental work on alternate sites has been done, the reports are incomplete and fragmentary, and extensive further environmental impact studies would be required. While action by this Commission, as lead agency, would certainly occur within the one-year period required by AB 884, we cannot agree with Hollister that state approval could be obtained in six months. Mindful of the need to avoid delay resulting in curtailments to high priority users and to avoid impairment of contracts for supplies of natural gas, this Commission, however, would be obligated to expeditiously process an application for an alternate site. Nor can we agree that federal approval could be obtained within one year, as estimated by the staff in formulating its time schedules in Exhibit A-115. We are convinced by the reasoned analysis of the federal regulatory process put forth by SDG&E, in its June 9, 1978 filing, that a twoto three-year delay for regulatory approvals would be much closer to reality than the one year assumed by the staff. SDG&E's review of the regulatory approval process that an alternate site would be required to undergo shows that the staff was "exceptionally optimis-tic" in this instance.

While Point Conception has not yet cleared all federal regulatory hurdles, it is at least well down the road. Assuming Western Terminal would not, in prudence, begin construction (field move-in)

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until the nœcessary federal approvals are in hand, the two- to three-year regulatory delay would make the operational dates at the three alternate sites one to two years later than estimated by the staff. Fortuitously, this does not detract from the usefulness of the staff's timing estimates for purposes of the comparisons we are making here; rather, it may enhance their value because the time differences between Point Conception and each of the alternate sites are understated as developed by the staff. Thus, to the extent that the staff errs, it is to the disadvantage of Point Conception in relation to the three alternate sites; whereas, for comparisons among the three alternate sites, the time differences shown by the staff are unaffected, because, to the degree that there is an understatement of regulatory lag, the operational date of each is thereby displaced by the same amount of time.

B. <u>Camp Pendleton</u>

1. <u>Timing</u>

Figure 1 shows that the <u>earliest</u> date a plant could reasonably be expected to be in operation at Camp Pendleton is October 1, 1984. This would not be soon enough to avoid the curtailment of highpriority gas use according to the supply and requirement determinations made in Case No. 10342. Furthermore, if either of two mitigation measures (ingrounding of LNG tanks and substitution of a submarine tunnel for an over-water trestle) were required, the on-line date would be delayed for an additional seven to 28 months.

2. <u>Gas Supply Contracts</u>

In addition to resulting in the foreseeable curtailment of high-priority gas requirements, the plant availability date for Camp Pendleton (with or without the mitigation measures) is extended far enough into the future as to make probable, as a result of Indonesian and Alaskan contract cancellations and expirations, the loss of the very LNG supplies which a Camp Pendleton terminal would be constructed to receive.

3. <u>Economic Factors</u>

For comparative purposes, most of the cost figures presented during the hearings in the applications, as well as in this decision, are in mid-1977 dollars. For purposes of the site selection we are here engaged in, any constant dollar basis for determining capital requirements is inappropriate because the construction schedules of terminals at the alternative sites are noncoincident with and are extended over greater periods of time than the schedule for Point Conception.

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To be realistic, we must give recognition to the effects of inflation on the costs of goods and services during the time of project construction. In determining capital requirements for the site selection process, we will escalate mid-1977 dollars by an annual figure of 8 percent */ to arrive at a more meaningful determination of the economic factors involved. When this escalation factor is applied, the grand total of capital costs required for the PacIndonesia and PacAlaska LNG projects with a terminal sited at Camp Pendleton is \$2.807 billion. The comparable figure for Point Conception is \$2.171 billion. Thus, Western Terminal's sponsors would have to raise well in excess of one-half of a billion dollars more **/ in the siting of the terminal at Camp Pendleton. This greater capital requirement results, not just from inflation, but from design changes and increased AFUDC requirements arising from the delays attendant upon locating the terminal at the alternate site.

The record in this proceeding is not without questions as to PLC's financial ability to participate in an LNG project calling

We believe 8 percent to be a conservative figure. The evidence in these proceedings indicates that 10 percent per year is closer to the level of cost inflation that may reasonably be expected in constructing an LNG terminal.

^{**/} This capital requirement difference reflects the staff's "exceptionally optimistic regulatory approval process." Regulatory approval delays beyond one year would, of course, markedly increase this difference.

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for the construction of a terminal at Point Conception. The construction of the terminal at Camp Pendleton would further complicate PLC's ability to finance its half of the LNG projects because of the greater capital cost and longer lead time.

4. Jurisdiction

Western Terminal asserts that the United States government has exclusive jurisdiction over the Camp Pendleton Military Reservation; that such jurisdiction was acquired in a series of transactions in the 1940's; and the validity of the federal government's exclusive jurisdiction over the realty it holds in fee within the boundaries of the State has been upheld in the courts. Western Terminal cites <u>California v. United States</u>, (9th Cir. 1956) 235 F.2d 647, 655-656, in which the court stated as follows:

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"No sovereign rights over this land existed in the United States except as provided by the dual system until the State of California ceded exclusive jurisdiction over the tracts of land acquired by condemnation. By federal law, thereafter, the United States held paramount and exclusive control and jurisdiction over the land and water which at any time is upon the land within the limits of this enclave. The process of the state courts could not run therein unless by consent. The executive and administrative bodies and regulations have no control therein. State law, substantive and procedural, had no force over persons or objects within the boundaries...."

The Secretary of Navy has the authority to lease property within the Camp Pendleton Military Reservation, if he considers it advantageous to the United States and the terms of such lease will promote the national defense or be in the public interest. (10 USC Section 2667.) However, the Secretary of Navy has already indicated opposition to the siting of a facility at Horno Canyon, thereby making it doubtful that the necessary approvals would be forthcoming. (CCC Exhibit 00730, Dept. of Navy Letter.) If the Navy Department will enter into a lease, an act of Congress would be required for Western Terminal to acquire the right to construct an LNG terminal on the marine base. Furthermore, by letter dated July 7, 1978, Joseph M. Hendrie, Chairman of the Nuclear Regulatory Commission advised the Commission that the siting of an LNG terminal at Camp Pendleton (or Rattlesnake Canyon) may preclude the operation of existing nuclear facilities at San Onofre (or Diablo Canyon in the case of Rattlesnake Canyon) because of the potential hazard to nuclear facilities from LNG vessel traffic. A copy of this letter was mailed to all parties of record in Applications Nos. 57626, 57792, Case No. 10342, OII 1. This letter expands upon points raised in previous correspondence between NRC staff and the Coastal Commission.

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If Edison's experience in siting its nuclear power plant at San Onofre provides an example, the delays resulting from controntation with the Navy and ultimately obtaining Congressional approval for acquisition of a part of Camp Pendleton would be of such duration as to probably cause the loss of the gas supply contracts for the terminal.

Edison made its first contact in May of 1960 with the Marine Corps Commandant regarding a specific site on the base. In December of that year, the Marine Corps suggested that Edison consider another site located elsewhere on the base (San Onofre), although the Marines were still opposed to any site on the base. In December of 1962, the Navy Department agreed not to oppose the San Onofre site. In May of 1963, after legislation had been introduced in the

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House and Senate, the Navy wrote to the House Armed Services Committee stating that it had no objection to the San Onofre site. Negotiations with the Navy after December of 1962 concerned the terms of the easement, but the easement was not finally obtained until May 1964.

Western Terminal contends that, since Horno Canyon is within exclusive federal jurisdiction, the CCC exceeded its authority by even considering it as a possible LNG terminal site; that the CCC went beyond the explicit powers granted it by the State of California in the California Coastal Act of 1976 and the Act; and that for the CCC to consider Horno Canyon is not only contrary to California law, but is contrary to federal law since the State is not allowed to legislate over federal property.

The CCC's authority to rank potential LNG sites is found in Section 5611 of the Act. It is to rank "any onshore sites proposed by any person" by applying the policies, goals, and objectives in Chapter 3 of Division 20 of the Public Resources Code (part of the California Coastal Act of 1976). Section 30200 of Chapter 3 of the Public Resources Code states that the policies must be consistent with the goals of Section 30001.5 of that Act. Part (a) of that section declares one goal to be to "protect, maintain, ... the coastal zone environment...." "Coastal zone" is defined for purposes of this Act as those lands over which the State of California has jurisdiction. Section 30008 of the Public Resources Code excludes from the coastal zone "land, the use of which is by law subject solely to the discretion of or which is held in trust by the federal government, its officers or agents."

It is legally arguable that (1) the CCC cannot regulate lands on the coast of California that are within federal ownership, and (2) the CCC has authority only over coastal properties within the jurisdiction of the State of California and can only consider sites A. 57626 et al. Alt. RDG

over which the State of California has jurisdiction. Assuming arguendo the validity of this contention, the CCC would have no authority to nominate and rank any location on the Camp Pendleton Military Reservation as a site for an LNG terminal.

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This Commission, however, does not wish to engage in a jurisdictional dispute with another state agency especially as it relates to that agency's authority vis-a-vis the federal government. The Commission believes that it is not feasible to complete construction and commence operation of an LNG terminal at Camp Pendleton in sufficient time to prevent significant curtailment of high priority requirements for natural gas and that selection of Camp Pendleton, based on the evidence of record, would not be consistent with the public health, safety and welfare.

Because of all the foregoing and in particular because Horno Canyon does not qualify as a remote site pursuant to Section 5582(a)(2) of the Code it must be rejected from further consideration.

C. Rattlesnake Canyon

1. Timing

As Figure 1 shows, May 1, 1985 is the <u>earliest</u> date on which a terminal at Rattlesnake Canyon could reasonably be expected to be in operation. This would not be soon enough to avoid the curtailment of high-priority gas use according to the supply and requirement determinations made in Case No. 10342.

2. Gas Supply Contracts

Because of the longer time involved, the potential for loss of the gas contracts through delay is considerably greater for Rattlesnake Canyon than for any of the other sites. The likelihood of the Indonesian and Alaskan suppliers staying with the amended project through the period required for necessary regulatory approvals would be considerably diminished by the prospect that the <u>earliest</u> date the terminal could receive their gas would be in the year 1985.

3. Economic Factors

As we did in the case of Camp Pendleton, we will escalate the mid-1977 capital cost figures for a terminal at Rattlesnake Canyon by an annual inflation rate of 8 percent. When this escalation factor is applied, the grand total of capital costs required for the PacIndonesia and PacAlaska LNG projects with a terminal sited at Rattlesnake Canyon is \$3.714 billion. The comparable figure for Point Conception is \$2.171 billion. Thus, Western Terminal's sponsors would have to raise in excess of one and one-half billion dollars more if the terminal is sited at Rattlesnake Canyon.

All of the adverse economic aspects that would evolve from the location of the terminal at Camp Pendleton, would pertain to Rattlesnake Canyon, but to a degree that would be much more severe. In any case, it is doubtful if the project could be financed in view of the huge capital cost, the large amount of AFUDC resulting from the extended lead time, and the higher cost of capital related to the increased risk.

4. Reliability Factors

In the CCC's final report, there is only indirect reference to the sea-state conditions at the Rattlesnake Canyon site. The report obliquely mentions that a breakwater would be constructed at this site. It should be noted that there is insufficient evidence in the record to determine what kind of breakwater is needed to make this site reliable.

In the staff's Exhibit A-103, Rattlesnake Canyon's sea-state is compared to other sites as follows:

"This site is located some 45 miles north of Point Conception on a portion of the coastline fully exposed to sea and swell attack from the west and southwest and, to a

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lesser extent, from the south and northwest. Waves are a significant factor in berth availability during all months; however, poor visibility becomes very important in the summer and fall. Its exposed location combined with conditions of poor visibility make this site a rival with Guadalupe Dunes for the lowest berth availability ranking. Provisions of an effective breakwater would reduce the site's vulnerability to waves. However, the poor visibility would still prevent it from approaching the highest berth availability ranking."

The record in this case supports the conclusion that the windwave conditions at this site are relatively severe compared with sites just below Point Conception. However, there is no specific onsite data for Rattlesnake Canyon in the record as there is for Point Conception. Wide-ranging estimates of sea-state conditions for Rattlesnake Canyon have been presented in the record of OII 1. Because no specific onsite wind-wave measurements for Rattlesnake Canyon exist, there is no reliable evidence indicating the extent to which a breakwater would improve berth availability. However, the record supports the conclusion that the sea-state is more severe at Rattlesnake Canyon than Point Conception. It follows then that sea-state conditions at Rattlesnake Canyon could make it unacceptable both as to safety and reliability.

In OII 1, the staff introduced Exhibit 0-91, a report on berth availability and reliability. The study concludes that "the Rattlesnake Canyon site would not be capable of sustaining an average throughput of 1,300 MMcfd without a breakwater." It implies that even with a breakwater, maintenance of long-term throughput is uncertain. This conclusion seems reasonable, especially so, in view of the lack of onsite data for Rattlesnake Canyon. The staff pointed out that throughput capacity for this site with a breakwater could probably be increased to over 1,300 MMcfd by an additional LNG tanker or a second berth. Either of these would, of course, entail substantial additional investment.

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The CCC report fails to address the presence of reefs, rocks, and pinnacles, which compound the shipping problems at Rattlesnake Canyon. While many of these hazards would be removed in order to clear a path to the berth, the remaining reefs, rocks, and pinnacles would still endanger LNG tanker traffic.

5. Summary

The Commission will enter findings that: (1) it is not feasible to complete construction and commence operations of a terminal at Rattlesnake Canyon in sufficient time to prevent significant curtailment of high-priority requirements for natural gas; and (2) selection of Rattlesnake Canyon would not be consistent with the public health, safety, and welfare; (3) Rattlesnake Canyon does not meet the criteria. of remoteness required by Section 5552 of the code.

Rattlesnake Canyon is eliminated from further consideration herein as a potential LNG site.

D. Deer Canyon

1. Timing

As Figure 1 shows, April 1, 1987 is the expected date a terminal could begin operations at Deer Canyon. In Exhibit A-115, the staff considered the possibility of advancing the operational start-up date to May 1, 1985 if the LNG storage tanks were located at elevation 600 feet rather than elevation 200 feet. The change in tank elevations would achieve a balance in earthwork cut and fill operations and a savings of 23 months in construction time. Even giving consideration to the earlier start-up date of May 1, 1985, it would still not be soon enough to avoid the curtailment of high priority gas use according to the supply and requirement determinations made in Case No. 10342.

2. Gas Supply Contracts

Similarly as discussed for the Rattlesnake Canyon site, the selection of the Deer Canyon alternative also poses the potential f for loss of the gas contracts through delay because of the longer project timing requirements. The probability of Indonesian and south Alaskan contract cancellations and expirations is considerable A. 57626 et al. Alt: RDG

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in light of delaying the plant availability date to May 1985, at the earliest.

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3. Economic Factors

The capital cost and length of construction time for a plant in Deer Canyon at the 600 foot elevation are greater than at Camp Pendleton while less than or equal to, respectively, those for Rattlesnake Canyon. It is therefore apparent that the escalated total capital costs for the PacIndonesian and PacAlaska LNG projects with a terminal sited at Deer Canyon would fall between the escalated values of \$2.807 billion for Camp Pendleton and the \$3.714 billion for Rattlesnake Canyon. The comparable figure for Point Conception is \$2.171 billion. Here again, Western Terminal's sponsors would have to raise well in excess of one-half of a billion dollars more to site a terminal at Deer Canyon.

Here too, all of the adverse economic aspects that would result from the location of the terminal at Camp Pendleton, would pertain to Deer Canyon, but to a degree that would be more severe. In any case, it is doubtful if the project could be financed in view of the larger capital cost, the sizable amount of AFUDC resulting from the extended lead time, and the higher cost of capital related to the increased risk.

4. <u>Summary</u>

The Commission will enter findings that: (1) it is not feasible to complete construction and commence operations of a terminal at Deer Canyon in sufficient time to prevent significant curtailment of high-priority requirements for natural gas; and (2) selection of Deer Canyon would not be consistent with the public health, safety, and welfare; (3) Deer Canyon does not meet the criteria of remoteness required by Section 5552 of the Code.

Deer Canyon is eliminated from further consideration herein as a potential LNG site.

E. Point Conception

In considering need and project timing, the evidence demon-

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commencement of operations in sufficient time to prevent significant curtailment of high-priority requirements for natural gas.

The earliest date for the start of construction at any of the alternate sites would be February 1, 1981, compared to an estimated field move-in date for Point Conception of March 1, 1979. Figure 1 illustrates that the plant availability for Point Conception is November 1, 1982, compared to earliest possible dates of October 1, 1984 for Camp Pendleton and May 1, 1985 for Rattlesnake Canyon.

Evidence was presented in OII 1 which shows that, when evaluating the entire LNG transportation system for the proposed project (from loading at the liquefaction plants to delivery to the pipeline at Point Conception), including particularly wind-and-wave conditions, a terminal at Point Conception could maintain a long-term average throughput in excess of 1,300 MMcfd. The ability of Rattlesnake Canyon to sustain such a throughput, even with a breakwater, is uncertain.

Based on the record as made in Case No. 10342, OII 1, and Applications Nos. 57626 and 57792, the Commission must eliminate the higher-ranked sites and grant Western Terminal a conditional permit to construct and operate an LNG terminal at Point Conception.

Readers of this opinion will notice that we have exhaustively explored many problems and complications with respect to the Point Conception site. This is not because there are fewer problems or obstacles at the alternative sites. Rather the fact is simply that Point Conception has received the closest scrutiny as a result of the application and EIR process. It may not be axiomatic that the old grass-always-looks-greener saying applies when deciding on siting for an LNG plant, but the tendency surely exists. Our deliberations on these proceedings has taught us that. It can be said that we know a lot about Point Conception, although more investigation and analysis will be required in Phase II of OII 1.

XII. ENVIRONMENTAL IMPACTS AT POINT CONCEPTION

A. The EIR Process

1. Background

The environmental review process for this project began on August 30, 1976, when Western Terminal filed an application for a general plan change with the Santa Barbara County Planning Commission, followed by an application for rezoning on October 19, 1976. In November 1976, the county assumed the responsibilities of the lead agency for the purpose of preparing an EIR. Approximately six months later, the county entered into contracts with various consultants to gather and analyze the data necessary for an EIR.

On September 16, 1977, the Act became effective vesting exclusive jurisdiction in this Commission to issue a permit for the construction and operation of an LNG terminal and designated the Commission as the lead agency for purposes of compliance with CEQA. On October 14, 1977, Western Terminal filed its application for a permit with the Commission, and on October 19, 1977, the contracts between the EIR consultants and Santa Barbara County were assigned to the Commission as the new lead agency.

2. Scope of Environmental Review

On March 1, 1978, the Commission staff issued the DEIR and mailed it to various federal, state, and local agencies; public libraries; parties to, and interested parties in, the litigation; public interest and environmental groups; representatives of the press, including newspapers, United Press International, and Associated Press; and a number of state and federal legislators.

Previously, during the period beginning in December, 1977, and ending in February, 1978, the staff had circulated 25 technical reports containing information supporting the DEIR. The reports were distributed to interested federal, state, and local agencies; interested parties in the litigation; libraries; and public interest; and environmental groups.

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On April 1, 1978, the staff issued and circulated two additional technical reports (Nos. 23A and 26) supplementing the DEIR. The public comment period on the DEIR, which was to have closed on April 15, 1978, was extended to May 21 for the receipt of written comments on the supplementary material. Public hearings on the DEIR and technical reports were held during the period March 14 through May 5, 1978 in the Application No. 57625 proceedings and the OII 1 proceedings.

In addition, miscellaneous reports were prepared in order to address the concerns raised during the DEIR comment period. These were issued from time to time and included reports on geoseismic hazards at Las Varas and Rattlesnake Canyon sites, environmental data on Deer Canyon and the impacts on OCS development. The Commission held environmental hearings for public input in each county in which a CCC-ranked site is located. These hearings were held during the week of May 8 through 12, 1978 in the cities of San Luis Obispo, Santa Barbara, Oxnard, and Oceanside. The staff incorporated all of the written comments on the DEIR, as well as comments received during the hearings of May 8 to 12, 1978, into the FEIR. The FEIR was made available to the Commission on July 18, 1978, and was formally filed on July 28, 1978.

This decision includes, pursuant to Rule 17.1 of the Commission's Rules of Practice and Procedure, a series of findings based on the FEIR's coverage of (1) the environmental impact of the proposed action, (2) any adverse environmental effects which cannot be avoided if the proposal is implemented, (3) mitigation measures proposed to minimize the impact, (4) alternatives to the proposed action, (5) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, (6) any irreversible environmental changes which would be involved if the proposed action should be implemented, (7) growth-inducing impact. of the action, and (8) plans for future development.

This decision is to be considered a Statement of Overriding Consideration as required by the California Administrative Code, Title 14, Division 6, Section 15089 which states:

"15089. Statement of Overriding Considerations.

"(a) CEQA requires the decision-maker to balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve the project. Where agencies have taken action resulting in environmental damage without explaining the reasons which supported the decision, courts have invalidated the action.

- "(b) Where the decision of the public agency allows the occurrence of significant effects identified in the final EIR without mitigation, the agency must state in writing the reasons to support its action based on the final EIR and other information in the record. This statement may be necessary if the agency also makes a finding under Section 15088(b) or (c).
- "(c) If an agency makes a statement of overriding considerations, the statement should be included in the record of the project approval and should be mentioned in the Notice of Determination.

The Commission, as a basis for making any order pursuant to the provisions of Section 762 of the Public Utilities Code relating to location of structures, is required to give consideration to, and include in its order findings upon, the following factors:

- (a) Community values.
- (b) Recreational and park areas.
- (c) Historical and aesthetic values.
- (d) ·Influence on environment.

These elements are tested in the FEIR and supporting technical reports. Additional testimony and exhibits bearing on these elements were introduced during the public hearings aforementioned.

3. Positions of Bixby and Hollister on the EIR Process

Bixby asserted that the DEIR fails to disclose the Commission's proposed decision and choice of priorities and, therefore, does not reflect the independent evaluation and analysis of the lead agency : as required by CEQA. These contentions are without merit and are based on an erroneous interpretation of CEQA and the CEQA Guidelines.

The EIR is an informational document, the purpose of which is to identify significant effects of a proposed project and indicate how the significant effects can be mitigated or avoided. (Public Resources Code Sections 21002, 21002.1(a), 21061; 14 Cal. Admin. Code Sections 15011.6(a), 15012.) These sections make it clear that the EIR is intended to provide to the decision makers and general public the necessary environmental information on which the decision to approve or deny a project is based. Contrary to Bixby's assertions, the EIR is not intended as the vehicle by which the lead agency renders its decision and explains the reasons underlying such decision.

CEQA Guidelines contemplate the lead agency's issuance of a separate decision based on all the evidence, including the FEIR. (14 Cal. Admin. Code Sections 15088 and 15089.) For example, Section 15088(b) expressly provides that if the agency decision allows the occurrence of substantial adverse environmental consequences, a statement of overriding considerations must be prepared to explain the agency's reason to support its action; however, "(t)his statement need not be contained in the EIR."

Moreover, under the Act, the Commission cannot issue a decision until the CCC's evaluation and ranking of sites has been completed and the FEIR is submitted. There is nothing in either CEQA, the CEQA Guidelines, or the Act to suggest that the Commission must disclose its preferences or value judgments before it makes its decision on the application for a permit to construct an LNG terminal.

Bixby appears to contend that, because outside consultants have prepared portions of the DEIR and technical reports, the DEIR is somehow defective. First, both CEQA and the Act contemplated the employment of outside experts to aid the lead agency in preparing the DEIR. (Section 5635(b).) Second, it should be noted that once this Commission became the lead agency for this project pursuant to the provisions of the Act, its staff assumed the function of over- *F* seeing all aspects of the preparation of the DEIR, including researching and writing certain sections, reviewing work done by consultants, and coordinating work done by both staff members and consultants. Third, each of the technical reports has been admitted

into evidence and thereby made a part of the record in these proceedings. The authors of these reports, whether outside consultants or PUC staff members, appeared as witnesses at public hearings in this matter and underwent cross-examination. Finally, the entire record herein, including the technical reports, the witnesses' testimony, and the FEIR, was submitted to the members of this Commission for their review before the issuance of this decision.

Bixby also claims that supplementary technical reports issued after March 1, 1978 were not made available to the public for the minimum 45-day comment period required by CEQA and the CEQA Guidelines. Hollister raises a similar point.

The supplemental material issued after March 1, 1978 consists of Technical Reports Nos. 23A and 26, which were mailed to all interested parties, including Bixby and Hollister, on April 1, 1978. In the middle of April, the staff notified all interested parties that the public comment period, which closed as to the DEIR on April 15, would be extended for these reports to and including May 21, 1978, more than 45 days after April 1.

All of the supporting technical reports, including Nos. 23A and 26, were sent to public libraries throughout the state to ensure wide public access to these documents. Between April 1 and May 21, 1978, the authors of the reports appeared and testified at the hearings in the above matter and were subjected to cross-examination thereon.

The Commission has complied with CEQA and the CEQA Guidelines. It provided a minimum of 45 days each for the public to comment on the DEIR and on the additional technical reports issued after March 1, 1978, and it took all reasonable steps to assure wide public access to these documents.

In raising another issue, Bixby asserts that federal authorities have approved Oxnard as an LNG terminal site, and that the DEIR's discussion of project alternatives is inadequate for failing to take, into account this fact and the related issue of possible federal preemption of site choice.

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Bixby's characterization of federal "approval" of Oxnard is misleading. In Opinion Number One, DOE/ERA conditionally approved Oxnard as an LNG terminal site, provided safety and environmental requirements are met. DOE/ERA expressly qualified its decision, stating "we do not, however, conclude that it is necessarily the only acceptable site." The DOE/ERA concluded that since California has a legitimate interest in the outcome of the site selection process and may choose an acceptable or preferable site by July 31, 1978 as provided by the Act, the federal government should defer to California at least until July 31, 1978.

The Commission must operate under applicable California law in selecting an LNG terminal site. It is, therefore, bound by the population density criteria in the Act. Oxnard does not comply with these criteria and, therefore, cannot be considered under existing law. No purpose would be served in discussing in the DEIR the possibility that at some future date the federal government will impose its preliminary preference for Oxnard on California. The DOE/ERA has deferred to California's site selection process and is awaiting the Commission's decision based on California law.

Bixby asserts that the DEIR is premature, because the applicant allegedly has not yet submitted sufficient terminal design information to the Commission. This assertion is without merit. Bixby ignores the provisions in CEQA and the CEQA Guidelines that are intended to preserve a reasonable degree of flexibility in the EIR process.

Section 15140(c) of the CEQA Guidelines provides that the EIR "shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public." Section 1514(g) states: "(d)rafting an EIR necessarily involves some degree of forecasting." As a result, CEQA contemplates only reasonable specificity of design information and does not require completion of all details on the project design Ξ before an EIR can be prepared.

Moreover, one of the purposes of the EIR process is to suggest changes in the project (and the design) which might reduce adverse environmental effects. "The CEQA reporting process is not designed to freeze the ultimate proposal in the precise mold of the initial project; indeed, new and unforeseen insights may emerge during investigation, evoking revision of the original proposal." (County of Inyo v. City of Los Angeles, (1977) 71 CA 3d 185, 199.)

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Planning a major project such as the LNG facility at issue here is necessarily an ongoing process which may result in the discovery of new information after the draft or even the FEIR has been completed. Provisions of CEQA and the CEQA Guidelines clearly allow for changes in the project. Only in certain limited circumstances, however, will such changes require preparation of an additional (subsequent or supplemental) EIR. (Public Resources Code Section 21166; 14 Cal. Admin. Code Section 15067.)

In our opinion, sufficient design information has been supplied to permit the EIR to analyze the significant environmental impacts of the project.

B. <u>Significant Environmental Impacts and Proposed</u> Mitigation Measures

As a major industrial project, the Point Conception LNG project's construction and operation will lead to a broad range of significant environmental impacts. The most important significant impacts identified during the environmental review process are highlighted below. Also highlighted below are the most important mitigation measures that were suggested during the EIR review. The discussion presented herein relates to those facts developed during the EIR process.

Our EIR review process has demonstrated that the environmental impacts and technical factors and their mitigation measures are complex. For some issues such as air and water quality, objective standards exist which can be used to assess both the project impacts : and the effectiveness of various mitigation measures. However, with respect to other issues, such as visual or cultural resources impacts, no objective criteria are available for judging the severity.

of the impacts or the desirability of a particular mitigation measure. In these cases we have been required to exercise our subjective Judgments, which is made even more difficult by the fact that the proposed mitigation measure can usually lessen, but not eliminate, an environmental impact.

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Additionally, mitigation measures identified in the Final EIR and supporting technical reports are summarized and referenced in Appendix F. This appendix also notes which measures were accepted or rejected and the condition under which accepted measures will be implemented. Condition No. 33, which is set forth later in this decision, requires the implementation of a variety of lesser mitigation measures that are not included in the other conditions.

1. Soils, Geology, and Seismicity

The Point Conception site will require approximately 1.5 million cubic yards of earth to be moved, which will change the land forms of the marine terrace. This portion of California is a seismically active region, and resistance to seismic shaking and protection from soil liquefaction are major design criteria. Since publication of the DEIR, evidence of active faulting has been discovered on the site.

The EIR record shows that the geophysical hazards and impacts associated with the LNG project can be reduced by the proper application of soils engineering practices, including stabilization of finished slopes in graded areas, proper soil compaction and drainage of subsurface soils, reliance on rock or well-stabilized foundations for major structures, and top soil conservation and replacement. The proposed Safety Standards issued by the staff, moreover, would require a somewhat more stringent design than that proposed by Western Terminal to mitigate the potential for geophysical hazards.

As discussed elsewhere in this decision, however, further seismic investigation is needed to resolve the question concerning the exact risks presented by the on-site faulting. We agree with zthe FEIR conclusion that "if the faults are secondary, the site may be feasible if major components are relocated to avoid these features. If the seismic risk is higher than originally anticipated, an addendum to the FEIR will be prepared."

2. Air Quality

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The proposed LNG project will have a significant adverse air quality impact. The principal pollutant sources are the LNG ships' burning high-sulfur fuel, with correspondingly high sulfur dioxide emissions, and the gas turbine power generators with high nitrogen oxide emissions, and the onshore vaporization facilities.

Because of the elevated terrain around the terminal site, the effluent plume from the ships or turbines will result in high ground-level concentrations during common meteorological conditions. An air quality model of the effluent plumes indicates that the state one-hour standards for sulfur dioxide and nitrogen dioxide will be violated 69 hours and 77 hours per year respectively in the site vicinity. Project emissions, then, would be a significant increment to the region or air basin emissions inventory. The LNG project as described in the application will emit pollutants at a rate which exceeds New Source Regulations of the Santa Barbara County Air Pollution Control District and the U.S. Environmental Protection Agency.

Western Terminal submitted on March 17, 1978 an application to the Environmental Protection Agency (EPA) for New Source Review approval of the Point Conception project. In this application, Western Terminal has stated plans to use low-sulfur fuel in the LNG ship's boilers and to use offsite electrical power even for the initial phase of project development as measures to mitigate air quality impacts. Terminal operations will, of course, be required to comply with the provisions of any permit granted by the EPA. The use of offsite power is discussed in greater detail under the heading "Mitigation Measures - Electric Transmission Line".

Air quality impacts can be substantially reduced through the adoption of mitigation measures. The Commission, therefore, requested the California Air Resources Board (ARB) to perform a
New Source Review for the proposed project and to recommend mitigation measures needed to bring the project into compliance with all applicable air quality standards. These recommendations are included in Response Bll in Volume II of the FEIR.

The ARB's proposed mitigation measures are similar to the ones that were developed for the Sohio project. The proposed measures seem to address conditions related to oil transporters and do not always seem applicable to LNG vessels. The estimated maximum emissions, as shown in Table 4 of Response Bll, disagree with the comparable levels shown in Table 3.5-4 of the Draft EIR, once Table 3.5-4 has been corrected to reflect .25% Sulfur fuel for LNG ships instead of the 3% as shown. Moreover, it is not clear as to what, if any, trade offs will be required to meet the Air Pollution Control District's new source criteria. Therefore, we are ordering further hearings on these recommendations to develop a record which will allow us to determine the extent to which these air quality mitigation measures should be adopted.

3. <u>Water Quality/Marine Biology</u>

The Point Conception marine environment is unique because colder waters from the north and warmer waters from the south meet and mix there. This unique environment is inhabited by an unusually diverse population of fish and invertebrate species, many of which are at their range limits or are found only in this biological transition zone. The waters offshore from the site have been identified as being within the "nodal point" of this transition zone. There is some evidence that the Point Conception area is also important to migrating gray whales and marine birds. (CCC Final Report page 30) The marine environment near the site also supports important commercial resources. The proposed marine facilities are located in commercial Kelp Bed 32, the state's largest and most productive bed. The area is also used extensively by commercial fishermen.

Three aspects of the proposed LNG project will have significant impact on the marine environment: construction of the trestle and submarine seawater lines, operation of the seawater system for vaporizing the LNG, and operation of the LNG ships and associated small craft.

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Construction of the trestle and seawater lines will affect roughly 30 acres of the rocky reef east of Canada del Cojo. Although most of the disturbance is temporary (the construction period is about one year), it will entail nearly complete destruction of kelp and bottom-dwelling marine organisms in the construction zone. Blasting, if any, can be conducted to minimize the potential injury to fish. After completion of the trestle and seawater lines, the construction zone will be a rock substrate suitable for recolonization by the same species present today. We expect substantial recovery of the kelp and associated marine organisms within a period of two to five years after construction. The temporary loss, however, will adversely affect the resource exploitation of Point Conception which includes kelp harvesting and sports fishing in the area east of Cojo Bay.

The ocean is the principal source of heat for vaporizing the base load at the terminal. At full development, the terminal will take in 160,000 gallons of seawater per minute, or 230 million gallons per day. Although a large volume of seawater, it is roughly one-quarter of the intake rate of a typical electrical power generating station along the south coast.

The seawater intake will entrain fish and plankton in the intake station. Western Terminal proposes to use a velocity cap, an intake structure which has proved to reduce fish entrainment at Southern California Edison power plants. Nonetheless, a reasonable high estimate of entrainment is 40,000 pounds of fish per year. Western Terminal further proposes to screen these fish from the seawater stream in an onshore screenwell and to pump the fish through a discharge pipe. An offshore screenwell, which separates the fish from a seawater stream while they are still in the ocean, is an alternative. We believe that the offshore screenwell is

feasible and has a better chance of minimizing the impacts on the fish. Further discussion on this issue is presented under the heading "Mitigation Measures - Seawater Vaporization System."

The plankton entrained will be killed by the combination of mechanical injury and chlorination. The dead plankton discharge will have little value to the ocean food chain from which they were taken. Nonetheless, most plankton have a very high rate of reproduction, and we do not expect any significant impact on the populations. The entrained plankton will include roughly one-half to one ton of fish eggs and larvae per year. For species which have small populations at Point Conception, the egg and larvae mortality could adversely affect a marginal population. Rare species could become even rarer.

To protect the seawater system from fouling by marine organisms such as barnacles and mussels, Western Terminal proposes to chlorinate the seawater at its intake point. The dosage will be roughly 1 to 1-1/2 parts per million chlorine, producing a residual chlorine of from 0.2 to 0.5 parts per million. This will require roughly one and one-half tons of chlorine per day. Chlorine will be generated onsite by electrolysis of a portion of the seawater streams. As the chlorine oxidizes organic materials, metals, and ammonia, most of it will convert to chloride ion which is abundant in seawater. Any residual chlorine will be destroyed by addition of sulfur dioxide. The water chemistry of seawater chlorination is complex, and there is the possibility that continual low levels of toxic substances will be discharged.

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The seawater is cooled by passage through the LNG vaporizers. The maximum temperature drop is 12°F. When discharged, the cold jet of seawater rapidly entrains warmer surrounding water, and the plume is warmed. Organisms which float passively in the seawater will be exposed to the cold water plume as the water in which they float is entrained. Average exposure time is 30 seconds, and typical maximum temperature drop is on the order of 4° to 6°F for the majority of the organisms affected. Since this is a once-through impact, we do not expect it to have a significant effect on plankton.

Even a temperature drop of 12°F will have little effect on marine organisms for short exposures. If the cold water plume were directed against the sea floor, the benthic (or bottom dwelling) organisms would have a far greater exposure and could suffer an adverse impact on population structure. The final studies of plume dynamics will be used to refine the design to minimize bottom impact.

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The LNG ships will be fueled at Point Conception. The heavy residual fuel oil (Bunker C) will be delivered in roughly 20 ship loads per year to the terminal and transferred to each LNG ship which off-loads. The numerous transfers of fuel may result in operational spills. Most of these will be small, but there is a chance of larger spills. There is already much oil in this portion of the Santa Barbara Channel from existing oil and gas development as well as from natural seeps. If some oil escapes containment, the principal impact will be on the immediate shoreline of the LNG terminal; thus, this impact would be locally significant. The maximum credible oil spill could affect an area of shoreline between Refugio Beach and Point Arguello, but has an extremely low probability of occurrence over the project life. Other chemicals which may be toxic to marine life will arrive at the LNG site by rail and are not expected to pose a problem.

The vessel activity at the marine terminal will cause injuries to kelp similar to those at the existing points of small craft activity along the Santa Barbara Channel. The deep draft, large horsepower tanker propeller will disturb sediments along the rocky reef, seaward of the berth. Although most of the impact is away from the principal area of the kelp bed, the operation of the Point Conception terminal will cause a continual low-level degradation of the kelp and associated resources. At present, there is no proposal for a major exclusion zone around the trestle. To the extent that vessels and divers must avoid the area for safety reasons, commercial and sports fishing and commercial kelp harvest \vec{z} would be adversely affected.

Although seasonally high concentrations of the endangered California gray whales and some migratory birds occur in the terminal vicinity, at this time we believe the project should not have a major adverse effect on such species. The entrainment of 40,000 pounds of fish or more per year is potentially mitigable. Western Terminal is considering a fish separation mechanism in the intake sump (screenwell). Coupled with a fish-return line, this measure may reduce fish damage to an undetermined extent.

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As mentioned above, an alternative mitigation measure is provision of a screen at the water intake at the 30-foot water depth, 1/2-mile from shore. In principle, this method would more effectively reduce fish damage and appears to be feasible. Chlorination of intake seawater to prevent fouling of equipment may result in discharge of low levels of toxic substances. The seawater system effluent should be monitored and the chlorination program modified, if necessary. Also, a supplemental method of fouling control should be used to reduce the reliance on chlorine (see Technical Report 26). In addition, an oil spill contingency plan and spill containment and cleanup equipment at the site should be provided to minimize the impacts of any potential oil spills associated with fueling the LNG ships.

4. <u>Terrestrial Biology</u>

The LNG project will result in activity on land for terminal construction at the Point Conception site, for pipeline construction from Point Conception to Gosford in the Central Valley, for road construction from State Route 1 to the site, and for power line construction from Goleta to the site. Each of these activities will entail some degree of disturbance to terrestrial biology.

Terminal construction at Point Conception will disturb roughly 150 acres, two-thirds of which is grassland and the remainder, scrubland with some coastal sage. Apart from the pipeline crossing, there is no need to disturb the Cojo ravine. There is the possibility that several rare or endangered species of plants and animals are associated with the site. Overall, the terrestrial biology impact of site construction is small in a regional sense, since the habitat affected is already disturbed by grazing which is common in the vicinity.

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The pipeline stretches 112 miles, with a 100- to 125-foot-wide construction right-of-way. The corridor affects an area roughly 10 times greater than the terminal construction does. The pipeline is only able to use existing rights-of-way for a small portion of its length. Roughly one-third of the pipeline affects disturbed agricultural or vacant land. Of the remainder, only 5 percent is wooded, the balance being brushland and grassland. These communities are expected to revegetate the pipeline scar. Woodland will be excluded within 20 feet of the pipe.

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Several rare or endangered species are known to be along the pipeline route. These species include the San Joaquin Kit Fox and the Blunt-Nosed Leopard Lizard in the Carrizo Plain. A detailed survey of at least a portion of the pipeline route is necessary to determine whether the pipeline will impact concentrations of these animals.

Road access to the site crosses numerous ravines. Major construction would adversely affect several riparian zones and patches of coastal sage. In a regional sense, road construction has a more significant impact on terrestrial biology than terminal construction does. The damage by road construction can be minimized to the degree to which road improvement is minimized or right-of-way corridors are used.

Construction of either a coastal or inland power line on steel towers will have a minimal terrestrial biology impact. Some brush will be cleared for road access to the tower sites, but the rightof-way between towers need not be disturbed. The electrical conductors pass high above the more sensitive vegetation along the bottoms of the numerous coastal drainages.

These terrestrial biological impacts at the project site can be mitigated by minimizing disturbance, for instance, by protecting Canada del Cojo from grading and by routing the access road to avoid major fill in the coastal ravines. The land taken for the proposed site can be compensated for by using some of the adjacent pasture land as a large buffer zone around the terminal and allow-

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ing it to revert to a natural vegetation community. The pipeline impact can be minimized by careful survey to avoid rare or endangered species and by a vigorous revegetation effort wherever compatible with pipeline maintenance.

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5. <u>Noise</u>

Both construction and operations will create a new noise source in an otherwise extremely quiet rural area. The pipeline route is mostly through unpopulated areas, and its construction will cause noticeable noise for only a few days as the construction crews pass near several populated areas. Its operation produces no noise impact. Terminal construction will increase sound levels up to 15 decibels on the A scale (dBA) at 4000 feet from the center of the site.

An alternative access road is presently being considered as a desirable mitigation measure. This alternative involves use of the Hollister Ranch Road, with some improvements to upgrade it to a 25-mile-per-hour (mph) speed. If this is done, construction workers would have to be bused to the site, causing additional noise impacts during construction. Access road alternatives via an improved Jalama Road or the gas pipeline corridor would have similar noise impacts during construction. During terminal operation with power generation by gas turbines, sound levels will increase by up to 10 dBA at 3000 feet from the center of the site. The sound levels outside the terminal during operation will be around or below Environmental Protection Agency (EPA) criteria.

6. Visual Aspects

The immense bulk of the LNG storage tanks, the trestle, LNG ships, and miscellaneous structures on the site will appear in sharp visual contrast to the undeveloped setting at Point Conception. Since the public does not have easy access to the site, however, the terminal itself will not significantly impact the public view. The power transmission line, if built as a steel tower line on the coastal terrace, will result in serious visual impacts.

The terminal structures can be visually softened to a limited degree by camouflage painting and by proper landscaping to protect the principal scenic vistas of Point Conception. Partial inground-

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ing of the tanks should also be considered. When the power transmission line is constructed, visual impact can be reduced by locating the line out of view from the coast wherever possible. Also, the alternative of providing power to the site utilizing existing wooden pole power lines and by undergrounding the line through Gaviota State Park appears to be an attractive visual mitigation measure.

We are, therefore, requiring Western Terminal to provide the Commission with a study to determine the exact extent to which existing wooden poles can be utilized and the extent to which the transmission line can be undergrounded. In addition, we are asking Western Terminal to submit a landscaping plan which would also mitigate visual impacts.

7. Land Use

The terminal itself will require slightly over 200 acres and right-of-way for the access road may require another 75 acres. Construction of the gas transmission pipeline will cause a short term impact to over 1000 acres until the right-of-way is revegetated with native plant species. The project will introduce a new land use to the Point Conception area. This use is compatible with continued cattle grazing, the dominant present use. It is also compatible with the existing oil tank and oil tanker mooring buoy and the Southern Pacific Railroad. However, it is less compatible with recreation and low-density residential development, which are current land use trends in the area. The terminal will, of course, have a significant impact on the open space character of the land. There will be no significant change in surrounding land use as a result of this project.

The basic conflict in land use cannot be changed. However, any reduction in cumulative environmental effects, including visual, would mitigate the impact.

It should be noted, however, that the California Legislature, in enacting SB 1081, determined that the LNG terminal could be located at such a remote and undeveloped location, since, neces-

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sarily, there would be little residential or permanent working population. In effect, the Legislature has made the decision that siting a terminal in a relatively undisturbed location is both acceptable and necessary for this LNG project.

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8. <u>Socio-economics</u>

The total socio-economics impact will not be adverse. Project construction will require a large number of workers over a period of three to six years. Although project construction will lead to temporary large employment, there will be little long-term population growth in the area, since the facility operating staff is small.

The urban areas within and around Santa Barbara County can easily supply most of the labor needed for construction if this were the only project. However, cumulative construction employment requirements of the LNG project, the Vandenberg space shuttle program, and Outer Continental Shelf (OCS) development would result in a significant number of temporary in-migrant construction employees. The projected vacancies in transient accommodations and permanent housing in the area, as reflected in county statistics, appear sufficient for the cumulative requirements of the projects as they are now scheduled. Adverse impacts could result with certain combinations of project schedules, resulting in small reductions in tourists accommodated, further tightening of the local housing market, and increased use by labor of north county accommodations.

There will be some additional demands on public services, but these will be more than balanced by the increased economic benefit from employment and the expanded tax base. Market attractiveness of property surrounding the site will be reduced, and residential land values may tend to decrease in this locale.

The project impact on the socio-economics aspects of Santa Barbara County is small and requires little mitigation. Most important is for the project constructor and local agencies to discourage overdevelopment of housing or services in the community \leq in false anticipation of long-term growth.

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9. Ancillary and Induced Development

The development of the Point Conception site will not, in all probability, provide an incentive for industry to move into such a remote location. Cryo-utilization will, at most, provide a basis for very limited industrial development. It is possible, however, that onshore support facilities for the development of outer continental shelf oil and gas leases could be attracted to the area, since it will offer power and pipeline infrastructures. These facilities are small compared to the proposed LNG project.

10. <u>Cultural Resources</u>

Known significant archaeological sites are within the boundary of the terminal area, within the pipeline corridor, and along the proposed access road. The project as planned will result in the destruction of many significant cultural resources.

Point Conception is regarded as a sacred place by some American Indians. Indians throughout the West are said to believe that Point Conception is the "Western Door" through which souls enter and leave this world. The local Chumash Indians consider themselves to be the keepers of the door, and they conduct religious ceremonies in the vicinity. The record does not show that the specific site selected for the LNG plant has any particular religious significance as opposed to other areas in the vicinity of Point Conception. The project will impact the religious values present in the Point Conception area.

The proposed project's potentially major impacts on archaeological sites at Point Conception and along the pipeline and power line routes can be reduced substantially by shifting the location of proposed project facilities to avoid the significant resources sites. The access road has less flexibility in altering the route to avoid major archaeological sites. In sensitive areas, road improvements might be limited to avoid impacting cultural resources at the cost of increased traffic problems or the need to bus construction workers to the site. Mitigation by salvage rather than by avoidance is a second, but far less desirable, option.

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Although operation of an LNG terminal at Point Conception will not necessarily interfere with religious practices in this area, the visual and acoustical impacts on the sacredness of the Point Conception area to Native Americans are impacts for which there appears to be no remedy.

11. Energy

The project will consume significant quantities of electricity; however, its net energy impact will be a major increase in gas supply to California.

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Energy use at the terminal can be reduced slightly by actions such as energy recovery in the seawater outfall and use of seawater for peakload as well as baseload vaporization of LNG; however, these measures would increase cost and reduce reliability. A major energy saving might be realized from cryo-utilization to generate power without additional fuel. At present, the feasibility of this process and its impact on reliability remain unproven. Other energy-use reduction alternatives, such as the use of all gasfired vaporizers or solar power, will be further evaluated in the ARB hearings to be held at a later date.

12. Marine Traffic

The Santa Barbara Channel is an active transportation corridor for coastal maritime trade. The LNG ships and associated supply shipping produce only a small increase in existing channel traffic. The LNG ships bound for and departing from Point Conception must cross the western portion of the Santa Barbara Channel vessel traffic lanes; however, simulation of possible vessel encounters indicates that the impact of LNG ships on existing traffic is negligible.

As mentioned ship traffic in the Santa Barbara Channel was simulated to evaluate the potential for marine accidents associated with 193 LNG ship deliveries per year. The simulation indicated that the chance of an LNG ship being involved in any sort of an accident while approaching the site is an event with a recurrence interval of more than 10,000 years (less than 10^{-4} chance of accident per trip). Also, because the double hull design of the

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LNG ship makes the ships more resistant to minor accidents such as bumps and scrapes, accidents severe enough to cause an LNG spill are expected to be very rare. Analysis indicated that the probability of losing the contents of one ship's tank of LNG, based on about 190 shipments per year, is an event with a recurrence interval of 12,500 years (approximately 8×10^{-5} per year).

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The low probability of a serious ship casualty, coupled with mitigating measures to further increase vessel safety and the low population density in the vicinity of the terminal and the marine approach lanes, makes Point Conception a suitable site with respect to vessel traffic safety.

Further reduction in the already low risk of vessel casualties might be achieved by further improving communication and navigation procedures for the ship's approach to the Santa Barbara Channel and the LNG berth. Contingency plans for responding to minor incidents to prevent their escalation are also likely to further mitigate marine traffic risks.

13. Terminal Reliability

As stated, the proposed project is designed to supply up to an annual average volume equivalent to 1.3 BCF/D of LNG to California gas users. The reliability of this supply depends on a number of factors: The reliability of the liquefaction plants supplying the LNG, the reliability of the LNG ships with respect to delivery of LNG without delays long enough to cause a temporary disruption in gas availability to California users or to cause an inability to accept annual contract quantities of LNG, and the reliability of the receiving terminal facilities.

Historical evidence indicates that liquefaction terminals and shipping operations can be considered to be essentially 100 percent reliable. This reliability, to some extent, is due to excess capacity typical for liquefaction facilities and to the availability of extra ships if an occasional additional shipment is required.

Occasional unfavorable combinations of weather conditions (wind, waves, and fog) may prevent the LNG ship from docking as soon as it arrives near the terminal. Based on currently available

information the long-term average berth availability at Point Conception will be in the range of 84 to 93 percent. This is more than the 83_percent limit estimated as the minimum level at which a long term throughput of 1.3 BCF/D can be maintained. Additional data on the sea state at Point Conception are currently being recorded to allow future improvement of the berth availability analysis. Recent onsite data seem to confirm preliminary conclusions, but additional information on southern hemisphere swell will be obtained during the summer of 1978.

The mechanical reliability of the LNG terminal itself is estimated to allow the 1.3 BCF/D capacity to be maintained 99.41 percent of the time. If the terminal were operated at maximum capacity with allowance for reduced output because of mechanical failures, an annual average rate of 1.57 BCF/D of LNG send-out could be achieved if the LNG supply were unrestricted. This excess capacity allows some flexibility in catching up after periods of reduced output as a result of equipment failures or delays in unloading the LNG from the ship. Since California has underground gas storage volume equal to about 5 months' sendout from the proposed terminal at 1.3 BCF/D, short interruptions can be tolerated as long as an annual rate of 1.3 BCF/D can be maintained.

The continuing high reliability of California's only LNG supply depends on maintaining a spare parts inventory of critical items. In the early phases of the project, the terminal reliability is high enough so that the cost of adding further redundant systems is not justified in terms of increased reliability. However, at full capacity, it may be desirable to consider adding another peakload vaporizer. The addition of a fourth tank as discussed in the Draft EIR is no longer considered desirable, since existing underground gas storage capacity in California can be used as buffer storage instead of additional LNG terminal storage.

[&]quot;Berth availability" is the term used to describe the percentage of the time that an ING ship can safely dock at the berth and unload ING.

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14. Terminal Safety

A review of the safety of the proposed terminal facilities indicated that it is technologically feasible to achieve high levels of safety at the Point Conception site. Seismic design requirements for the Point Conception location can be met with existing technology within reasonable costs. Although Western Terminal's seismic design analysis for major components of the terminal is not yet complete, recommended criteria for the design will ensure construction of a terminal that meets satisfactory safety and reliability standards. The staff has issued proposed LNG Facility Safety Standards, which, if promulgated, will assure a high level of safety.

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The foregoing statement is based upon our knowledge of the seismic state of the site as our evidentiary record exists at this moment. The further hearings we will hold on this issue may materially change our evaluation of terminal safety and our ultimate decision.

Most accidents that might occur at the terminal would not be serious enough to have potential offsite safety impacts. Only a major failure of one of the LNG storage tanks has the potential for creating a serious offsite risk, although more limited LNG releases associated with ship unloading line accidents or spills in the land storage or vaporization areas might endanger some terminal personnel or persons in the vicinity of the marine trestle. The analysis of both the probabilities of various accidents at the LNG terminal and their potential consequences indicated that the probability of an accident involving more than 10 fatalities is extremely low, with a recurrence interval in excess of 1 million years. This low-risk level is due to the combination of inherent terminal safety and the low population density near the site. Some perspectives on interpreting these estimated risk levels are presented in Section 5 of the FEIR.

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The possibility of accidents from malicious acts ranging from vandalism to sabotage was also evaluated. Security measures planned by Western Terminal and divulged to the safeguards analysis team on a restricted basis were judged by the reviewers to be adequate after some recommended modifications were adopted.

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Impacts of the LNG project on public safety can be minimized both be reducing the likelihood of LNG spills at the terminal through accident prevention and control procedures and by remote siting to reduce the number of people potentially exposed to the A. 57626 et al. ALT--RDG-IM

consequences of such an accident. The Point Conception site location is in a remote area, and LNG ships approaching the site also are distant from population areas. The land-use control provision of the ING Terminal Act will maintain future population density at low levels in the terminal vicinity. The Commission staff has issued proposed Safety Standards for LNG facilities which would impose some design requirements on Western Terminal. Indeed, it is all important to state that the Point Conception site is the only one before us which poses no problem with the application of the "remote" criteria mandated by S.B. 1081. Within the four mile perimeter spelled out in Section 5582 there is no doubt that neither permanent nor transient population exists to the extent that any question of remoteness may be raised. The closest state park capable of producing significant transient population is some nine miles distant while surfers, fishermen and kelp harvesters, do not operate in sufficient numbers within the proscribed distances to raise the issue.

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In addition, in Phase II of OII-1 we will consider the establishment of a staff Risk Management Group that will have an active and continuing role in ensuring that the facility safety systems are properly designed, operated, and maintained. Under staff surveillance, Western Terminal's operating procedures, contingency plans, site security equipment and procedures, operator selection and training procedures, and plans for investigation of minor accidents and malfunctions will be reviewed to maintain a high level of safety at the terminal. The staff has issued a Safety and Construction Monitoring Plan which gives further details on its proposed risk management program.

C. Unavoidable Adverse Impacts

Although many of the significant environmental impacts of the proposed project can be successfully mitigated, some residual impacts are unavoidable. The major unavoidable impacts are highlighted below.

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1. Topography, Soils, Geology, Hydrology, Seismic

Grading and cut and fill operations will modify topography and eliminate some existing topographic features. Removal of top soils in the developed area will result in loss of productivity. Erosion and water turbidity are likely to increase slightly during project construction.

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2. Air Quality

As discussed earlier, further hearings will be held to determine what air quality mitigation measures will be required. It is the intent of the Commission that sufficient trade-offs and/or mitigation measures will be required so that the project will not have a significant impact on air quality in the South Central Coast Air Basin. The following paragraph describes the project's impacts without consideration of additional mitigation measures as trade-offs.

Cumulative annual average emissions from the LNG project add a significant increment to the pollutant emissions within the North and South Santa Barbara air basins. Nitrogen oxides produced by terminal fuel combustion are a large increment to emissions in the immediate area and are a small addition to the already significant nitrogen oxide emissions in the air basin as a whole. Under adverse weather conditions, short-term state standards for nitrogen oxide are violated a few percent of the time.

3. <u>Water Quality/Marine Biology</u>

The seawater system will entrain plankton, and plankton mortality will result from the effects of anti-fouling chemicals. Also, some residual fish entrainment and mortality in the seawater system are possible if planned mitigating measures are not fully effective.

4. Visual

The large structures and man-formed industrial character of the proposed terminal and the power transmission line will conflict with the present open space character of the area.

5. Land Use

The proposed project will permanently remove about 300 acres of land from agricultural and recreational use, and temporarily disrupt more than 1,000 acres of land during construction of the pipeline. The terminal will conflict in land use with its surrounding open space, recreational, and residential area.

6. Cultural Resources

The proposed terminal site and pipeline corridor contain some significant archeological resources which would be destroyed during construction. Construction of either the proposed or one of the alternative access roads will result in major unavoidable impacts to cultural resources. Also, the terminal site at Point Conception would conflict with and decrease the religious value of the Point Conception area for Native Americans.

7. Marine Traffic

Vessel traffic will increase about 4 percent because of the LNG ships and by 1 to 1-1/2 percent as a result of service traffic

in support of the project. Also, a petroleum product spill might result from_a casualty involving these ships; however, the chance of such an occurrence is small.

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8. <u>Onshore Transportation</u>

Project and construction traffic increases will impact traffic flow of State Route 1 at the access road intersection. Use of either the Hollister Ranch Road or the Jalama Road for an access road will impact the existing character of these routes.

D. <u>Mitigation Measures - Seawater Vaporization System</u>

1. <u>Deficiencies in Design</u>

Because of the importance of the seawater vaporization system to the reliable operation of the LNG terminal and because the operation of the seawater system will cause one of the major environmental impacts of the terminal, staff submitted Exhibit A-102, a special report on the design and operation of the seawater system. This report, which indicates the seawater system has major design deficiencies, was sponsored by a consultant to the Commission. The consultant's report examines the means which could be utilized to reduce damage to entrained fish and to improve the effectiveness and reliability of the fouling control for the seawater system.

2. Mitigation of Fish Entrainment

Western Terminal's proposed fish return system consists of an onshore pump and screenwell with a fish return elevator that removes entrained fish from the screenwell and places them in the seawater outfall line. Although it is of the same design as planned for San Onofre Units 1 and 2, this entire fish return system has never been tested in actual operation. The deficiencies of this system are described in Exhibit A-102 as follows:

"First, it removes the fish from their natural ocean waters and relies on mechanical separation and return. In the course of this, the fish are exposed to damage from mechanical trauma and chlorination of the intake water. Although based on an existing design, the effectiveness of the fish return in reducing fish mortality is unproven at the scale and location of the Point Conception LNG plant. Furthermore, the equipment required for the fish return is elaborate: it requires several thousand feet of discharge conduit, mechanical elevators, separate pumps and possible separate dechlorination.

The report proposes a preferred alternative to an onshore screenwell. This alternative utilizes a caisson-type seawater intake system. It largely eliminates damage to entrained fish; further, its component parts have been proven in operation. The record shows that this seawater system would cost no more than the onshore screenwell system. According to Exhibit A-102, it also "may simplify fouling control by eliminating the need to precisely control chlorine concentration in the intake, screenwell, and fish return conduit. With respect to trash rejection and anti-fouling, the offshore concept may be more reliable than the onshore concept with a fish return." Western Terminal has not chosen to utilize this design.

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Exhibit A-96 indicates that Western Terminal rejected the caisson-type system not on the basis of overall effectiveness, but on the basis that it has not been proved reliable in an open marine environment. Western Terminal believes additional hydraulic testing of the design is needed. Staff argues, however, that Western Terminal's real reasons were stated by its witness when he was asked the following question by staff counsel:

- "What I don't understand, Mr. Fuller, in light Q. of the facts, with respect to the onshore pumping system, you will have to go ahead and conduct additional studies with respect to exomotive chlorination levels, so forth, why you haven't considered the possibility of going forward with necessary hydraulic tests necessary to determine the reliability of the caisson pump station concept?
- "The sole reason is that we are attempting to Α. eliminate as early in the game as we can concepts that we need not pursue longer and spend the time " and the money making those additional investigations.

"I think that what we have done to date has been thorough, and it admittedly has work yet to be done, but at least I think that we have identified the issues in sufficient detail so that a rational decision can now be made and the concept selected." (T. 2880-2881.)

It appears that Western Terminal had decided to go forward with the proposed design, and by the time the offshore caisson screenwell Intake system was proposed, Western Terminal was already committed. This conclusion would seem to be supported by the response of the witness to a further question concerning the costs of conducting the necessary hydraulic tests to determine caisson system reliability:

Q. "Any indication of what the cost of such a test would be?

A. "No, I don't believe we have that.

"I think the bigger cost is associated with going ahead through the design work and finding at a later date we will have to back up and start again with a new design effort on a different concept." (T. 2882)

Based on the available evidence, it appears that the caisson screenwell intake is more effective than the applicants proposed method. Condition 4, discussed in Section XIV, will require the development of this system unless the applicant can demonstrate that it is infeasible or that another method is more effective.

3. Control of Fouling

The principal design deficiency which the staff's consultant found with respect to the fouling control is related to Western Terminal's proposal to rely on electrically generated chlorine as a reasonably safe and cost-effective method of controlling fouling of the seawater intake system. He noted that the major problem with this proposal is that Western Terminal intends to rely on the effectiveness of a continuous, low-level chlorine injection system that has never been tested and that Western Terminal had made no provision for a backup anti-fouling arrangement in the event of greater than expected fouling. Exhibit A-102 points out that, in addition to not allowing for the intrinsic demand that seawater itself makes upon the chlorine, Western Terminal has failed to demonstrate that mixing of the chlorine would occur to a degree sufficient to maintain its effectiveness. The staff's consultant

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expressed the opinion that a higher level of chlorination would probably be required and that the increased dosage would have a greater impact on fish sucked into the seawater intake.

The witness who sponsored Western Terminal's seawater system study (Exhibit A-96) conceded on cross-examination that testing would have to occur in order to determine the level of chlorine injection that will actually be required and that tests would need to be made to determine how to design for sufficient mixing.

Because of the essential role of the seawater system in LNG terminal operations and because low-level chlorination has never been used before in the manner proposed, the staff recommends that Western Terminal should adopt the staff consultant's proposal for alternative means to control fouling, as detailed in Exhibit A-102.

Based on the foregoing, the Commission will adopt the following staff recommendations with respect to the seawater system, in addition to our condition as set forth later herein:

- "1. Part of the operating procedures for the Point Conception plant should include monitoring for biological fouling in the intake conduit, the screenwell, the vaporizers, the fish return and the discharge conduit. The monitoring should include both instrumentation to measure resistance to flow and periodic visual inspection. In this way the effectiveness of the anti-fouling program can be continually evaluated, eliminating the tendency for over dosage and warning of possible unscheduled maintenance.
- "2. Design should include the use of a long-life toxic coating such as B. F. Goodrich 'No-Foul' for those portions of the seawater system which would be the most difficult and time consuming to clean manually in the event of an anti-fouling failure. Particular attention should be paid to the fish return conduit. If that line becomes fouled, the flow restriction will interfere with the efficiency of the fish return and the likelihood of mechanical damage to fish in the narrow conduit will sharply increase.

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"3. The applicant should provide a contingency maintenance plan for the seawater system showing the operating procedure for seawater shut-down for time intervals of four hours, one day, five days and fourteen days. The contingency plan should include provision for de-watering a portion of the system, providing access to all critical components and should estimate the cost of outage and the source of alternate gas supply to California."

E. Mitigation Measures - Access Road

1. Existing Access Roads to Site

At present, access to the Point Conception site is via the existing Hollister Ranch Road, which begins at Highway 101 at Gaviota State Park and follows the coastal terrace through Hollister Ranch and the Edison property of which the proposed site is a part. The distance from Highway 101 to the site is 13.4 miles and takes about 40 minutes. Alternate access is provided by the Bixby Ranch Road, which originates northwest of the terminal at the County's Jalama Road and generally follows the coast to the site.

As envisaged by Western Terminal, the proposed access road will be used during both construction and operation for equipment and for material carried by trucks, for labor transportation and for emergency services. Western Terminal contends that an adequate access road is an essential element of the project; that neither the Hollister nor Bixby roads are adequate for the planned movement of labor and materials during construction; and that an adequate all-weather road is required in meeting the day-to-day labor and material needs of the completed project.

Only small amounts of material and equipment will be hauled by pickup trucks over the existing access road. Western Terminal states that the majority of such cargo will be transported by rail and unloaded at a new railroad spur to be constructed at the site.

2. The Railroad Route

Western Terminal originally proposed an access road designed for 45 mph traffic with a route parallel to the existing Southern Pacific railroad. It is the most direct route, following the coast from Highway 101 to the LNG site. For six miles, from Highway 101 to Drake, the route follows the Hollister Ranch Road corridor. At two points near existing high railroad trestles, the

route departs from the railroad right-of-way and curves inland around arroyos to avoid bridge construction. Considerable cut-andfill work would be necessary as this route crosses the mouths of about two dozen arroyos.

The record shows that construction of a road over this route would have greater environmental impact than construction of the terminal itself. The road would substantially alter the visual character of the route; it would significantly impact the terrestrial biology; and it would pass through and destroy a dozen archaeological sites. Further, the route passes through Gaviota State Park. The EIR evaluated this proposed access road and found it unacceptable.

3. The 40-MPH Improved Hollister Alternative

An alternative to the railroad route is an improved Hollister route following the existing Hollister Ranch Road corridor with departures to reduce the number and sharpness of curves to accommodate 40-mph traffic. Edison has a 200-foot wide easement along the corridor. Western Terminal estimates that three-fourths of this alternative road would be within this easement. It would, however, place the access road well within the array of Hollister Ranch's 100-acre residential parcels between Drake and the terminal. Western Terminal indicates that the required cut-and-fill earth movement along this route could be almost as extensive as that required for the railroad route.

This alternative can be regarded as somewhat preferable to the railroad route because construction would cause less disturbance of terrestrial biota, and it would impact few archaeological sites. However, this route also traverses Gaviota State Park.

4. The Improved Jalama Route

The Jalama route differs distinctly from the others in that it approaches the terminal site from the northwest through the undeveloped Bixby properties. Utilizing this route would require the construction of seven miles of new road from Jalama Road at Jalama Beach County Park to the terminal site, in addition to the reconstruction of eight miles of the Jalama Road. The new road

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> would replace the winding Bixby road from Jalama Road to a point past Black <u>Canyon</u>. The route then follows the Southern Pacific line across the coastal terrace to the railroad spur at Point Conception, where the Bixby road diverges from the railroad and enters the terminal site from the west.

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This route is 26 miles longer than the railroad route. Cumulative long-term costs of this route, because of travel time for construction, labor, and additional expenses for the movement of equipment, would be significantly greater than for the other routes.

Because the coastal terrace is relatively flat, there appears to be greater opportunity for flexibility in designing the placement of a road along this alternative route. Thus, although there are many cultural resource sites along this route, many could be avoided. However, over 140 mature trees would have to be cut down during improvement of the Jalama Road.

5. The 25-MPH Improved Hollister Alternative

After distribution of the DEIR, which identifies the environmental impacts of the proposed railroad route and the above alternatives, Western Terminal proposed, as a mitigation measure, a plan to improve the existing Hollister Ranch Road for a design speed of 25 mph. The improved Hollister alternative road would provide all-weather access with significantly smaller and fewer environmental impacts than any of the above alternatives. Western Terminal alleges that these impacts are likely to occur whether or not the LNG terminal is ever constructed; that sooner or later, Hollister will have to make many of the improvements to maintain the road and eliminate trouble spots.

6. Staff Position on the Access Road

The staff believes that if the Commission permits an LNG terminal at Point Conception, it should authorize an improved access road. The staff took the position that, of the foregoing four alternative routes, the proposed 25-mph improved Hollister Ranch Road should be conditionally authorized on the basis that this proposal would provide the most efficient access with the

least environmental impact. Following testimony presented in behalf of Hollister Ranch Owners Association, however, the staff qualified this position. Hollister offered evidence on the high level of costs which would be incurred in improving the existing Hollister Ranch Road as well as evidence on the feasibility of constructing a road from Highway 1 over the Santa Ynez Mountains to the site. As a result, the staff now recommends that the Commission develop further evidence on the issue of routing the access road. It is the staff's present view that the record as made contains insufficient evidence on the access issue. The staff points out that if it is feasible to transport most of the labor and material to the site via the railroad or to construct an access route similar to route 4-4a as shown on Hollister's Exhibit A-105, the environmental impacts of the proposed project might be greatly reduced. The staff, therefore, recommends that the Commission adopt its proposed Condition No. 16, which is set forth later in this decision.

7. Hollister's Position On the Access Road

It is Hollister's position that all of the acceptable access routes have major adverse environmental impacts and that any permit should be conditioned to require the use of barges and the railroad exclusively. Citing County's findings in Condition No. 59, Hollister points out that any improved road will become a major inducement for increased industrial and other urban growth throughout the Point Conception area. County recommends that all transportation of construction personnel and material to the proposed LNG site be by Southern Pacific from the Lompoc Valley spur. County also found that Lompoc is easily serviced by rail and that approval of this railroad access would put the major burden of providing housing on Lompoc and the north county areas where the housing situation is_far less acute than exists in southern Santa Barbara County where the rental vacancy factor is minimal and much of the area is under a building moratorium.

Hollister points out that the record in OII 1 shows that, if use of the present track as extended by short spurs at either end to unload trains were found infeasible for reasons of opposition

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by Southern Pacific or Amtrak, the estimated cost of constructing a new temporary track, alongside the existing Southern Pacific track and within the right-of-way, would be one-fourth to one-third as much as the cost of any vehicular access route to the site. Hollister asserts that with little, if any, need for cutting and filling, the laying of temporary track would be far less damaging from an environmental standpoint.

Hollister contends that should it for some reason be impossible to utilize the railroad for all construction traffic, construction access should be limited to a yet-to-be-constructed private road leading northward from the site and connecting with Highway 1 at its nearest point, following generally the proposed pipeline route, with the precise alignment to be so designed as to avoid cultural sites, to minimize earth moving, and to avoid degradation of significant vegetation and wildlife habitats. According to Hollister, such a northerly access route has been recommended by County in an amendment to its Condition No. 49 for substantially the same reasons it put forward in support of railroad access via Lompoc.

CCC, in its Condition No. 23, recommends maximum feasible use of barges and the railroad for transport of workers, materials, and equipment. It specifies minimum improvement of the Hollister Ranch Road as a supplemental means of access should vehicular access prove necessary. Hollister points out that CCC did not have the benefit of the testimony of its witness relative to the actual condition of the Hollister Ranch Road and the impacts of reconstruction and that, therefore, its recommendation does not appear to be supported by evidence. Hollister urges, therefore, that the Commission modify CCC's Condition No. 23 under Subsection (b) of Section 5633 of the Act and require the northerly route recommended by County. Hollister submits that a northerly route is preferable to a route extending from Gaviota through the Hollister Ranch to the proposed site for the following reasons:

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"1. It better diffuses the impact of traffic and housing within the County, focusing these impacts at a more median point in the County, and, in particular, diminishing the housing impact on the already overcrowded Santa Barbara-Goleta urban areas.

- "2. It avoids the impact of heavy construction traffic through Gaviota State Beach Park.
- "3. It avoids disruption and damage to existing residential and agricultural developments.
- "4. Reconstruction of the existing Hollister Ranch Road entails extensive cuts and fills, realignment and grade reduction along a ten-mile stretch of narrow coastal terrace, resulting in greater visual degradation, increased land use impacts and greater safety problems.
- "5. The northerly route offers sufficient flexibility in alignment to permit by passing of archaeological sites and other cultural resources, thereby eliminating the severe impact to archaeological sites entailed with any route through the Hollister Ranch.
- "6. Use of the dangerous Gaviota turn-off on U.S. Highway 101 involving an on-grade crossing of southbound lanes by all northbound traffic, is eliminated; use of the interesection of Highway 1 and U.S. Highway 101, where a full diamond interchange exists, will result in a major reduction of traffic hazards."

8. Railroad Commuter Service

Western Terminal investigated railroad service as an alternative to transporting construction workers to and from the LNG site. Western Terminal states that it rejected railroad commuter service as being infeasible and offering no evironmental advantage for the following reasons:

- "(1) Given institutional restraints and opposition by Southern Pacific Railroad and Amtrak, it : would be difficult to achieve this alternative."
- "(2) Response time for emergency service would be significantly greater using the existing roads rather than an improved access road.

"(3) The expected construction peak for personnel would require 23 passenger cars for one trip into the site each day. Establishment of craft working hours to suit a rail schedule would be extremely difficult, if not impossible.

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- "(4) Even with a rail commuter service, a minimum access road would still be necessary for access during the construction as well as during operation of the facility.
- "(5) A staging area for the train would also be necessary, producing significant impacts.
- "(6) It would be an extremely expensive alternative."
- 9. Conclusion

Conclusion 16, discussed in Section XIV, will require the applicant to develop transportation plans for the 25-mph Hollister Ranch alternative and the improved Jalama Route, As requested by Santa Barbara county, a northern route generally following the pipeline corridor will also be studied.

F. Mitigation Measures - Electric Transmission Line

1. An Air-Pollution Mitigation Measure

In its application, Western Terminal proposed onsite generation of the electric power for the initial 500 MMcfd capacity of the terminal (Phase I). Gas turbines were to generate the required electricity. Once a second LNG supply project (Phase II) had come on line, purchased electricity would be the normal source of power, with gas turbines assuming a standby role. The DEIR recommended as an air-pollution mitigation measure, #/ that Western Terminal from the outset abandon onsite generation, except as a standby source, in favor of purchasing power from Edison. In order for Edison to provide power for the project, it will have to construct, own, and operate a 66 kv-transmission line to the site.

2. Disadvantages of Onsite Generation

For onsite generation, three gas-turbine power generators would be needed during the 500 MMcfd and 700 MMcfd phases of the project.

^{*/} The major environmental problem with onsite power generation is that the resulting emissions may result in violation of air quality standards. With onsite power generation, even at the Phase I level, the onsite gas turbines would emit more than 100 tons per year of NOx. This would classify the terminal as a "major emitting facility" under the Federal Clean Air Act.

Two would be in continuous operation; the third would be on standby. Peak power requirements for the terminal during these phases will be approximately 40 megawatts.

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The DEIR shows that, even at the lower operating levels of the terminal there would probably be a violation of air quality standards and emission regulations. Exhibit A-87 (Technical Report No. 4 supporting the DEIR) states:

"The first few phases of project development specify that an average of 35 megawatts (mw) will be generated on site. ...Until that time the tremendous quantity of nitrogen oxides generated by high temperature combustion in the gas turbine generators will pose a local violation of the state 25 pphm hourly standard for nitrogen dioxide, particularly when the plant peaks at 50 mw." (Exhibit A-87, p. 161.)

Exhibit A-87 shows that even when operating at the 5 mw and 10 mw levels, the state NO_X standard would be equalled. The DEIR concludes that with onsite power, violations of state standards would probably occur approximately 77 to 133 hours per year. These violations are unacceptable. With purchased power at the 500 MMcfd throughput level, there is, according to Exhibit A-101, a substantial reduction in emissions.

Onsite generation has the following additional disadvantages: (1) It is less reliable. Having the gas turbines as backup to purchased power increases the reliability of the plant over total reliance on gas turbines; (2) Gas turbines are a source of a certain amount of noise. Elimination of turbine noise will improve the environment in the immediate vicinity of the plant; (3) It is less energy efficient. The energy efficiency of onsite power generators is considerably less than that of large utility generating plants. The everyday use of gas for onsite power generation is questionable.

3. Minimal Impact on Air Quality of Purchased Power :

Edison states that "this project will not represent a significant element of present demand and will be met from existing:" or previously planned capacity." This demand for electric power is equivalent to 0.28 percent of Edison's 1977 capacity. The

pollution emissions from the Edison facilities to produce an equal amount of purchased power will be less than that emitted from onsite generators, due to higher efficiency and types of units used by Edison. Some of these units are nuclear and hydroelectric which do not produce air emissions. These emissions will be distributed throughout the Edison power generation grid with minimal impact upon air quality in any particular area.

4. <u>Two Power Line Routes Available</u>

The merits and demerits of two powerline routes have been developed on the record. These routes have been identified as the coastal route and the inland route. The required power could be transmitted over either or both of the two routes. Each route has certain environmental advantages and disadvantages with respect to the other. On balance, the coastal route is the environmentally preferred route.

5. Coastal Power Line Route

An existing 66-kv power line now parallels Highway 101 along the Channel coast from Gaviota to Goleta. The line is supported on wood poles. Another line on wood poles, a 16-kv distribution line, runs from Gaviota substation through Gaviota State Park along the coastal terrace past the project site.

The 66-kv line could be modified to accommodate a second 66-kv line for the project. Wood poles could still be used. The 16-kv distribution line could be upgraded to carry both the 16-kv line and a 66-kv line. This would involve replacing the existing wood poles with wood poles roughly 20 to 30 feet taller and installing new crossarms, insulators, and conductors. In Western Terminal's opinion, the environmental impacts caused by upgrading these existing lines would be minimal and substantially less than the impacts caused by installing entirely new lines and supporting structures.

The only significant environmental impact of routing a power line along the coast is visual. The reconstruction and upgrading of the existing lines along the coastal route should not result

in any additional significant visual impact. Other than somewhat taller_poles, a higher level of insulation, and an additional circuit, there will be no difference from the present condition. The public's view of the area should not be substantially altered because telegraph, telephone, and electric lines are already arrayed along this entire stretch of coast from Goleta to Point Conception. It is very unlikely that use of the existing pole line would impact cultural resources.

Installing the 66-kv facilities along the coastal route would cost less than for the inland route. Routing the project's 66-kv line around Gaviota State Park would be costly and could have a greater environmental impact.

6. Inland Power Line Route

The inland route follows along the southern border of the Los Padres National Forest on an existing Edison easement which parallels the coast. The 10.4-mile Hollister Ranch section of the route is in the same easement as proposed for the coastal route. A power line constructed along this easement would generally be out of sight of persons on the coastal terrace. The only environmental advantage of this route over the coastal route is visual. The line would utilize steel tower supports, but fewer people would see a power line constructed on this route than one following the coastal route.

The inland route would extend along 27.8 miles of existing Edison right-of-way. It would have a total length of 32 miles and require the construction of over 50 miles of access road to reach remote tower sites. If this route were selected, it would be difficult to avoid cultural impacts in the construction of the required extensive access road.

7. Edison Presentation

At the request of the staff, Edison presented testimony by its supervisor of transmission and maintenance. He indicated that $\stackrel{>}{=}$ Edison had provided applicant with two conceptual plans for providing

electrical power to the plant. One plan is for a single-circuit 66-kv transmission service, costing about \$6 million. The other is for a two-circuit 66-kv transmission service costing about \$7 million. Edison's witness stated, however, that no preliminary engineering had been done, that no consideration had been given to alternate routes, and that the cost estimates were accurate in order of magnitude only.

Edison's witness was questioned concerning the feasibility of: using the existing 66-kv pole line that runs from Goleta to the Gaviota substation; upgrading the supporting structures of the existing line that runs along the coast from Gaviota past the site; utilizing alternate corridor routes; and undergrounding the transmission line. In response to each of these areas of questioning, he indicated that additional engineering would be required to provide meaningful answers.

As to the feasibility of undergrounding the transmission line, Edison's witness indicated that the current cost of undergrounding a typical 66-kv transmission line is on the order of \$500,000 per mile plus right of way costs. He indicated that until additional studies are conducted, he could not state the extent to which the transmission line could be undergrounded or what would be the actual cost of undergrounding.

Edison's witness indicated that for the routes he examined, he assumed wood poles would not be adequate. He stated that steel structures are the only satisfactory line supports in rugged terrain because span lengths often exceed the strength characteristics of wooden poles.

8. Staff Position on Transmission Lines

Staff believes applicant should be authorized to construct a single-circuit 66-kv power line to serve the terminal during Phase I of the project. The staff recommends, however, that Western Terminal, in conjunction with Edison, should conduct the necessary preliminary = engineering studies and submit to the Commission a plan indicating the maximum extent to which it is feasible to place the transmission line underground in the coastal zone and in Gaviota State Park. Where undergrounding is not feasible, the plan requested by the

staff would include utilization to the maximum feasible extent of existing poles and/or upgrading of existing poles. The staff further recommends that Western Terminal should be required to carry out the recommendations set forth in its Condition No. 15, infra.

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9. <u>Conclusion</u>

Based on this record, total undergrounding of the electric transmission line does not appear to be technically feasible. However, the record does show that portions of the transmission line could be undergrounded and that along portions of the routes existing wooden poles might be utilized. The visual advantages of undergrounding or using existing wooden poles are obvious. By Condition No. 15, set out later in this decision, we are requiring additional studies and hearings on this issue.

G. <u>Mitigation Measures - Gas Transmission Pipeline</u>

1. Proposed Trans-Mountain Pipeline Route

Western Terminal states that it selected the proposed transmountain pipeline route because it represents the most reasonable balance of tradeoffs of design and costs versus environmental effects. Western Terminal's proposal is based on a three-mile corridor width to permit flexibility in final pipeline alignment in response to specific engineering and environmental factors. A wide corridor provides latitude for: avoidance of archaeological resources, populated areas, and sensitive biological habitats; use of existing right-of-way and previously disturbed areas; and minimization of impacts to natural and artificial drainage, natural biological habitats, terrain (topographic alteration and increased erosion/ siltation rates), and existing land use.

Once constructed, the pipeline will be completely underground. A permanent 50-foot-wide zone along the transmission pipeline corridor will be required during operation, except the 45 miles of looped line will require a 75-foot-wide right-of-way.

The proposed tie-in from Point Conception to Gosford appears to be the most economic transmission pipeline routing available. An added advantage of the proposed route is that it traverses the

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Ten Section oil field. This field has great potential as an underground natural gas storage or banking facility. SoCal and PG&E are planning to purchase the Ten Section oil field for this purpose.

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No unusual biotic associations occur in the pipeline area. The three-mile pipeline corridor provides sufficient flexibility for minimizing impacts to natural and artificial drainages and special habitats. Once the pipeline is completed, Western Terminal agrees to have the right-of-way revegetated with native grass or agricultural crops and generally restored to its original use and appearance.

Western Terminal believes that the proposed route will result in less impact to cultural resources than other routes. To ensure protection of cultural resources, Western Terminal states that it will employ an archaeologist to accompany the pipeline surveyors. He will provide guidance in avoiding cultural resources or salvaging their sites, as appropriate.

The record shows that population concentrations along the proposed route are very small. Generally, such concentrations as there are can be avoided so that few people would be exposed to construction noise, dust, and other interference.

Western Terminal and the staff gave consideration to more direct pipeline routes across the mountainous region. Neither found a more direct trans-mountain route to be acceptable because of the steep terrain and greater adverse biological impacts.

2. Coastal Route

The coastal alternative route is approximately twice as long as the proposed route. The pipeline would follow the Channel coast and then go inland across Ventura County to Los Angeles County. In contrast to the proposed route, it would traverse some of the region's most heavily developed areas around the city of Santa Barbara as well as urban centers at Ojai, Newhall, and Palmdale. Agricultural land use and residential development in general is more intensive along the coastal route, and the area is noted for

its beauty. In addition, there are numerous cultural resources. Land use impacts, therefore, would be correspondingly great, and in general, the environmental effects of this alternative are more adverse than the proposed route.

3. Staff's Position on the Gas Pipeline

Staff believes that the record in this case clearly establishes the proposed route as the most favorable corridor in which to construct the proposed gas transmission line. As stated in DEIR, "The coastal pipeline approach offers no advantages to the trans-mountain pipeline approach currently proposed. The coastal approach is roughly twice as expensive, it entails construction in difficult terrain and in more urbanized areas, and its environmental impact is generally more adverse."

It is the staff's position that the proposed pipeline is a necessary adjunct to the proposed Point Conception regasification facility. The staff believes the utility has made reasonable representations of the total pipeline costs and scheduling, and the pipeline unit costs of service are acceptable. The staff points out that the record shows that the capacity of the existing gas transmission system is adequate to accept the initial volumes proposed under Application No. 57792, and that the existing gas transmission system would be capable of accepting ultimate plan output volumes after various minor modifications. The staff also believes the construction of the pipeline is feasible from economic, engineering, and environmental points of view. The staff recommends that the Commission grant PG&E and PLS a certificate of public convenience and necessity to construct the proposed gas transmission pipeline, subject to pertinent portions of the staff recommended terms and conditions, infra.

4. <u>Conclusion</u>

The record clearly shows that the proposed pipeline corridor is the most feasible and has the least adverse environmental impact. « Alignment of the pipeline with this corridor shall be determined as specified in Condition 8 in Section XIV.
XIII. LNG SAFETY ISSUES

Section 5632 of the Act provides that the Commission:

"shall not issue a permit ... unless it finds to do so is consistent with public health, safety and welfare and may impose such conditions on the issuance of a permit as may be necessary or appropriate to ensure the public health, safety and welfare."

It was principally to comply with this provision that OII 1 was commenced. The procedural history of OII 1 has been described earlier. What follows herein is our opinion on all safety issues raised by Western Terminal's application to build an LNG facility at Point Conception.

A. General Comments

Before reviewing the evidence in this proceeding with regard to safety and making the determinations required by Section 5632, some general comments with regard to safety and the concept of risk are in order.

Practically every industrial activity being undertaken in our society presents some risk of bodily harm to people whether they are workers within the industry or the general public in the vicinity of the industrial activity in question. Modern, complex industrial systems are carefully engineered to provide continuity of operation and are specifically designed not to fail. Nonetheless, failures do occur, and sometimes, the consequences of such failures in terms of the extent of casualty incurred can be quite large.

To a large extent, the level of safety of a new facility can be determined by design options. For example, building codes are generally based on severe conditions (e.g., wind, flood, seismic events) which have occurred within 20 to 50 years' experience. These conditions are likely to recur during the life of a structure \leq designed to the building code. Because of some safety factors in the design of structures, even if a somewhat more severe event

occurred, such structures would not be likely to fail. However, there would be some chance of failure should an unusually severe natural disaster occur.

In contrast, design criteria for nuclear reactors are based on the concept that release of radioactive material from an accident is not tolerable. Therefore, nuclear power plants are designed to withstand extremely rare natural disasters. For example, when seismic design levels are established, an analysis is made to determine the most severe seismic event that might occur at a particular site. Also, containment vessels are designed to withstand tornadoes with winds of 300 mph, even though 99 percent of all tornadoes have lower winds.

Where a component or subsystem failure could cause a potential hazard, redundant safety systems are incorporated in the design. Of course, such stringent design criteria are expensive to implement, but have been judged to be necessary by the Nuclear Regulatory Commission (NRC) to minimize the risk to the public to the lowest level consistent with existing technology. While zero risk cannot be achieved, the NRC still permits operation of nuclear facilities designed to stringent criteria.

The California Legislature in the Act decided that California's first LNG import terminal should be sited in a region of low population density. This approach is based on an assumption that a catastrophic accident might occur at the facility and that potential consequences of such an accident can be mitigated by strictly limiting the number of people who might be exposed to the risk. However, in formulating safety standards we cannot rely exclusively on remote siting. The probability of occurrence of failures within a system and the expected consequence of the failures as expressed by total casualties make up the overall risk associated with that system.

Risk, then, has two major components. First, there is the probabilistic component of risk which represents the likelihood

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with which system failure may occur. Second, given a failure has occurred, a certain level of casualties may result. This second component is generally considered deterministic in that once the failure scenario has been postulated, its impacts are predictable in absolute terms.

Because risk has two components, the risk presented to people (i.e., the impact of concern is casualty as opposed to dollar loss or environmental damage) by an industrial system can be reduced by introducing measures which would either reduce the probability of failure, reduce the level of casualty in the event of failure, or reduce both the probability of failure and the level of casualty. The preferred way of reducing the risk would depend on details of the industrial operation, the existing level of risk, and the extent of reduction in risk which is desired. The last of these, the desired level of risk reduction, depends largely on perceptions of acceptability of risks.

To decide whether the additional costs required to reduce risk levels are justified in the interest of adequately protecting the public, it is necessary to make a judgment as to what risk levels are acceptable. While it is difficult to quantify risk levels for an LNG facility accurately, it is often possible to make fairly conservative estimates of risk and then compare estimated risk levels with information on risk levels associated with other, more familiar activities.

In attempting to arrive at a decision regarding the desirability of constructing the proposed major LNG importation facility at Point Conception and in developing Safety Standards for LNG facilities, we are, in effect, engaged in a risk management process. The construction and operation of the LNG terminal at Point Conception pose some risk. In the final EIR, the risk is identified considering general system failure modes and the expected consequences of such failures. The probability with which various levels of casualties may occur was quantified and reported

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for the Point Conception site in a series of risk profiles. These risk profiles constitute a graphical representation of the measured risk.

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The risk profile for the proposed LNG terminal at Point Conception indicates that the probability of incurring an accident with a casualty level of one or greater is about 1×10^{-6} events per year (one chance in 1 million years) with the existing population level and about 2×10^{-6} events per year (one chance in 500,000 years) for a hypothetical population equal to the maximum allowed under the Act. In the Final EIR, these probability levels for one or more casualties are compared with the probability of incurring a fatality as a result of several voluntary and involuntary activities that people are exposed to in the United States. As the table indicates, a person living near the proposed LNG terminal takes about the same risk as an average American has of dying in a tornado. A person living in the close proximity of the proposed LNG terminal has a much larger chance of dying in a fire in his/her home than being adversely impacted by an accidental release of LNG.

From a multiple casualty point of view, the risk profile for Point Conception indicates that ten or more casualties may be expected with a probability of occurrence of about 10^{-8} per year, given the existing population in the terminal area. Should current population increase to the maximum allowed under the LNG Terminal Act of 1977, 20 or more casualties could occur with a probability of about 10^{-8} per year. This probability of 10^{-8} per year is the equivalent of a recurrence interval of one hundred million years.

It remains for us to determine whether the risks are acceptable as they are; whether the risks should be lowered by the introduction of practical and cost-effective risk control strategies; or whether the risks are unacceptable. The first and the last of these possible determinations are straight-forward in the absolute _ nature of their finding. The determination that the risks should be lowered by introduction of effective risk control strategy leads to the necessity of making further, more complex, decisions.

B. <u>Remote Site Requirement</u>

Western Terminal submitted evidence demonstrating the proposed site's compliance with the remote siting requirement and population density criteria (Sec. 5582). The information establishes that there are approximately four persons per square mile living within one mile of the terminal site and approximately 3.3 persons per square mile living within four miles of the site.

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With respect to the Act's requirement that the terminal be located so that no marine vessel transporting LNG would be required or permitted to pass closer to areas of population density than the distances heretofore specified, the supervisor of marine transportation of Pacific Marine Associates and Western Terminal presented a marine operations plan. The berth's location was identified as approximately 4,600 feet offshore. It further showed that vessels handling LNG would approach from a southeasterly direction after turning out of the southbound vessel traffic lane in the Santa Barbara Channel.

While one party suggested that the construction of an LNG terminal will increase population density to a level beyond that permitted by Section 5582, no party contested the fact that currently. the site meets the population density requirements of that Section. Further Western Terminal's marine operations plan shows that it will comply with the requirement of subsection (a)(3) of that section which provides:

"The Terminal shall be located so that no marine vessel transporting LNG would be required or permitted in the normal course of marine operations, ... to pass closer to the areas of population density than the distances specified in paragraphs (1) and (2)." (10 persons per square mile for a distance of one mile; 60 persons per square mile for 4 miles).

Section 5582(a) provides in part that, "(f)or the purpose of selecting the site ... 'population density' shall be established as of the effective date of this chapter."

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C. Engineering Design

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Sec. 5601(b) requires the applicant for a permit pursuant to the provisions of the Act, to provide in its application "a detailed description of its engineering design." Western Terminal presented several witnesses who provided testimony concerning the engineering design of the proposed LNG facility. Their evidence which follows demonstrated the manner in which the proposed terminal will operate."

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An engineer with Fluor Engineers and Contractors, Inc., presented testimony providing further details on the engineering design of the proposed LNG facility. He described the facility's extensive fire protection system. The witness stated that the marine berth, docking structure, and trestle can be designed consistent with the state-of-the-art to accommodate wind and wave conditions known to exist at Cojo Bay.

A design engineer with Chicago Bridge and Iron Company, provided testimony on the design of the storage tanks for the proposed LNG facility. The tank design was described by the witness as follows:

"... an outer cylindrical tank, having a self-supporting dome roof, flat bottom, and a cylindirical inner tank with an open top and flat bottom. The inner tank is concentric within the outer tank. A suspended insulation deck, hanging from the outer fixed roof, is located at the top of the inner tank."

The inner tank, which is designed to contain the stored LNG, has a shell and bottom formed from 9 percent nickel steel. Nickel steel is a proven material for use in cryogenic tanks. The outer tank, which is gas tight, is designed to contain the insulation and gas vapor. Electrical heating cables are placed under the outer tank bottom to protect the foundation against damage caused by frost heave. The design provides for the sloshing of LNG within the Ξ storage tanks during an earthquake.



*/ A detailed description of the engineering design of the proposed project is presented in Part B of Section IX of this decision. A. 57626 et al. Alt-RDG

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The manager of cryogenics for Pacific Alaska LNG Associates and Western Terminal provided detailed evidence on the cargo transfer system for the proposed facility, showing the flow of the LNG cargo transfer system from the ship manifold connections to the receiving terminal storage and the major valving required for transfer operations and shut-down. The valves are to be controlled remotely and automatically, with manual overrides, and the cryogenic piping is to be constructed of stainless steel.

Western Terminal presented additional testimony concerning the engineering design for undergrounding storage tanks. Western Terminal stated that totally undergrounding LNG storage tanks is technically feasible, but that totally undergrounding is not the optimum design for the proposed project, due to the fact that ground water below the tanks freezes, causing unnecessary stress on the tanks.

Western Terminal contends that this serious engineering problem more than negates any visual benefits of inground storage tanks. Their witness estimated that the cost of constructing the tanks would increase by one-third to one-half if required to be placed inground. Their witnesses also described the impounding system for the aboveground tanks. The impounding system will contain 100 percent of the contents of a full LNG tank below the grade level of the plant site, with berms extended above that level, making the total capacity of the containment system 125 percent of a full tank.

An issue was raised regarding a proposal to require that the tank foundations be set only on bedrock. Such a proposal implies that only bedrock is structurally adequate. We are inclined to accept that premise unless and until a complete and thorough soils investigation and structural analysis of the tanks shows it to be unreasonable. This responsibility to implement this requirement will be left to Western Terminal's structural and soils experts with review by the Commission safety and construction monitoring program and final approval by the Commission.

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D. <u>Pipeline Safety</u>

On April 2, 1971 we revised General Order No. 112-B to 112-C (Decision No. 78513). General Order No. 112-C contains rules governing the design, construction, testing, maintenance and operation of utility gas gathering, transmission and distribution piping systems. One of the expressed purposes of the rules is to "to safeguard life or limb, health, property and public welfare..." (General Order No. 112-C, Sec. 102.1)

Western Terminal described its plans concerning the proposed 34-inch pipeline to be constructed to transport regasified LNG from the terminal facility at Cojo Bay, near Point Conception, to an interconnection with existing pipelines near Gosford, California. The description included the proposed pipeline's specifications, the pipeline testing, and the pipeline's capacity to withstand floods, landslides, earthquakes, and other hazards.

No party contested the fact that Western Terminal had provided adequate evidence that it will construct, operate, and maintain the proposed pipeline in a safe manner that equals or exceeds all the requirements set forth in General Order No. 112-C. We will so find.

E. Operating Procedures

Western Terminal's proposed operating procedures were briefly described as follows:

"The LNG facility will require operations on a 24-hour seven-day-a-week basis to meet the maximum base load delivery rate of approximately 1.3 billion cubic feet per day. LNG will be periodically unloaded from LNG ships (approximately 190 ship arrivals per year), transferred from the berthing area to the storage tanks through the cryogenic transfer line. The LNG will be stored on site in the three storage tanks and will be pumped from the storage tanks to the base load seawater vaporizers where it will be vaporized into natural gas for delivery into existing pipelines. Fired vaporizers will be put into service as required to meet operating conditions and deliver larger than base load volumes of gas to the pipeline system."

Western Terminal's witness stated the facility would require an operating staff of 50 persons.

F. Marine Transportation and Operations

Subsections (b) and (d) of Section 5601 require the applicant for a permit pursuant to the provisions of the Act to provide information concerning marine transportation related to the proposed LNG project, to submit a proposed plan for marine operations, and to provide information concerning public safety

of the proposed LNG project, including marine navigational systems.

Western Terminal presented evidence describing the vessels which will deliver LNG to the terminal. All vessels, foreign and American flag, will meet U.S. Coast Guard requirements.

Western Terminal's witness described the vessel traffic in the Point Conception area, and the only vessel traffic in that area is traffic transiting the Santa Barbara Channel. He also testified that the LNG vessels will not interfere with that traffic.

The staff's consultant, John J. McMullen Associates, Inc., presented an analysis of vessel traffic safety in the region surrounding the proposed LNG terminal site.

Staff's consultant sponsored Exhibit 0-55 which stated the following:

"(V)essel traffic in the Santa Barbara Channel is generally controlled in an advisory manner, by the established vessel traffic lanes.

"Vessel traffic safety involves the types of casualties which may be suffered by an LNG tanker: Collision with another vessel; ramming of a stationary object, such as on an oil platform; grounding of the ship on the sea floor; wrecking, which is striking a submerged object; and foundering. Of these, by far of most concern is the possibility of collision. The configuration and depth of the ocean in the vicinity of Point Conception makes grounding and wrecking highly unlikely and large ships of modern construction simply do not founder without any initiated casualty. The only oil platform in the vicinity of Point Conception is Platform HERMAN. During any time that the LNG ship may be in the vicinity of that platform, the tugboats will be available to take control of the ship should an onboard casualty render the ship helpless and in danger of striking the platform. The probability of collision has been investigated based on worldwide casualty experience and statistics and on data specifically applicable to the Santa Barbara Channel.

"During the 8-year period since the vessel traffic lanes_were established, there have been no collisions or casualties of any sort in the Santa Barbara Channel. During this period, there have been over 36,000 vessel movements through the Channel. This does not imply that the probability of a casualty is zero, but may be used to calculate a value below which the probability lies..."

Based on experience over the 8-year period since 1969, during which traffic service (traffic lanes) have been in operation in the Santa Barbara Channel, the probability of a casualty of any sort in the Channel is less than 8.2×10^{-5} per ship movement. The probability of a casualty serious enough to lead to the possible loss of a ship or a possible spill of LNG might be significantly smaller.

Western Terminal's witness also described Western Terminal's marine operation plan, which will apply to all vessels calling at the proposed LNG terminal. Its provisions are in addition to, not in lieu of, U.S. Coast Guard and other applicable requirements for vessel operations. All masters of vessels calling on the LNG facilities will be required to be familiar with the marine operations plan.

The witness testified that the plan requires all vessels to establish and maintain communications with the LNG facility while approaching the facility and departing from it. All vessels will monitor their radar for the presence of other vessels in the area. The LNG vessels will not enter the approach zone if another vessel is transiting it. All vessels will approach the LNG terminal from a southeasterly direction. During initial operations, Western Terminal has established as operating criteria that berthing will not be permitted when visibility is less than one mile, when winds exceed 25 knots, or when wave heights exceed six feet. In addition, the master of each vessel calling on the terminal will retain discretion to not berth even if those criteria are not exceeded. Three

· tugboats and two line-handling boats will be available at all times to assist In the berthing of LNG vessels. Once berthed, unloading will not commence until representatives of the vessel, the LNG facility, and the Coast Guard have conferred, and all parties are satisfied that unloading can be safety conducted. The vessels are responsible for the proper discharge of their cargo and will coordinate all such activities with the responsible terminal officials.

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A marine consultant also testified on behalf of Western Terminal concerning its marine operations plan and stated:

"Considering the vessels, the weather conditions we will encounter in the proposed area, the equipment proposed for assisting the vessels, I have concluded the vessels can be safely handled at the proposed terminal."

The evidence with regard to the marine navigational systems showed that each vessel will have two marine radar sets, a collision avoidance radar set, a Loran unit, and radio direction finder equipment for navigational purposes. All vessels will also have the latest marine navigational charts. The trestle and pier will be properly lighted to conform to U.S. Coast Guard requirements. The pier and trestle will also be equipped with radar reflectors.

Staff's maritime consultant recommended measures which should be applied to reduce the risk associated with LNG vessel traffic to and from Point Conception. These recommended mitigating factors were divided into the two general categories of equipment and procedures. These are equipment measures and site instrumentation.

The equipment measures are as follows:

Ship Instrumentation

Anemometer - the ship should be equipped with an 1. anemometer, providing wind speed and direction information to the bridge. This information will be necessary for the docking phase, and ensure that docking is not attempted under conditions outside the specified operational envelope.

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2. Rate of Turn Indicator - the ship should be equipped with a rate of turn indicator, reading out at both the steering stand for use by the helmsman, and at a second appropriate place on the bridge for use by the Master/Pilot. This indicator will assist in maneuvering and docking of the LNG ship.

- 3. <u>Docking Velocimeter</u> if not provided on the pier itself, the ship should be equipped with a direct reading bridge instrument displaying the velocity of the bow and stern (separately) toward the pier. This will assist in preventing too high a lateral velocity of the ship into the pier.
- 4. <u>Collision Avoidance System (CAS)</u> the ship should be equipped with a modern CAS to provide rapid indication of potential collision threats and free the bridge crew from the time-consuming task of radar plotting.

Tug and Work Boat Equipment

- 1. Open-Sea Towing Capability Via Tugboat -Each tug should be equipped with a multiple drum towing winch. This machinery should be equipped with a minimum of 2000 feet of wire tow rope and a similar length of 9 or 12 inch nylon rope. All tugs should possess at least 4-5000 horsepower (HP) and perhaps one vessel, 7,500 HP. Personnel should be trained and experienced in salvage, damage control and especially ocean towing.
- 2. Firefighting Capability Aboard Tugboats -Given the nature of LNG, its behavior when spilled, and the threat it poses to personnel and ships, the tugboats should be outfitted with extensive firefighting equipment and with personnel welltrained in LNG firefighting techniques.
- 3. <u>Pollution Control Via Vessel</u> -The work boat planned for use at the terminal should be capable of deploying some kind of open water

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Tollution control equipment. Included in this equipment should be a rapid deployment container boom and a skimming device. The work boat will require a deck crane for launching and recovering the skimmer.

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Navigational Aids

- 1. <u>Range Markers</u> the facility should be equipped with a set of range markers defining the initial approach path to the pier. One marker at the end of the trestle and a second on the mainland, properly aligned, are recommended.
- Bouys a buoy should be provided marking the location of the reported rock (hazard to navigation) at a depth of 4 fathoms which must be avoided by LNG ships.

At least two buoy should be provided to mark the southern- and western-most extremes of the field of submerged well-heads in the vicinity of Platform HERMAN. These well-heads are at a depth of 6-1/2 fathoms and should be avoided by LNG ships.

No other buoy marking the approach to the dock are recommended inasmuch as they could become a hazard rather than provide assistance.

3. Lighting of Pier - the entire trestle and pier head should be lighted with shielded lights; the lights should not be directly visible from seaward. These lights should be in operation at night and under all conditions of reduced visibility. Except for actual search purposes, spotlights or floodlights pointing seaward should be avoided.

A light atop the control tower is recommended. This light should be of a distinctive color and occulting, and will serve as a navigation aid to ships further away than in the docking approach. Early a set

Site Instrumentation

1. <u>Weather Instrumentation</u> - the control tower should be provided with an anemometer for direct on-site reading of wind speed and direction. This will assist in determining if the wind conditions at the pier are inside or outside the specified operational envelope.

- 2. <u>Visibility Measurement</u> the control tower should be provided with equipment and a procedure for determining the extent of visibility. A series of distances along the trestle marked so as to be visible from the control tower would be adequate. This will assist in determining if the visibility conditions at the pier are inside or outside the specified operations envelope.
- 3. <u>Swell/Wave Measurement</u> the pier should be equipped to observe and measure the wave and swell height, direction and period. This may be accomplished by observing the wave and swell action against a marked piling. This will assist in determining if the ocean water conditions are inside or outside the specified operational envelope.
- 4. Radar the control tower on the pier should be equipped with a surface search radar with 15- to 20-mile range capability. This radar should be operated during periods when an LNG ship is in transit and within range.

The procedural measures are as follows:

1. <u>Approach Route</u> - for the Alaska tankers, an approach route to the vicinity of the pier, beginning when the arriving ship reaches latitude of about 34°40' and follows a rhumb line to a point 2 to 4 miles south of Point Conception, is recommended. والمراجع والريبية والمعوج متووقا والمستخب

For Indonesian LNG tankers, it is recommended that the ships enter the southbound vessel traffic lane, and then turn to cross the inorthbound lane and proceed to the vicinity of the trestle.

2. Communications - during its approach to the vicinity of the trestle, the LNG vessel should attempt to communicate with all other vessels within or potentially within its path and inform them of its intentions. It is recommended that the control tower on the pier attempt to communicate with vessels with which the LNG ship may interact, and inform them of the intentions of the ship.

The ship and the site should mutually confirm, by use of their radar and communication, all vessel traffic with which the LNG ship may interact. This procedure, particularly under conditions of limited visibility will, in effect, be a vessel traffic service for the LNG ships during their approach and departure.

Western Terminal indicated its intention to adopt the recommended equipment measures and its willingness to consider the propriety of the suggested procedures. We will order it to do so.

G. Public Safety and Protection Features

The Act requires the applicant for a permit to provide information regarding safety and public protection features, including fire protection measures, marine navigational systems, emergency systems for shutting down the terminal, and other contingency plans for accidents. (Sec. 5601(d).)

Western Terminal presented evidence with regard to the public safety features at the proposed LNG terminal. The LNG facility will have an automated-control system which will continually monitor conditions at the plant, and automatically shut down operations if abnormal conditions cannot be corrected before they become hazardous. In addition, the plant will have redundant manual emergency shutdown stations for use by the plant's personnel. In the event the

control system should itself fail, the values in the emergency shut-down System automatically move to a safe shut-down position. Standby electric power will be provided at the terminal by two full capacity electric generators and a battery powered electrical system. Equipment will be located on the site with sufficient clearance so that an emergency at one part of the plant (even a fire) would not affect other parts of it.

The LNG cargo transfer system contains main shut-down isolation valves which can be activated to isolate the various portions of the system. Furthermore, pumps and piping will be installed so that LNG can be transferred between tanks, or circulated within one tank, a capability that allows the operator to avoid rollover and to empty a tank if it is necessary.

Western Terminal presented as a witness a consultant in the LNG safety area, who described the planned fire protection equipment for the proposed facility. He testified that the Point Conception terminal will have its own complete fire and leak detection and protection system. In the event of fire, fixed monitors will spray water on adjacent equipment to provide cooling, so as to prevent damage. In this connection, Western Terminal stated that water deluge systems will be placed on each storage tank to protect them from damage from fire in an adjacent impounding area.

Although Western Terminal presented extensive evidence that it will include adequate and advanced public safety and protection features at the proposed LNG terminal, we will require that prior to commencement of operations, Western Terminal shall prepare a fire protection plan for the affected area. The plan shall provide measures to adequately minimize risks to life and property from fire.

Terminal operations will not be permitted to commence until. the Commission, after consultation with the Santa Barbara County Fire Department, has approved Western Terminal's plan. This plan f shall be consistent with any safety regulations adopted by us pursuant to Section 5637 of the Act.

H. Emergency Shutdown and Other Contingency Plans

The Act also requires that the applicant provide information on its emergency systems for shutting down the terminal and other contingency plans for accidents (Sec. 5601 (d)).

Western Terminal submitted evidence that the LNG terminal will have a control system that will shut down the terminal in the unlikely event that an emergency would so require. The system includes an automatic shut-down capability, redundant manual controls, and it automatically moves the valves to a safe shut-down system if the control system fails. The terminal's impoundment basins, which will be constructed around the storage tanks and the LNG handling operating equipment, will contain any LNG spill. In the event of an emergency, the tanks can be emptied into other LNG tanks. The terminal control system is powered by an uninterruptible power supply. Excessive ship movement will automatically stop the LNG unloading and close the valves. The control system will shut down the facility within one minute of the sensing by the detection system of an abnormal condition. If either the air control system or the electrical system should fail, the failure would initiate a safe shutdown of the plant. According to Western Terminal's evidence, the cargo transfer system is designed to permit the rapid shutting down of that system in an emergency.

Western Terminal also presented evidence on contingency plans for accidents, showing that plant personnel will be given training for emergency conditions at the terminal. If LNG is spilled, the impoundment system will confine it, the shut-down system will be initiated, and high expansion foam will be employed to reduce its dispersion. If a fire is ignited on land, the fixed water system will be activated, the dry chemcial system will discharge automatically, and the high-expansion foam system will be activated to control the fire. In the event of an earthquake causing damage to the facility, the facility will be shut down until the appropriate inspection and repair, if necessary, are completed. If a spill

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were to occur at the unloading dock, operations that might act as a source of ignition would be halted immediately and safety shutdown systems for the unloading operations would be initiated. If a fire occurred at the pier, the fixed water and dry chemical systems would be activated.

· Vessel collisions involving no spillage of LNG would be handled in the same manner as any ship collision. If a spill occurs, steps would be undertaken to stop or minimize the leak (by cargo transfer, trimming of the cargo, or jettisoning it at a safe location). Operations involving a source of ignition would be ceased immediately.

Western Terminal has been ordered by the Department of Energy to submit to it, within 90 days after the site and tariffs are approved, a contingency plan for use in periods of service interruptions. The plan is required to insure, to the extent possible noncurtailable supply continuity for high priority customers of SoCal and PG&E for five consecutive months of peak use.

I. Analysis of Accidents, Consequences, and Risks

The Act requires applicant to provide an analysis of accident possibilities, consequences, and risks for the terminal. (Sec. 5601(c)). Western Terminal has submitted an extensive analysis of the accident possibilities, risks and consequences in a report entitled "LNG Terminal Risk Assessment Study for Point Conception, California".

The study analyzed the level of risk to the general public from the delivery of LNG to the proposed terminal near Point Conception. The study assumed a 4 Bofd delivery rate in place of the 1.3 Bofd average for which Western Terminal's application was filed. It considered various types of initiating events that could cause a condition in which a risk to the public may be present, and the probabilities of those initiating events. The study examined: (1) internal plant failures: (2) natural events (severe winds, storms, tsunamis, earthquakes, and meteorites; (3) ship collisions;

(4) aircraft hazards; and (5) missile impacts. The study also considered projected population data for the region surrounding the site. Ξ

The evidence developed that LNG itself is not explosive and that the greatest hazard related to LNG is the potential release of a large, low-lying vapor cloud.

Based upon the analysis performed, the study concludes that the level of risk to the public arising from the proposed LNG terminal is:

"The highest fatality probability is one chance in 14 million */ per person per year within 1-1/3 miles of the site, decreasing to probabilities ranging from one chance in 1 billion to one chance in 10 billion per person per year or less within 2 miles of the site. The probability of one occurrence of 10 to 100 fatalities is one chance in 29 billion per year, and the maximum fatality count per occurrence is 54, with a probability of one chance in 760 quintrillion (760 followed by 18 zeros) per year."

Comparative data was presented showing that an individual's chance per year of dying from fires and burns in the United States is one chance in 30,000. The study concludes "on the basis of this study that the LNG risks to populated areas near the Point Conception site are extremely low."

Further evidence on the risks associated with the LNG terminal was given by the staff's consultant, Dr. Elizabeth Drake. Her study concludes that detonation of LNG is "extremely unlikely", is not a "realistic hazard", and that the probability of an accident involving ten or more casualties due to the proposed project was around 10⁻⁸ per year (100 million years recurrence interval)' for existing population levels." She further stated:

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The probability decreases to one in 43 million per person per _ year if the assumption of 100 percent fatalities in the plume area is not used.

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"The low levels indicated are due to the conservative design of the terminal to minimize the chance of accident as well as to the low-population density in the region surrounding the Point Conception site."

SDG&E presented evidence that it has operated an LNG facility (liquefaction and gasification at Chula Vista) for approximately 10 years and has never experienced an accident, incident, spill, or leak associated with its LNG storage tanks.

The staff study comports with our earlier expressed general views on risk analysis. We will adopt its conclusions.

J. Sabotage and Vandalism

Two reports, one classified and one unclassified, were prepared in connection with the sabotage protection plan for the proposed LNG facility. The classified report provided a complete description of the security plan. That report is being held by the California Department of Justice on a confidential basis, pursuant to legal advice of the Attorney General that Section 6255 of the Government Code authorizes its treatment as classified information. The second report, which contains more general information, was presented by consultants to the staff and was the subject of hearing.

The sabotage protection plan includes: (1) perimeter fencing, (2) multiple phenomena sensors, (3) a roving security patrol, (4) a vehicle barrier, (5) access control measures, (6) special trestle, pier, and ship security measures, and (7) special employee selection and training methods. The sabotage plan should also protect the terminal against vandalism.

The report concludes as follows:

"The security plan as presently proposed will serve to deter sabotage attacks as well as provide a level of protection against sabotage threats which is to be considered adequate. If implemented as proposed, the plan will provide greater security than at other LNG facilities

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and will approach that employed at nuclear plants and Department of Defense installations, some of the most secure facilities in the country."

We will adopt the above-mentioned conclusion, pertaining to security of the proposed LNG terminal against acts of sabotage and vandalism.

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K. <u>Insurance</u>

Western Terminal submitted evidence on its plans for providing insurance for personal injury and property damage in connection with its operation of the proposed LNG facility.

Western Terminal's witness testified that it is Western Terminal's intention to maintain Comprehensive General Liability and Terminal Operator's Legal Liability Insurance covering third party property damage and personal injuries in an amount not less than \$50 million per occurrence. Western Terminal will require that each LNG vessel which is used for the proposed project carry protection and indemnity insurance of not less than \$50 million per occurrence. Western Terminal will also insure the terminal facilities for the replacement cost of new plant. In the event of an incident at the terminal, Western Terminal intends to provide a centralized claims handling facility for the receipt and handling of claims by members of the public.

Southern Pacific Transportation Company, (SP) a party to the proceeding, proposes that the Commission condition any permit to require Western Terminal to indemnify SP, even for its own acts of negligence or even willful misconduct, unless Western Terminal enters into an indemnity agreement with it. Western Terminal resists such a proposal stating that SP will be covered by Western Terminal's insurance in the same manner that all members of the public will be, and no rational basis exists to give that party any special treatment in this proceeding. The Commission concurs with Western Terminal's position.

A. 57626 et al. ALT.-EDG-IM

The County of Santa Barbara in their proposed terms and conditions recommended the imposition of strict liability on LNG terminal owners and operators for ultra-hazardous activities. Western Terminal 15 opposed to any condition of a permit that imposes strict liability for the activities of the project. The argument is that the condition is not feasible and will have impacts on the project which are difficult to predict and not readily quantifiable. Western Terminal indicates that unlimited Liability would cause a marked escalation in the costs of financing and could delay or prevent altogether obtaining of the necessary financing of the project. They indicate that while the potential cost impacts are likely to be serious, the uncertainty of impact upon scheduling and overall project viability is of even greater concern.

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We take no exception to the intentions of Western Terminal regarding liability insurance coverage. The Commission will order Western Terminal to provide to the Commission evidence of their specific liability insurance coverage at the time of exposure and obtaining such insurance. For the purpose of this order the insurance coverage would include the marine facilities, the gas handling facility, all pipeline and transmission facilities to and from the property and all vessels, regardless of ownership or control, transporting or designed to transport or otherwise used in connection with the marine operations.

We do not see it as within our jurisdiction to either limit liability or to fix a standard of strict liability upon Western Terminal. We will fix safety standards and minimum insurance requirements. The extent of actual liability for the operation of the LNG terminal must be determined either by the courts if a mishap occurs or by legislative action.

L. Missile, Aircraft and Meteor Hazards

The proposed terminal is located so that it could be impacted by launches of missiles and space boosters from Vandenberg Air Force Base and the Pacific Missile Test Center. Therefore, damage to the storage tanks could result from the potential impact of a vehicle or vehicle fragments from a critical vehicle malfunction. In most cases, these vehicles are equipped with flight termination

systems to prevent large deviations of the vehicle from the planned flight trajectory. Although none of the launch vehicles are expected to have trajectories which directly fly over the proposed LNG site, and although the activation of a flight termination system would prevent such overflight in most cases, the dispersion of some vehicles prior to destruct action, together with the effect of prevailing winds on the fragments resulting from vehicle breakup, could result in the impact of fragments on the LNG terminal. Some of these fragments would be capable of penetrating LNG tanks or major piping at the terminal. The average annual probability of one or more missile fragments penetrating an LNG storage tank, pipeline or LNG tanker tank is less than 3×10^{-5} in 1980 and declines to less than 4×10^{-7} by 1987. The Commission deems this probability to be sufficiently low as to render the risk of missile hazards acceptable.

Although the LNG terminal is located at a significant distance from any major airport, a possibility exists that an aircraft in distress may crash at the terminal and impact a critical LNG system. It has been concluded that the probability of an airplane's penetrating a critical LNG system at the shore-based terminal is about 5×10^{-5} occurrences per year (recurrences interval of 20,000 years) for the LNG pipelines and about 10^{-5} occurrences per year for an LNG tank roof, and 6×10^{-7} for an LNG tank sidewall. The risks from aircraft hazards are deemed acceptable.

Small meteors, entering the earth's atmosphere are usually completely disintegrated, due to aerodynamic heating and ablation processes that occur before they reach the earth's surface. Those meteors lasting to impact generally have pre-entry weights exceeding 100 pounds. These surviving meteors, called meteorites, would create a hazard for LNG tanks, tankers and pipes, if they were to impact with a mass and velocity sufficient to cause penetration of _ the structure. It is estimated that 3,500 meteorites, having weights in excess of one pound, fall to earth each year. The probability of a tank, pipe or tanker being penetrated by a

meteorite has been calculated to range from 10^{-7} to 5 x 10^{-8} , a clearly acceptable risk.

We conclude, that the risks to the terminal from missile and aircraft hazards are acceptably low. The probability of a meteorite of sufficient mass and velocity to penetrate the LNG tanks, LNG ships and pipelines is so remote as to be acceptable.

M. <u>Sea-State Conditions</u>

The acceptability of sea-state conditions, including wind, wave, current, and fog, at Point Conception is a significant issue with respect to the safety and reliability of the proposed project. In the event of poor sea-state conditions, an LNG tanker may not be able to dock at the facility or unload once at berth. Since occurrence of these sea-state conditions might interfere with the reliable operation of the project, it is critical to determine their frequency of occurrence, persistence, and impact upon system reliability.

Western Terminal presented a maritime operations plan which, among other things, indicates that during initial operation of the terminal LNG vessels will not be permitted to berth when steady winds exceed 25 knots, seas exceed 6 feet and/or during those periods when visibility is less than one mile. Western Terminal also sponsored evidence evaluating the level beyond which wave and swell-induced forces and motions of the ship at berth would require cessation of the LNG unloading operations. With respect to wind-related effects on tanker unloading, Western Terminal posited that the ship could safely stay at berth in winds up to 50 miles per hour without exceeding any design criteria. We accept Western Terminal's operating criteria as valid.

In order to evaluate the annual percentage of time the berth will be available to receive and unload LNG vessels, and accordingly to determine if throughput of 1.3 Bofd can reliably be delivered to the gas transmission system, an accurate assessment of oceanographic (sea and swell wave characteristics, current, etc.) and meteorologic (wind speed and direction, visibility) conditions at the Point Conception site is critical. The Commission must be in a position to conclude, on the basis of marine operating criteria set by Western Terminal, whether weatherrelated conditions at Point Conception will allow sufficient berth availability so that reliable delivery of 1.3 Bofd of gas on an average annual basis can be insured.

A. 57626 et al. ALT.-RDG-IM

Unfortunately, when faced with this critical determination, we are compelled to look to a limited record of on-site observation and measurement data which would accurately portray actual meteorologic and oceanographic conditions at Point Conception. In the absence of actual field measurement of conditions - the preferred but unavailable method - characterization of wind and wave conditions at Point Conception can best be accomplished utilizing techniques of hindcasting. Hindcasting is a process whereby historical weather information is used to estimate what conditions existed at a particular site during a specific period.

Much evidence was presented on the issue of sea-state conditions, or wind and wave conditions, in the vicinity of the proposed LNG terminal site. There were volumes of exhibits and several expert witnesses. The significance of the evidence lies in its application to two issues, project safety and project reliability.

Oceanographic Services, Inc. (OSI), undertook and presented a study on Point Conception hindcast for Western Terminal. The data employed by OSI in the preparation of its study was derived from historical weather maps prepared by the U.S. Weather Bureau, and section analyses of the southern California area prepared by OSI itself. To derive wave heights from this data, wind speed and direction, fetch length and duration were taken from the maps and analyzed by a computer model.

OSI studied wind and wave conditions at the proposed site for the years July 1961 to June 1962 and July 1964 to June 1965. Those years provided information which the OSI witnesses described as typical conditions at the site. OSI's conclusion that those

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years were typical years was based upon an analysis of weather conditions during the ten-year period, which revealed that the weather during the two-year study most closely fit the averages of the ten-year period. While OSI was instructed by Western Terminal to study typical years, and not extreme years, at the site, OSI did, as part of its report, provide Western Terminal with information on extreme wind and wave conditions at Cojo Bay.

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Intervenors Bixby and Hollister alleged both prior and subsequently to the submission of OII 1 that Western Terminal's evidence contained insufficient data with regard to "extreme" year conditions at Point Conception. This allegation seems to be based principally on OSI's use of hindcast data from 1961-62 and 1964-65 to determine, per Western Terminal's instructions, "average" conditions (tankers will not land during "extreme" conditions). The OSI data was corroborated by additional evidence presented by Western Terminal: the Tetra Tech, Inc. studies.

The intervenors misconstrue the use of the term "average." No one contends that the conditions occurring in an "average" year will recur during every year of the life of the project. Rather that term only describes a quantity that roughly bisects a range of possible quantities. This concept is illustrated by the testimony on cross-examination of the staff witness in support of Exhibit No. 0-91:

- "Q. (by Atty. Green) Referring now to page 62 of Exhibit 0-91, the range of downtime percentages that appear on that page, am I correct in understanding that those are averages, perhaps over - - - for the life of the project?
- "A. Those are long term averages.
- "Q. Okay. So then your conclusion there is not affected if, in one particular year, downtime percentages would exceed 17 percent?

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"A. Yes. On the contrary, it is constructed, assuming a fairly wide range of differences in years. It assumes that in half the years, the downtime will be in excess of that; and half the years, it will be less than that."

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The conclusions reached by OSI on the basis of its hindcast study are:

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- 1. The predominant direction of winds at Point Conception are from west-northwest to northnorthwest, with a combined annual frequency of 49.4 percent.
- 2. The frequency of occurrence of winds in excess of 25 knots is approximately 3.4 percent of the year or about 12.5 days per year at the site.
- 3. Winds at the site are lower than winds offshore or to the west of the site due to the protection afforded by Point Conception, Government Point, and the Santa Ynez Mountains.
- 4. The predominant directions of waves at the Cojo site are south-southwest to west-southwest, with a combined annual frequency of occurrence of 92.1 percent.
- 5. The site is sheltered from northwesterly swells and waves by the Point Conception promontory.
- 6. The annual frequency of swells greater than six feet is 0.2 percent.
- 7. The frequency of occurrence of waves in excess of six feet from southwesterly and southeasterly storms is less than 1/2 of 1 percent.
- 8. The frequency of occurrence of 25-knot winds simultaneously with six-foot waves from all sectors is less than 1/2 of 1 percent.

Delft Hydraulics Laboratory (Delft) undertook for Western Terminal modeling tests to determine the optimum berth orientation for the Cojo Bay facility. The modeling tests were carried

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out to ascertain the optimum berth alignment in terms of berth availability - that is, the percentage of time the berth is open to receive LNG carriers. Berth availability as that term is used by Delft is not operational berth time, but rather just a statement of the percentage of the time, on an annual basis, that the berth is available to accept vessels.

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Delft's modeling tests considered various mooring arrangements, various line elasticities, wind types, and various wave conditions (including multiple wave conditions). In studying optimum berth orientation, Delft used the OSI hindcast data.

The Delft witness testified that the optimum berth orientation for the Cojo Bay site is within the sector of 225° to 255°. He further testified that the determination of the optimum berth orientation is based on the conclusion that yearly downtime due to excessive mooring forces and ship motions at the berth, and due to adverse waves, currents, and wind conditions is at a minimum of about 7 percent at the sector of 225° to 255°. He testified that the downtime calculations were made, in part, using Western Terminal's instructions that berthing would not take place when winds exceed 25 knots or significant wave heights exceed six feet. He also stated that those criteria are based upon a conservative assumption that the tugboats and line-handling boats at the proposed terminal cannot effectively operate when the criteria are exceeded.

Western Terminal also contracted with Tetra Tech, Inc. (Tetra Tech) to provide certain additional studies of the seastate conditions at Cojo Bay. Tetra Tech, on behalf of Western Terminal, conducted two principal studies in connection with sea-state conditions at the site. First, it used certain historical data derived from wind and wave hindcasts of U.S. Navy Fleet Numerical Control and certain on-site measurements of winds to substantiate the OSI hindcast data. The Fleet Numerical data

was derived_from 26 years of weather maps (1949-1974) and the measured data was derived from a 150-foot meteorological tower which recorded conditions between March 1, 1971 through May 1, 1972. Tetra Tech concluded that the OSI wave statistics show consistent agreement with its findings, and that the OSI wind statistics were only slightly below those which it found.

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With respect to the Fleet Numerical data employed by Tetra Tech, Bixby presented evidence to show that the data has a statistical bias which results in an under-representation of extreme conditions. The Tetra Tech witness testified that his firm was well aware of the stated limitations of the Fleet Numerical data at the time it used that data and that for the purposes for which the data was used (statistical analyses and comparison) it was employed by that firm with confidence.

Tetra Tech presented a later study showing on-site wind and wave measurements at Cojo Bay from December 1977 through April 1978. The period of time covered by the report is short, but the period includes some extreme weather conditions. That report indicates the lack of long-period waves at the site, but that a number of waves were measured with a significant wave height in excess of six feet.

Hollister presented two witnesses on sea-state conditions. One witness prepared a hindcast study of wind and wave conditions at Cojo Bay. The study was conducted for one year (1973), a year the author admitted was an above-normal year. The witness testified that based upon his study the berth would have been available at Cojo Bay 81 percent of that year. A staff consultant also analyzed this study and he interpreted it to result in 85 percent berth availability for 1973. The witness characterized the study results as the most conservative he reviewed.

Hollister's other witness testified that long-period wave activities "could cause very dangerous motion of the moored ships in an unprotected setting..." However, the study sponsored by

the witness was not a study of long-period waves at the proposed terminal site. The witness had not studied the effects of longperiod waves on LNG vessels and the details of the proposed mooring system.

Western Terminal presented a report on LNG trade simulation. The report was a computer analysis of the entire LNG transportation system for the proposed project from the time the gas is loaded at the liquefaction plants (in Indonesia and South Alaska) until it is delivered to the transmission pipeline at Point Conception. The computer analysis included a number of factors which can affect that transportation requirements and delay caused by weather and other factors.

Evidence was introduced by the staff on project reliability. In its study on berth availability and reliability, numerous factors were applied to determine whether the proposed project could maintain a long-term average throughput in excess of 1.3 Bcfd. It was concluded that "weather caused berth downtime will not seriously impair operations at Point Conception."

The staff analyzed the hindcasts of both OSI and Hollister, made certain adjustments to the data, and concluded that on an annual basis estimates of restricted availability due to wind, waves, and poor visibility range from a lower bound of 5.5 percent of the time (OSI hindcast data) to an upper extreme of 15 percent (Hollister hindcast data). Staff then presented a computer-aided analysis which indicated that given berth downtime and berth unavailability ranging from 0 to 17 percent on an annual basis the LNG transportation system could maintain a long-term average throughput in excess of 1.3 Bcfd.

The staff's range of acceptable berth downtime conservatively encompasses the estimate made by Western Terminal, the Waterways Experiment Station and John J. McMullen estimates made for the CCC, and the range of estimates made by the staff consultant, including the estimate based on the hindcast prepared by the Hollister witness.

The estimate of berth downtime made by the Hollister witness (19 percent) is beyond the acceptable range estimated by the staff (1 to 17 percent), and is exclusive of downtime caused by visibility limitations. If the staff's estimate of the visibility limitation (approximately 4 percent) is added, the estimated total downtime would be 23 percent for the year estimated. A direct comparison of this estimate with the staff's acceptable range (0 to 17 percent) is not valid. The staff's range is for long-term average conditions. In contrast, the Hollister witness estimate was made for a year in which "(t)he storm frequency was somewhat above normal but not so far above as to rank as an extreme case. A number of such years would have to be contended with during the life of the LNG operation."

n ann an sins a' a' suideann - sine a dh Tanna saonn a' a' a' suideann - s As indicated in the staff's report, the system could provide an average delivery of over 1.3 Bofd of gas at 23 percent annual berth downtime. Further, the upper bound of the staff's range (17 percent) includes provision for years with berth unavailability equaling or exceeding 23 percent three years out of every ten years. Therefore, it is reasonable to conclude that none of the estimates would seriously impair operations at the Point Conception site.

We believe adequate evidence respecting these weather-related issues exists to support us in any determination to approve the proposed project. Some uncertainty exists, however, in the absence of actual measurement data, and precludes us from unconditionally accepting the proposition that weather-induced berth availability will not significantly affect reliable operations at Point Conception.

The record in the proceeding reflects 16 days of hearing which were devoted either all or in part to weather-related impacts on the viability of the LNG project at Point Conception. Witnesses ranging from international experts to local pilots, fishermen, ~ and surfers presented testimony. The evidence is somewhat contradictory. Questions were raised concerning lack of information A. 57626 et al. ALT.-RDG-IM

relating to southern swell and its potential for disrupting unloading operations at the Point Conception berth. Conflicting testimony was presented with respect to the possible dangerous effects of long-period waves on a moored LNG vessel.

Consequently, prudence dictates that we appropriately condition any permit so as to guarantee the satisfactory resolution of these weather-related uncertainties. The approval of Western Terminal's application is accompanied by a condition requiring Western Terminal to provide the Commission with two years of onsite measurement data for purposes of verifying our <u>preliminary</u> conclusion that with respect to maritime conditions Point Conception is an acceptable site for safe and reliable operations. The data shall be submitted to the Commission no later than January 15, 1980 and shall encompass the period December 1977 through December 1979.

N. Geologic Hazards

The site, in varying degrees, is susceptible to slope failure, settlement and differential compaction, and liquefaction. The evidence indicates that the threat posed by soil creep, landsliding, flooding, erosion and liquefaction at Point Conception is minimal. However, the record reflects limited soils engineering data and can only be characterized as preliminary in nature. In the absence of more detailed soils engineering, testing and analysis, we find that the problems of slope failure, settlement, and liquefaction can be reduced, when and where feasible and appropriate, by grading to competent bedrock and utilizing compacted engineering fill. The Commission further finds that given the following conclusions which are based upon existing record evidence none of the above-mentioned hazards pose significant risks to the operation of the LNG facility:

(1) Soil Creep: Creep is the imperceptibly slow and intermittent downslope movement of soil and other surficial materials. Aggresive soil creep was not recognized on the site and is not expected to be a significant problem. For the most part, the site slopes southerly at a very gentle gradient and the topography is smooth. These conditions are not conducive to destructively rapid creep.

- (2) LandsTides and Slope Failure: The large gullies, or barrances, which have formed on the site do not presently have any landslides associated with them. In general, landslides do not appear to pose a major threat to the site. Slope failure can be expected in those areas where steep cliffs, highly fractured materials, and seasonally saturated conditions prevail. The steep sea cliffs, banks of active stream channels and steep sides of large erosional gullies are the areas in the site with the highest susceptibility to failure. Mitigation measures, other than grading the site and filling the large erosional gullies with compacted engineered fill, are generally inappropriate.
- (3) Flooding and Erosion: Direct effects of flooding would be scour of stream beds on the site and channel widening by bank excavation. It is anticipated that most effects of flooding will be limited to the alluvial floodplain in the western portion of the site. Adequate drainage control measures are required to minimize erosion.
- (4) Seismic Settlement and Differential Compaction: Seismic consolidation and differential compaction could occur as a result of seismic shaking of unconsolidated or semiconsolidated surficial materials. Essentially the entire site is subject to some settlement and differential compaction in its present condition. If the site is graded to bedrock, since it is denser and more compacted, the potential for settlement can be reduced. However, alluvial materials which will be present on portions of the site will still be susceptible to risks of settlement and compaction. Good quality, properly compacted engineered fill can be expected to withstand settlement and compaction better than alluvial materials.
- (5) Liquefaction: Liquefaction is a process whereby unconsolidated water saturated sediments such as silt, sand or gravel experience a sudden loss of strength and behave like a fluid. Much of the site is mantled by unconsolidated to semiconsolidated surficial materials. Ground water is present in these materials and saturated conditions can be expected during portions of the year. In those areas where granular, unconsolidated materials are saturated, liquefaction can be anticipated. This includes the alluvial flood plains, beach sands, and areas where sandy marine terrace deposits underlie the nonmarine terrace deposits. If the site is graded to bedrock, a significant reduction in the potential for liquefaction will result. However, analysis indicates that on-site terrace materials are fairly well consolidated, and thus the liquefaction potential of the materials appears to be low.

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.O. Seismicity

1. <u>Seismic - Procedural History</u>

Seismicity proved to be the most actively contested issue of Phase I of OII 1. Only the evidence regarding wind and wave conditions produced as great a spectrum of expert testimony and exhibits as was produced during our hearings on seismic issues. While little controversy exists over the state of the empirical data base upon which our ultimate decision must rest, widelydivergent views have been expressed regarding the conclusions to which an evaluation of that data should lead us. One need only review the procedural history of our consideration of this issue to appreciate the complexity of the question before us.

Evidence on seismicity was presented by 15 witnesses over the course of 23 days of hearing. Forty-nine exhibits were introduced. Receipt of evidence fell into two distinct time periods separated by the May 4, 1978 testimony of Dr. Donald O. Asquith, on behalf of Hollister, regarding the discovery of a possible fault (Arroyo fault) at the proposed site.

At the hearings preceding the May 4 presentation, staff, applicant and the County of Santa Barbara presented witnesses supporting their respective positions on the seismic conditions at the proposed LNG terminal site. During this portion of the hearings, only the applicant presented evidence that was based upon an actual geological field study of the site. Other evidence consisted principally of review of relevant literature and evaluation of the results of applicant's geological and geotechnical investigations.

To simply recount that Hollister's May 4 presentation resulted in a subsequent enlargement of the scope of the evidence received in this proceeding would grossly understate the impact of Dr. Asquith's testimony. At a minimum, the May 4 testimony prompted the initiation of the extensive geological and geotechnical studies performed by applicant in May and June.

Dr. Asquith's prepared testimony and geological evaluation were actually submitted under date of April 28, 1978 for filing in OII 1. The evidence was received at the hearing on May 4, 1978. On May 2, in an initial response to Dr. Asquith's prepared testimony
and geological evaluation, our Executive Director requested Western Terminal to-undertake geological and geotechnical investigations, including trenching, respecting the existence, nature, and extent of the postulated fault.

On-site excavation and trenching commenced immediately, with constant monitoring by both staff and intervenor geological consultants. These investigations were performed pursuant to an agreement between Western Terminal and concerned Native American groups, the expressed intent of which was to preserve archeological and cultural resources at or near the site. The results of these investigations provided the principal subject matter for our June hearings.

Hearings were held on June 12-16, 1978 in San Francisco and June 19-22 in Los Angeles. During the first week of hearing in June, it became readily apparent that the results of the May studies were not conclusive with respect to the question of whether seismic conditions at Point Conception permit the safe and reliable construction and operation of an LNG terminal at that site. On June 16, 1978, in response to a staff motion, the presiding ALJ directed Western Terminal to (1) conduct further geological and geotechnical investigations to determine the significance of the Arroyo Central fault (by this point in the proceeding it was acknowledged by all parties that a fault did in fact exist) and (2) to conduct further investigations into the significance of other identified geological anomalies at the site. The methods employed in the further investigation were to include additional trenching at the site.

The June 16, 1978 order of the presiding ALJ was necessary in light of the diverse and conflicting conclusions reached by the parties after review of the results of Western Terminal's initial trenching at the site. Differing conclusions were reached with regard to (1) the length of the fault, (2) the amount of seismicallyinduced ground displacement and, correspondingly, (3) the magnitude and associated ground motion of the earthquake that could potentially be generated by such a fault.

Efforts of Western Terminal to comply with the June 16, 1978 order of the presiding ALJ fell prey to strong religious and cultural objections articulated by certain concerned Native Americans. To avoid a confrontation, Western Terminal was informed by letter dated June 27, 1978 from our Executive Director that while it was imperative that certain trenching be expedited, "excavation shall not commence until the Commission staff has had an opportunity to meet with the Native Americans to discuss the adoption of reasonable mitigation measures." By letter of June 30, 1978 from our Executive Director, Western Terminal was advised that discussions between the staff and the Native Americans had not produced an agreement and that the staff still requested that "Trenches SC and SD...be excavated expeditiously." By letter of July 6, 1978, Keith McKinney, the President of Western Terminal, advised the Executive Director that Western Terminal had "not been able to respond to ... (the June 30) request in view of the opposition by certain Indian representatives and a resulting unavailability of local archaeologists."*/ By letter of July 11, 1978, the Executive Director, again to avoid a confrontation, directed Western Terminal that "no further excavation shall take place at the Point Conception site until further order of the Commission." Western Terminal complied with this directive.

On July 14, 1978 testimony and exhibits relative to final on-site geological investigations were recieved into the record of OII 1 by stipulation. Phase I of OII 1 was submitted on July 19, 1978 with the filing of final addendum briefs on seismicity.

Western Terminal and the Native Americans agreed in May 1978 that trenching would only occur when a qualified archaeologist was present.

2. Seismic Description of the Point Conception Site

The Point Conception LNG site lies in a seismically active region that has experienced at least one and probably two major historic earthquakes. The entire coastal areas of the tectonic mobile belt of California, which includes Santa Barbara County, is seismically very active and a major earthquake can happen in any part of the belt at any time. However, in historic times major earthquakes have been associated with major faults that are known or becoming known. Thus, it is those areas which lie along or near major active or potentially active faults that are areas of higher seismicity. A large number of faults exist which could generate earthquakes producing significant, if not severe, ground shaking at the site. The most significant faults include the Santa Ynez (South Branch), Pacifico-Santa Ynez (North Branch), Hosgri, Santa Cruz Island-Dume Faults and the F-1 fault. Further, due to its proximity and recency of movement, the Arroyo Central fault which transects the site warrants our serious consideration.

3. <u>Seismic Issues</u>

We are faced with four principal determinations with respect to seismicity. Upon the basis of a review of regional and local geology and seismology, we must determine the location, capability, magnitude and associated ground motions of the earthquake faults which pose the predominant and most severe seismic hazards to the proposed LNG terminal at Point Conception. Based upon our assessment of the seismic hazards at Point Conception, we must determine whether the facility can be safely and reliably constructed and operated at Point Conception. If we answer this latter question in the affirmative, we must then define the acceptable seismic risk for the LNG terminal, i.e. the intensity level of earthquake manifestations at the site, usually expressed in terms of peak ground acceleration, to which the proposed facilities should be designed to function or to experience a controlled level of damage. Finally, the Commission must prescribe the appropriate seismic design criteria to insure that the facility will safely and reliably operate in light of the defined seismic risk.

4. Seismic Hazard - Arroyo Fault

At the outset, we can state that our determination of the predominant seismic hazard to the site must focus on impacts at the site. Since the site is elevated on sea cliffs 50 to 75 feet above the beach, the threat of tsunamis (seismic sea waves) is minimal. We, thus, turn our attention to the faults located at or near the site.

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It is the position of intervenors Hollister and Bixby that the Arroyo fault constitutes the predominant seismic hazard to the proposed terminal at Point Conception. No party disputed their contention that the fault exhibits Holocene movement (movement within the last 11,000 years). Thus, under the standards employed by the NRC for construction of nuclear power plants, which Hollister and Bixby submit should be applied herein, the existence of the Arroyo fault may preclude construction of an LNG terminal at the Point Conception site.

Hollister and Bixby's reliance on NRC siting criteria is misplaced. The record simply does not support the contention that the considerations associated with the siting and location of an LNG terminal are identical to that associated with a nuclear facility. No witness supported such a proposition and we are not persuaded to adopt such standards solely on the basis of the arguments raised in Hollister's and Bixby's briefs. The fact that no long term health hazard is associated with LNG as it is with radioactive material from nuclear accident is but one of the arguments militating against wholesale adoption of NRC siting standards.

Our conclusion that the stringent NRC siting standards are inappropriate to the siting of the propsed LNG terminal should not be construed as a mitigation of the high level of conservatism to which we have committed ourselves with regard to the safety and reliability aspects of the proposed project. Implementation of NRC siting criteria is not necessarily the sole or most practical method ⁻ for insuring the safe and reliable construction and operation of an LNG facility within California. The Commission is fully cognizant that the immense dollar investment required to bring this project to

fruition, the potential for tremendous inconvenience and economic loss resulting from a long period shutdown, and the high premium accorded to human safety, compel incorporation of conservatism into the design of the facilities. The conditions attached to this authorization in conjunction with the safety standards which are being developed as part of Phase II of OII 1 will insure a conservative design and, within acceptable limits, a safe and reliable LNG operation at Foint Conception.

Hollister and Bixby contend that the mere existence of the Arroyo fault renders the site unsuitable with no need for further analysis. That contention is simply not founded in the record. Western Terminal's view that further information respecting the extent of the Arroyo Fault is not critical information necessary for a site suitability determination but merely for evaluation of design criteria is equally erroneous. In light of the Commission's earlier determination that supplemental gas supplies are required to prevent curtailment of high priority consumers, we deem it both prudent and in the interest of public health, welfare and safety to accept the staff's view of the significance of the Arroyo fault.

Staff prudently concedes that the evidence of record is insufficient to support either a conclusion that the Arroyo fault should disqualify the site or a conclusion that that fault may be disregarded save for design purposes. Staff suggests that based on <u>available data</u> the Arroyo fault is a short fault that may be a secondary fault resulting from activity on one or more significant offshore faults. Staff further contends that based on available data the Arroyo fault does not appear to be a causative fault, i.e. a fault capable of producing a 5 magnitude or greater earthquake.

We conclude that on the basis of currently available data, in the absence of subsequent evidence to the contrary, the on-site seismic investigation shows:

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1. The Arroyo Central Feature is a fault which exhibits 1-1/2 to 2-1/2 feet of displacement as shown in Arroyo Central and Trench SB. Nearly all experts, including D&M, concur that it is a fault. A. 57626 et al. ALT.-RDG-IM

2. The Arroyo Central fault displaces terrace deposits and is active with its latest mapped movement occuring between 5,000 and 8,000 years ago.

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- 3. The Arroyo fault does not appear to be exposed in the sea cliff to the east of its two exposures (Arroyo Central and Trench SB) nor in the trench (SA) to the west.
- 4. The Arroyo fault appears to be a short fault which, from currently available data, may be a secondary fault resulting from activity on a more significant fault offshore. Historical records indicate that earthquakes of 7 to 7-1/2 magnitude (1812 and 1927) have occurred in the offshore area of Santa Barbara County.
- 5. Based on currently available data, the Arroyo fault does not appear to be a causative fault, or one capable of producing a 5 magnitude or greater earthquake.
- 6. The Beach *t* fault appears to be another secondary fault associated with regional stresses and offshore causative faulting. It appears to be post-terrace deposition in age, that is, approximately 80,000 to 125,000 years old.

It is concluded that the above-identified Arroyo and Beach faults do not appear to be causative. However, there remains the problem of sufficiency of the data. The permit we issue therefore is only conditional, final authorization must await the development and submission of further seismic evidence to the Commission for its evaluation.

We will order further investigation into the significance of the Arroyo fault. Pending the results of those investigations, we must determine what other faults could consistitute the predominant seismic hazard to the proposed terminal.

The Beach fault was discovered during the investigation undertaken in response to Staff's May 2, 1978 letter to Western Terminal.

5. <u>Seismic Hazards - Other Faults Near the</u> <u>Point Conception Site</u>

Western Terminal contends that the Santa Ynez River fault, trending within 12 miles (20 km) of the proposed site, constitutes the predominant seismic hazard. Staff, pending receipt of further evidence on the Arroyo fault, submits that consideration must be given to the possibility of a major earthquake (7.5 Richter Magnitude) on either the Santa Ynez-Pacifico fault, the South Branch of the Santa Ynez fault or the offshore "F-1" fault at distances of 3-4, 5, or 3 miles (4.8-6.4, 8.0, or 4.8 km) respectively from the site. Staff contends that these near-site faults constitute the predominant seismic hazard.

Western Terminal's arguments in support of its position contain a number of fatal flaws. First is its refusal to consider any non-Holocene movement as significant. For descriptive purposes, geologists have designated certain periods of time in the past with various names. The Quaternary period represents the last 2 million years of geologic history. The Pleistocene epoch is generally considered to encompass the period between 11,000 and 2,000,000 years ago. The Holocene epoch is generally considered to encompass the past 11,000 years and can be considered to be still in progress. It is not necessarily conclusive as a time period for purposes of assessing fault activity. We concur with the contention of the other parties that movement of late Pleistocene time indicates geologically recent movement.

Western Terminal's strict utilization of the Holocene criterion has the effect of arbitrarily eliminating from consideration the South Branch of the Santa Ynez fault, a fault which all other parties in the proceeding have designated as significant for design purposes. Limited field investigation has uncovered no evidence of Holocene activity along the South Branch; however, absence of Holocene movement does not mean that movement cannot happen in the future. Furthermore, a major problem with working in the area of the Santa Ynez fault is the lack of Holocene deposits. There may be Holocene movement, but there are no surficial materials to record that movement. Since the discovery of geologic evidence often rests on the

fortuitous location of a trench, an absence of evidence is sometimes inconclusive. Finally, trenches excavated in Alegria Canyon along the trace of the South Branch exhibit conclusive movement which occurred between 15,000 and 40,000 years ago. Utilizing most fault classification criteria, including that employed by the California Division of Mines and Geology (CDMG), such recency of movement would result in designation of the South Branch as "potentially active".

As one witness aptly stated, "The Holocene is not sacred." (Tr. Vol. 16, p. 1825.) Of the six geologists who testified on behalf of applicant, staff and interested parties, only Dames and Moore, on behalf of Western Terminal, considered the Holocene period as an adequate record for determining a fault's activity. The preponderance of record evidence clearly indicates that the most significant geologic criterion for identifying areas of high seismicity, which is critical to the siting and design of a safe and reliable LNG operation, is the late Pleistocene period.

Another deficiency in Western Terminal's contentions with regard to the Santa Ynez River fault stems from Western Terminal's failure to establish that such a continuous fault even exists.

Western Terminal postulates that the Santa Ynez River fault splays from the Santa Ynez fault near Lake Cachuma slightly north of west along the Santa Ynez River to the Santa Rita Hills, then west along the margin of Lompoc Valley to the sea. They infer it from the generally straight baseline of the north margin of the Santa Ynez uplift, the presence of several local faults along this line, and complex folding along and south of this line. They infer that the local faults are breaks to the surface from a possibly continuous major fault at depth and that the numerous folds are its surface effects.

While the fault as described by Western Terminal may exist, its existence as a major fault is a matter of opinion among geologists.

Even more significant is the fact that there is no evidence that the fault displaces any Holocene alluvium nor Pleistocene deposits. Thus, it cannot be shown that the hypothetical Santa Ynez River fault can be classified as active or potentially active

pursuant to any fault classification criteria. Finally, it is somewhat inconsistent to do as Western Terminal suggests and eliminate from consideration the South Branch, which admittedly manifests late Pleistocene activity, solely because there is no proof of Hollocene movement, while postulating the existence and importance of the Santa Ynez River fault which shows no evidence of either Holocene or Pleistocene activity.

We are persuaded by staff's arguments that the North and South Branches of the Santa Ynez fault as well as the F-l fault constitute the predominant seismic hazards to the proposed site. First, as we have indicated earlier, we agree with the staff that our attention must be direct to movements in the late Pleistocene period rather than solely to the Holocene epoch.

Secondly, the existence of the faults have been documented by the geological community. As depicted on most geologic maps, the Santa Ynez fault has a gently sinuous trace, 241 miles (388 km) long, from its very complicated intersection with the San Gabriel and related faults at its eastern end to the Pacific coastline at its western end. At Gaviota Pass, it bifurcates into the South Branch and the North Branch/Pacifico fault.

The North Branch splits from the Santa Ynez fault at a point south of Buellton and extends westward for about 6 miles (10 km) where it apparently dies out into an overturned anticline. About 1/2 mile (0.8 km) south of where the North Branch dies out, the Pacifico fault extends westward for 10 to 13 miles (16 to 21 km). Although it is capable of generating a major earthquake, the North Branch appears to have been inactive during Holocene time. The record did not disclose that the Pacifico fault moved in Holocene time. However because this is the largest and least studied fault in the western Santa Ynez mountains and is aligned with the main Santa Ynez fault to the east, we must consider it to be potentially _ active, especially if an earthquake is triggered on it from an earthquake on the main Santa Ynez fault. Since the Pacifico trends within 3-4 miles (7 km) of the proposed site, it is worthy of consideration because it is the largest known fault in proximity to the site.

The South Branch of the Santa Ynez fault extends from Gaviota Pass southwest across Gaviota Canyon and the mouth of Alegria Canyon to sea. At its closest point of approach, the South Branch is about 5 miles (8 km) southeast and offshore of the proposed LNG site. All investigations of the Santa Ynez fault area agree that there is evidence of late Pleistocene movement on segments of this fault.

We do not believe it is prudent to discount future seismic activity along the onshore or offshore portions of the South Branch. Late Pleistocene movement has been documented by several sources. Geomorphic evidence is very well displayed, and this information alone places the fault in the potentially active category. Additionally, there are suggestions that parts of the Santa Ynez fault system are active, such as the North Branch/Pacifico segment. The tectonic history of the Transverse Ranges is not understood well enough to allow geologists or geophysicists to determine which branch or which portion of this fault will display the next seismic activity.

The history of earthquakes in excess of magnitude 6 reveals that of those that occurred on faults which had not been previously recognized almost all occurred on faults that, because of earlier Quaternary displacement, could have been or should have been recognized. The South Branch presents a classic example. The offshore Government Point syncline which was still forming (or tectonically active) during the late Pleistocene is offset some 2500 feet at its point of intersection with the offshore extention of the South Branch. If there is an offset on the syncline which may be as young as late Pleistocene, it appears that there may have been significant offset on the South Branch of the Santa Ynez fault during late Pleistocene time.

The submission of evidence supporting the existence of the so-called "F-1" fault further substantiates our conclusions respecting the predominant seismic hazard to the site. At a minimum, the fault appears to be some 11.5 miles (19 km) in length, trends parallel to the coastline and extends within 3 miles of the proposed site.

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Since this east-west trending fault, which all parties agree evidences Holocene displacement, may be an extension of the regional east-west trending offshore fault system that aligns with the More Ranch-Arroyo Parida fault system or the Santa Ynez South Branch, the potentially connected and thus substantial length of the system indicate the possiblity of significant offshore seismic activity.

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We conclude that the Santa Ynez fault, including the North and South Branches as well as the "F-1" fault are the largest and most potentially active faults that could create an earthquake hazard to the proposed LNG terminal. We further conclude that, while assignment of magnitude is a typically subjective matter, we may, mindful of the necessity that we act most prudently, assign a 7.5 Richter magnitude, with associated maximum bedrock acceleration of .6 to .68g, to both the North and South Branches of the Santa Ynez fault and the "F-1" fault. The length and seismic history of the Santa Ynez fault support the assignment of such magnitude to the former fault. The assignment of this magnitude to the "F-1" fault is supported by the fact that the Holocene offset along that fault is at least 5 feet. (That a minimum of 5 feet of displacement exists along the F-1 fault may be inferred from the fact that the principal method employed for discovering the fault, Sparker profiling, would not have detected an offset of a lesser magnitude.) Should a displacement of that magnitude occur in one movement, the earthquake would approach a 7.5 magnitude. We reach the same conclusion with respect to the F-1 fault, if, as we have earlier postulated, the F-l fault is an extension of either the regional east-west trending offshore fault system that aligns with the More Ranch-Arroyo Parida fault system or the Santa Ynez South Branch.

6. <u>Seismic Risk</u>

Having determined the location, capability, magnitude and associated ground motion of the earthquake fault which poses the predominant and most severe <u>seismic hazard</u> to the proposed facility, we must next, based on our assessment of that seismic hazard and the potential ground manifestations that could occur at the site, determine whether the facility can be safely and reliably located at Point Conception. Should we answer that question in the affirmative,

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We must then define the appropriate <u>seismic risk</u> level for the LNG terminal, i.e., the intensity level of earthquake manifestations at the site_f usually expressed in terms of peak ground acceleration, to which the proposed facilities are to be designed.

To determine the seismic risk level, we must analyze the seismic hazard, judge the probability and nature of the seismic occurrence, weigh its potential effect in light of issues of public safety, plant investment, gas supply reliability, and then make a policy decision as to the level of protection that should be designed into the facility. Such a policy decision should reflect the enormous financial investment involved along with the cost and inconvenience occasioned by loss of plant. Accordingly, our assessment of the appropriate seismic risk should insure with a high degree of probability that the LNG facility will maintain safe operation during and following ground shaking associated with a low probability but large magnitude earthquake.

Bixby and Hollister contend that, given the existence of the Arroyo fault, there is no acceptable level of risk for an LNG facility at Point Conception. However, as we have previously stated, <u>currently available data indicate</u> that the Arroyo Central fault is not causative, but rather a secondary rupture. If subsequent investigation reveals the fault to be causative, the increased probability of surface rupture and strong ground motion at the site could induce us to conclude that an acceptable seismic risk does not exist, rendering the site unsuitable. However, in the absence of such evidence, we reiterate our conclusion that a 7.5 magnitude earthquake on the South Branch of Santa Ynez fault with associated maximum ground accelerations of .6 to .68g or a 7.5 Magnitude earthquake on the F-l fault represents the predominant seismic hazard.

Western Terminal recommended that seismic design of the proposed LNG facilities be based on a ground surface rock acceleration of 0.4g and a thin alluvium acceleration of 0.37g. Their seismic risk analysis is premised upon definition of the Santa Ynez River Fault some 12 miles (20 km) from the site as the the predominant seismic hazard. Since we have already concluded

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that the record does not support such a conclusion, we need not comment on the validity of the methodology utilized by Western Terminal in its determination of a seismic risk level. The analysis itself, whether sound or not, is rendered irrelevant by virtue of Western:Terminal's improper identification of the seismic hazard.

Our staff based its seismic risk analysis on the premise, which we have already accepted, that the predominant seismic hazards are the North and South Branches of the Santa Ynez fault and the "F-1" fault. They contend that in light of that hazard we should adopt the following conclusions:

(1) Prudence and the public interest dictate that the LNG facility be designed to withstand and continue operation after occurrence of that earthquake which would produce an intensity of earthquake ground motion at the site that has a very high probability -- on the order of 99.5% -- of not being exceeded during the 50-year service life of the facility;

(2) To assure this high probability of plant and investment protection, the Commission should direct Western Terminal to design and construct the terminal to withstand ground motions at the site associated with the earthquake on the North and South Branch of the Santa Ynez fault as well as F-1 fault or that earthquake which has a probability of occurring one time in 10,000 years (10-4 per year);

(3) Accordingly, the LNG facilities should be designed to withstand a maximum earthquake of Richter Magnitude 7.5 using a bedrock acceleration-time history with a maximum peak acceleration of 0.6g (gravity) at the site.

We believe that in siting an LNG terminal in an active seismic region our approach to resolving seismic issues should be conservative. Consequently, we believe that the proper maximum peak acceleration standard to be employed at the site should be 0.7g rather than the 0.6g recommended by staff. We will so order.

7. Seismic Design Criteria

Both Western Terminal and the staff proposed seismic design criteria. The staff's presentation was based upon two levels of earthquakes and three categories of equipment. Western Terminal's initial presentation appeared less conservative and less appropriate than the staff proposal. After reviewing the staff proposal, Western Terminal submitted a proposal also utilizing two levels of earthquakes and 3 categories of equipment. Based upon the major

change in Western Terminal's presentation and given the tardiness of the filing, the staff recommended the matter be deferred to Phase II.

Considering the financial investment involved, the loss of energy due to shut-down of plant, and the potential-but-limited hazard to public safety, it is concluded that to ensure safe and reliable operation of the LNG terminal, a level of conservatism should be incorporated into the design. Therefore, all structures, components, and systems for the proposed facility should be classified into one of three seismic categories.

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Under such a seismic classification procedure, different levels of seismic performance are permitted for each category. The classification permits Western Terminal to relate the design to both safety and economy in operation. Items required to maintain the on-site LNG in a safe condition must be designed to withstand the most severe seismic environment, the Safe Shutdown Earthquake (SSE). Items required to maintain plant operation without interruption of service are designed to a lower seismic level, the Operating Basis Earthquake (OBE). Finally, items in the third category are designed to the lowest level of seismic performance. These are support items which are not needed to maintain safety, nor are they required for uninterrupted plant operation. Seismic design for this category should be based on applicable codes, such as the Uniform Building Code (UBC).

Though seismic design criteria will be the subject of detailed examination during Phase II of OII 1, it is necessary to impose the following conditions with respect to general seismic design criteria.

1. All structures, components, and systems for the proposed facility should be classified into one of three seismic safety categories which are defined as follows:

Category I: This category includes all structures, components, and systems required to shutdown the facility during and following a Safe Shutdown Earthquake (SSE) and maintain the on-site LNG in a safe condition.

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> Category II: This category includes all structures, components, and systems required to permit continued safe plant operation during and following an Operating Basic Earthquake (OBE).

Category III: This category includes all structures, components, and systems not included in Categories I or II, but essential for maintaining support or normal plant operations.

- 2. A statistical assessment of the seismic hazard associated with the site should be provided, and the SSE and OBE should be defined as follows:
 - The SSE should be based on an evaluation a. of the maximum earthquake potential considering the regional and local geology and seismology and the characteristics of local subsurface materials. It should represent the earthquake which would produce the maximum earthquake ground motion at the site. When major historical earthquakes in the region cannot be associated with known fault structures, the SSE should be taken as that earthquake which would produce an intensity of earthquake ground motion at the site that has a very low probability (such as .01 to .5 percent) of being exceeded during the service life of the facility.
 - The OBE should be based on an evaluation of Ъ. the earthquake potential considering the regional and local geology and seismology, and the characteristics of local subsurface materials. The OBE should represent the maximum earthquake environment at the site for which it is economically advisable for the plant to be designed to withstand without loss of operational function. Western Terminal should be permitted to establish this level based on an economic study which considers the capital investment, the loss and inconvenience to the owner and to the public resulting from loss of plant operation, and the probability of occurrence of the OBE event during the service life of the plant. As an alternative, Western Terminal may select the earthquake which would produce an intensity of earthquake ground motion at the site that has a 10 percent probability of being exceeded during the service life of the facility.

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3. Regulatory Guide 1.60(NRC) response spectra, properly scaled to the peak ground accelerations recommended for the SSE and OBE shall be used in the design of Category I and II structures, components and systems.

4. In accordance with Appendix B of 10CFR50 (Code of Federal Regulations), a quality assurance program should be established that assures reliable performance of all Category I and II structures, components and systems in their respectivelydefined seismic environments.

The staff expressed concern regarding the potential behavior of the supporting elements of the LNG storage tank and the base anchorage system. Their concern was focused on the fact that a relatively thin base plate would be supported by 25 inches of foamglass insulation, 1 inch of sand, and a 4-inch leveling layer of concrete. The staff states that these supporting materials do not have significant tensile strength, that tensile stresses can result from high shear stresses, created by the dynamic response of the tank to seismic stress waves propagating through the foundation. Staff recommends that a very careful analysis of the seismic stress conditions that develop in these supporting materials take place including experimental tests. They further recommend that a reinforced concrete mat be employed unless the aforementioned analysis demonstrates conclusively that safety and reliability does not require its use. Insulation is provided between the inner and outer tanks and the staff recommends that Western Terminal demonstrate by appropriate analysis, or test, that the two tanks respond independently to seismic excitation, or the interaction should be considered in the analysis. These recommendations are adopted.

P. Staff's Proposed General Order on LNG Safety

As heretofore stated, we have a legislative mandate to adopt regulations governing the safety and construction of the LNG terminal. To implement that mandate we issued an order instituting investigation in OII 1 on October 18, 1977. In OII 1 we directed our staff to prepare propose standards governing the safety and construction of an LNG terminal, noting that such proposal was to be distributed by March 15, 1978.

The staff was delayed and by letter dated April 21, 1978 distributed "a draft of proposed Liquefied Natural Gas Facilities Safety Standards as Part III of General Order No. 112-C. These standards prescribe minimum standards for the design, construction, installation, inspection, testing, and the safety aspects of operation and maintenance of liquefied natural gas."

The staff invited parties to comment on the proposal by May 22, 1978. After reviewing the comments, the staff planned to revise the safety standards as a proposed exhibit and distribute the proposed exhibit by June 9, 1978. Subsequently, this date was extended to July 7, 1978, at the staff's request. This matter will be set for hearing in Phase II of this proceeding to provide opportunity for cross-examination and alternate proposals.

XIV. TERMS AND CONDITIONS

A. <u>General Comments</u>

Comprehensive schedules of terms and conditions have been introduced and recommended by the CCC (Appendix D, hereto) and by the County (Appendix E, hereto).

This Commission is in general agreement with many of the terms recommended by the CCC and the County. However, there are major problems regarding questions of jurisdiction, monitoring, certification, and commencement of operations. A number of the recommended terms and conditions of both the CCC and the County have been worded to make commencement of construction, or commencement of operations, subject to that agency's approval of the plan or action required by that condition.

This Commission is to the extent permitted by federal law, the state's exclusive permitting agency. (Section 5551(d).) The permit the Commission is authorized to issue is "in lieu of any other permit, license, certificate, or other entitlement for use required by any agency of state or local government for the construction or operation of an LNG terminal." (Section 5581.) If terms and conditions of the permit are so worded as to require another agency's approval before construction or operation of the terminal can begin, then the Commission would cease to be the ultimate permitting authority under the Act. To establish terms and conditions that require approval of the CCC or the County would be to take the Commission's exclusive regulation authority away and give it to the CCC or the County, contrary to the general intent of the Act. Moreover, specific language in the Act makes the Commission responsible for seeing that all terms and conditions are met. Section 5637 reads in part, "The Commission shall establish a monitoring system to ensure that any terminal authorized pursuant this chapter is constructed and operated in compliance with all applicable regulations adopted and terms and conditions established pursuant to this chapter."

In our opinion, each and every term or condition which is worded in a manner that interposes another agency's approval is contrary to the specific authority and intent of the Act, and that imposition of each and every term which is so worded will result in significant curtailment of high priority natural gas requirements and that deletion or modification of the term or condition will avoid or significantly reduce such curtailment.

The Commission recognizes, however, that the CCC and the County have real and legitimate concerns with respect to seeing that the policies of their agencies, as represented in their proposed terms and conditions, are carried out. In fact, the Commission desires their advice in seeing that their concerns are properly addressed, and if possible, solved. The Commission will, therefore, adopt the following policy so as to assure specific action by the Commission and its staff to meet the needs of the CCC or the County:

In compliance with Public Utilities Code Sections 5580, 5581, 5632, 5633, and 5637 of the Act, the Commission is responsible for implementation and enforcement of all terms and conditions adopted within its permitting authority. In carrying out its assigned responsibilities, the Commission staff shall comply with the following Staff Guidelines:

- All applicable plans and specifications shall be submitted to the appropriate state and local agencies for their review and comment.
- (2) Prior to Commission approval of any plan or study, the Commission staff upon request of any appropriate state or local governmental agencies shall meet and confer with such agencies to assure a thorough and impartial review. The plan or study under review shall be modified, extended, or revised as necessary to allow for consideration of the reasonable and legitimate concerns of the agencies.

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(3) All records and information produced through the Commission Monitoring Program shall be made available for review upon request by any interested person or public agency.

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- (4) The Commission staff, in consultation with all appropriate state and local government agencies, shall assure to the greatest extent possible that all engineering and construction plans are prepared in conformance with the standards of the applicable agencies.
- (5) A 30-day review period shall be provided other agencies to review and comment on plans submitted to them by the Commission. A longer review period may be granted by the Commission 1f it is feasible to do so.

In evaluating the recommended terms and conditions the Commission must consider how a heavily conditioned permit will affect the curtailment of high-priority requirements and the impact on the ability of Western Terminal to finance a terminal. Although it is anticipated that any permit issued for a major project such as an LNG terminal will contain conditions, if conditions are so onerous, vague, or overly broad that effectively they preclude financing of the project, the project will not be built. In turn, significant curtailment of high-priority requirements will occur.

The terms and conditions recommended by the CCC, if adopted by the Commission as worded by the CCC, will preclude financing of an LNG terminal as now proposed. Those terms and conditions, and their corresponding findings, create uncertainty as to whether or when construction could ever be started (Conditions 3, 4, 7, 13, 24), and once started would ever be allowed to commence operation (Conditions 1, 2, 5, 6, 9, 10, 16), depending upon criteria yet to be determined. Such conditions would thoroughly discourage potential investors and prove fatal to the financing of the project.

If the Point Conception terminal site is to be approved as being in the public interest, conditions must not be imposed which foreclose investors of the ability to appraise the basic economics of the project or the ground rules under which it is to be built. On the contrary, a decision that the terminal is needed and is in the public interest requires positive assurances which are supportive to optimal financing, construction, and operation of the facilities. A perception by potential investors that the project may not be wanted by the regulatory agency, even though nominally approved, will be considered tantamount to outright rejection. The wording of the terms and conditions recommended by the CCC would have precisely such an effect.

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The risk that a proposed condition will make financing of the project impossible is compounded by any ambiguous or economically unrealistic standards which are utilized therein. Requirements, regardless of cost, that the impact of any facet of terminal construction or operations be mitigated to the "greatest extent possible," or that construction and operation be conducted in a manner which will have the "least possible" adverse impacts, are certain to discourage, if not repel, potential investors. We will modify such terms to require mitigation only to the extent feasible, thereby allowing a reasonable degree of flexibility to consider other factors in the public interest. Without a drastic reduction of these uncertainties at the outset, investment in the project will not be forthcoming, thereby making construction and operation of an LNG terminal financially impossible.

We will adopt the following schedule of conditions to the permit granted herein to implement the foregoing and to assure that the terminal is constructed and operated in a manner which will ensure the public health, safety, and welfare. Immediately below each adopted condition is a brief discussion.

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B. Adopted Conditions to Permit

1. Existing Onshore Public Access

Condition:

Western Terminal shall perform the following actions:

(1) Beach area disturbed by terminal construction activities will be restored as nearly as feasible to its original condition.

(2) Previously existing public access to or along sandy or rocky beaches will not be diminished, restricted, or adversely affected to the extent feasible and consistent with public health and safety. The Commission shall consult with the Coastal Commission in determining that this condition has been complied with to the extent feasible.

Discussion:

We adopt CCC Finding 1 insofar as it is applicable to the above Condition 1. Condition 1 allows for public access to or along sandy or rocky beaches to the extent such access existed prior to the construction of the terminal consistent with public health and safety and considering the physical presence of the facility. The Commission, rather than the CCC, will assure that Condition 1 is carried out without restricting the terminal operation start-up date which we consider critical. We understand the CCC mandate under the Coastal Act to encourage public access to California's coastline but we cannot square encouraging public access great than what currently exists near a facility that the legislature has mandated to be located in a remote area. Encouraging or developing such public use would be contrary to public health and safety in light of the legislative mandate.

2. <u>Nearshore Recreational Access</u> <u>Condition</u>:

Western Terminal shall detail the impact of its operational plan on recreational activities and submit its findings to the Commission during the design review process. Terminal operations shall not unreasonably interfere with nearshore recreational activities such as boating, surfing, or skindiving. A. 57626 et al. - Alt. RDG

Discussion:

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We adopt CCC Finding 2 insofar as it is applicable to the above Condition 2. Condition 2 allows for protection of public health and safety. It also allows for compliance with Sections 5580, 5581, 5633, and 5637 of the Act. The Commission, under its jurisdictional authority, will see that Condition 2 is carried out without unnecessarily and unjustifiably delaying terminal operation start-up.

Again we must point out that we do not perceive encouragement of additional nearshore recreational access to be consistent with the legislative mandate for a remote site in light of its public health and safety implications.

3. <u>Marine Resources: Construction</u> Condition:

Western Terminal shall contract for an independent study which includes the following:

(1) A survey of the marine biota within a one-mile circumference of the seawardmost part of the proposed trestle.

(2) A survey of the marine biota and existing condition of the intertidal area within one mile in each direction of the proposed trestle.

(3) A survey and modeling of the existing sediment transport system.

After completion of the above studies, Western Terminal shall submit to the Commission an offshore facilities construction plan and schedule which shall comply with the requirement that:

(1) Construction will cause the least feasible biological damage and interference with natural sand transport.

(2) Construction and placement of the trestle, berthing facilities, and seawater system (if constructed), to the extent feasible and consistent with safe offshore engineering practice, shall take place at the time of year which will cause the least biological damage.

(3) The methods of offshore construction to be used are the least environmentally damaging feasible methods. If blasting is involved, techniques such as drilling, tamping and sequencing of charges which limit fish kills must be used to the extent feasible.

Construction of in-sea facilities shall not begin until the Commission, after consultation with the CCC, has determined that the offshore construction plan and schedule complies with this condition.

Discussion:

We adopt CCC Finding 3 insofar as it is applicable to the above Condition 3. Condition 3 allows for compliance with Sections 5580, 5581, 5633, and 5637 of the Act. The Commission maintains jurisdictional authority over any plans or studies pertaining to the construction or operation of the terminal facilities. The Commission will, as an ordinary course of action and as set forth in the policy statement above, consult with all pertinent government agencies.

4. <u>Marine Resources: Seawater Intake and Discharge System</u> Condition:

Western Terminal must submit to the Commission a plan for the design and operation of the seawater system to be used, which includes:

(1) Use of the most effective and feasible method to prevent entrainment of fish.

(2) Use of feasible alternatives to chlorinization such as mechanical, biological, or thermal anti-fouling.

(3) Provisions for the most effective and feasible method of dispersion of the cold-water plume.

(4) Use of the most effective and feasible methods of preventing biological damage caused by the operation of the seawater system.

Construction of the seawater system shall not begin until the Commission, after consultation with the CCC, has determined that the submitted plan complies with this condition and incorporates the most feasible technology for minimizing adverse effects on marine resources.



We adopt CCC Finding 4 insofar as it is applicable to the above Condition 4. The Commission maintains jurisdictional authority over all approvals for plans and studies concerning terminal facilities. "Best available technology" is replaced with "most feasible method."

5. <u>Marine Resources: Operation and Impact Monitoring</u> Condition:

Western Terminal shall contract for an independent five-year ongoing marine monitoring program to examine the effect of the seawater system to determine:

(1) The effect of the cold water discharge on marine biota.

(2) The approximate number of invertebrates and larger fish lost due to entrainment and impingement.

(3) The approximate number of eggs and larvae of fish and commercial invertebrate species lost due to mortality within the seawater system.

(4) Length of detention time and survival for those larger fish and invertebrate species commonly entrained.

(5) The distribution of species which are entrained and returned to the ocean.

(6) The relationship between species entrainment in the initial years of operation and entrainment in subsequent years, as an indication of depletion of local species due to entrainment.

The five-year marine monitoring program shall also accomplish the following:

(1) Detection of the degree of severity and rate of occurrence of water quality impacts due to changed conditions.

(2) Determination of the effects of LNG terminal operations, including movement of tankers, bunker fuel vessels, tugs, line boats, and other small craft on kelp resources.

(3) Determination of changes in sediment transport and resulting changes in marine biota.

The selection of an independent consultant and the marine monitoring program shall be approved by the Commission after consultation with the CCC. The Commission shall ensure that the marine monitoring system complies with this condition and provides for publishing of results at reasonable intervals.

Upon completion of the five-year marine monitoring program, the Commission, after consultation with the CCC, shall then determine the degree of marine monitoring that shall follow. At any time, the marine monitoring team, based upon the results of the marine monitoring, may recommend to the Commission changes in the LNG terminal operation to protect the marine resources of the area. Western Terminal after opportunity for public hearing, shall implement all such changes the Commission determines are feasible and necessary.

Discussion:

We adopt CCC Finding 5 insofar as it is applicable to the above Condition 5. Condition 5 affords the coordination of agency review. It also allows for compliance with Sections 5580, 5581, 5633, and 5637 of the Act. The language of the CCC concerning use of the seawater system should be modified. We find that the record in this case fails to support the conclusion that as a whole, a seawater vaporization system should not be utilized. The Commission maintains full jurisdictional authority over all plan and action approvals. The intention here is that the Commission will make decisions after consultation with the CCC. It is expected and understood that all other relevant agencies will be afforded review and input prior to any Commission approval as a matter of normal procedure.

6. <u>Marine Resources: Bunkering Operations</u> Condition:

Western Terminal shall provide an oil spill prevention and contingency plan. The plan shall be approved by the Commission prior to start-up of terminal operations, and shall provide for, at a minimum:

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(1) An environmentally protective method of oil refueling and storage.

(2) A contingency plan for effective spill containment and clean-up.

(3) A demonstration that the plan complies with all regulations of the U.S. Coast Guard, the Environmental Protection Agency, and other responsible federal and state agencies.

Discussion:

We adopt CCC Finding 6 insofar as it is applicable to the above Condition 6. Condition 6 allows for compliance with Sections 5580, 5581, and 5633 of the Act. It is expected that other interested agencies such as the Department of Fish and Game and the CCC will review and comment to the Commission on such plan. Although federal agencies such as the U.S. Coast Guard may require approval of the plan prior to marine operations, Condition 6 allows California, through the Commission, control of oil spill procedures on the state level.

7. Land Resources: Construction

Condition:

Prior to construction, Western Terminal shall contract for an independent study of the flora and fauna in the vicinity of the site, access road, and utility corridors. The study shall include, at a minimum:

(1) the location of rare or endangered plants or animals or potential supporting habitat;

(2) mapping vegetative habitats or other critical biotic features such as riparian corridors, springs, known nesting sites, and significant watershed vegetation.

Based on the results of this study, Western Terminal shall submit a construction plan to the Commission and the CCC. This plan shall provide for:

(1) Maximum protection afforded by federal law for endangered plant and animal species.

(2) A noise and dust monitoring program and requirement that construction noise and dust be keptrat a minimum.

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(3) Maximum feasible protection of riparian vegetation and habitat...This shall include a prohibition of all filling and other alteration of stream beds, as well as paving or other construction within 50 feet of stream beds, unless there is no other feasible alternative. In areas of botanical significance, and to the extent it is feasible to do so, existing foliage shall be preserved and the sidecasting of soils shall be restricted. Any ground water pumping shall not be permitted which would diminish or harm existing water flows or riparian vegetation to the extent feasible.

(4) A landscaping element arrived at in cooperation with the affected county, which requires insofar as feasible a balanced cut and fill, preservation and reuse of topsoil, minimum feasible disturbance of natural vegetation and land forms, replanting with natural vegetation, and disposal of fill, if any, in the least environmentally damaging manner.

(5) A construction schedule which will, to the extent feasible, undertake to minimize damage to seasonally affected flora and fauna.

Construction shall not commence until the Commission has determined that the construction plan complies with this condition.

Discussion:

We adopt CCC Finding 7 insofar as it is applicable to the above Condition 7. It also allows for compliance with Sections 5580, 5581, and 5633 of the Act. It is expected and understood that all other relevant agencies will be afforded review and input prior to Commission approval. The indiscriminate ban on sidecasting of excess soils along the pipeline route appears to be an unwarranted expense.

8. Land Resources: Gas Pipeline Route

Condition:

The approved gas pipeline from the terminal site to the point of intersection with the gas transmission system shall be routed to mitigate significant environmental impacts with a plan approved by the Commission following consultation with the CCC. The plan shall provide that:

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> (1) The route shall be surveyed by the California Department of Fish and Game.

(2) Ground equipment should not be operated off the rightof-way when avoidable.

(3) Rights-of-way should be revegetated with native plant species beneficial to wildlife.

(4) In areas of botanical significance, and to the extent it is feasible to do so, existing foliage shall be preserved and the sidecasting of soil shall be restricted.

(5) Maintenance of access should be minimized, to the extent feasible, in areas of valuable wildlife habitat, such as areas within the range of the California condor.

(6) Public access to maintenance roads should be controlled to prevent abuse by off-road vehicles.

Discussion:

We adopt CCC Finding 8 insofar as it is applicable to the above Condition 8. Condition 8 appropriately designates the Commission with final approval responsibility and allows for participation in plan development by responsible agencies. A Commission decision will approve the applied for route, therefore, CCC Items (1) and (3) have been deleted since the applied for route is basically set and already parallels certain existing roads.

9. Termination of Operations

Condition:

Western Terminal shall submit to the Commission a plan providing for the removal, to the extent feasible, of in-sea or onshore components of the LNG terminal after cessation of operation. The plan shall be approved by the Commission after consultation with the CCC. Western Terminal, to the extent permitted by federal law, shall remove each terminal component unless Coastal Act policies would allow or encourage retention of that component.

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Discussion: ·

We adopt CCC Finding 9 insofar as it is applicable to the above Condition 9. Condition 9 allows for compliance with Sections

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5580, 5581, and 5633 of the Act. The Commission will assure the accomplishment of planned facility removal through a decision and order following an abandonment proceeding.

10. Replacement of Lost Habitat

Condition:

Western Terminal shall provide, to the extent feasible, terrestrial and marine habitat equivalent in value to that lost, damaged, or adversely affected as a result of terminal construction and operation, including construction of utility corridors, roads, and pipelines. The habitat acquired or protected shall be approved by the Commission after consultation with the CCC.

Discussion:

We adopt CCC Finding 10 insofar as it is applicable to the above Condition 10. The CCC's Condition 10 has been altered to give jurisdiction to the Commission to review this action.

11. Water Quality

Condition:

Terminal construction and operation shall comply with the requirements of the State Water Resources Control Board and Regional Water Quality Control Board to the extent required by federal law and regulations.

Discussion

We adopt CCC Finding 11 insofar as it is applicable to the above Condition 11. Condition 11 allows for compliance with Sections 5581, 5632, and 5633 of the Act. CCC's Condition 11 has been altered to eliminate reference to the Air Resources Board. In Condition 34 we are requiring further hearings on the Air Resources Board recommendations.

12. Archaeological Resources

Condition:

Prior to construction Western Terminal shall contract for an independent survey of archaeological resources at the site and along the approved pipeline, access road, and power-line corridors. Wherever so indicated, the survey shall consist of

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subsurface testing. If archaeological resources have been, or are likely to be found at the site, construction shall not commence until the Commission, after consultation with the CCC, the State Historic Preservation Officer, and representatives of local Native American groups, has approved Western Terminal's plan for the protection of archaeological resources. Such plan shall include:

(1) Construction methods and facility configuration that do not disturb sites of historic, archaeological, or paleontological importance to the extent feasible.

(2) If avoidance of such sites is infeasible, the use of techniques which would best preserve the sites and objects found in them for future study and evaluation.

(3) Access shall be provided for Native Americans to sites of religious significance consistent with security and resource protection.

(4) To the extent feasible the religious sanctity of the site shall be protected.

(5) Fencing of cultural resources located near construction areas.

Discussion:

We adopt CCC Finding 12 insofar as it is applicable to the above Condition 12. Condition 12 allows for compliance with Sections 5580, 5581, and 5633 of the Act. CCC Subpart (4) is addressed below in this Commission's Condition 13.

13. Commission Monitoring Program

Condition:

Western Terminal shall reimburse the Commission for all costs incurred in monitoring the construction and operation of the facilities addressed in these proceedings. Said monitoring program shall include the necessary personnel to ensure: the safe design, construction, and operation of the plant; protection of the environment as ordered in these proceedings; and the prudence of expenditures as they ultimately would affect costs to the 'ratepayer. S date a conservation of the

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Discussion:

This condition sets up funding for effectively monitoring the cost, construction, operation, safety, and environmental constraints necessary to ensure that the LNG facilities are designed, built, and operated in the best interest of the public and the ratepayer who is the ultimate beneficiary of this project.

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14. Fire Protection

Condition:

Western Terminal shall prepare a fire protection plan for the affected area. This plan shall provide measures to adequately minimize risks to life and property from fire and shall be consistent with any safety regulations adopted by the Commission pursuant to Section 5637 of the Act.

Prior to commencement of operation, the Commission, in consultation with the Santa Barbara County Fire Department, will approve Western Terminal's plan.

Discussion:

We adopt CCC Finding 16 insofar as it is applicable to the above Condition 14. However, we have substituted Commission approval for CCC approval.

15. Electric Transmission Lines

Condition:

Basic terminal electric needs shall be met by offsite generation with adequate onsite generation available for standby and emergency use only.

Within these proceedings, there have been several alternate transmission line proposals which mitigate to varying degrees the environmental impacts attributable to Southern California Edison's preliminary design (Exhibits A-118 and A-119).

(1) An inland route utilizing existing Southern California Edison easements (Figures 19, 20, and 21 in Exhibit A-90).

(2) A combination of overhead and underground lines requiring undergrounding within the coastal zone for the applied for routing.

(3) A routing utilizing the access road corridor.

(4)_Modification and upgrading of the existing wood-pole transmission/distribution line.

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In the interest of providing necessary offsite generated power with the least overall environmental impact, Western Terminal is ordered to submit a plan for each of the foregoing alternate proposals. The plans shall include:

(1) Data on the comparative reliability, cost, and environmental consequences of each plan.

(2) Maximum feasible use of underground construction within the coastal zone.

(3) Maximum feasible use of wood-pole construction for overhead portions of the line.

(4) Use of a single-circuit three-phase line, unless Western Terminal can substantiate the need for more than one circuit.

The Commission, after consultation with the CCC and Santa Barbara County, will then determine which one of these alternate proposals will be used.

Discussion:

Imposition of CCC Condition 23 would adversely affect public health and safety. Our Condition 15 is a major departure from the CCC's Condition 23, which would require onsite generation; however, our Condition 15 retains the CCC's requirement of mitigation of the visual impact in the coastal zone.

Several alternate routes are included for further study so that, if feasible, an alternative should be developed to a multiplecircuit line on steel towers within the coastal zone. A doublecircuit line on steel towers would have a significant visual impact on Hollister Ranch and Gaviota State Park.

16. <u>Construction Period Transportation Plan</u> Condition:

All transportation of workers, materials, and equipment for construction activities shall be in accordance with a transportation plan approved by the Commission prior to commencement of construction.

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> Within_these proceedings there have been three acceptable alternate routes proposed for an excess road from State Route 1 to the terminal site (see Exh. A-105, Routes 2, 3 and 4-4a respectively):

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(1) an improved Hollister Ranch road from Gaviota;

(2) a coastal route from the west via Jalama Road;

(3) a northern route generally following the proposed gas pipeline corridor.

In the interest of providing adequate access with the least overall environmental impact, Western Terminal shall submit detailed transportation plans for each of these alternate routes. These plans shall include:

(1) maximum feasible use of barges and the railroad for transport of workers, materials, and equipment;

(2) maximum feasible use of off-site parking areas and the busing of workers to and from the site;

(3) maximum feasible use of modular construction;

(4) use of a gate and guardhouse where the access road joins the existing public road so as to control access;

(5) data on the comparative safety, cost and environmental consequences of each plan.

The Commission, after consultation with the CCC and Santa Barbara County, will determine which one of these routes will be used.

Discussion:

This condition is a major departure from the CCC staff recommendation regarding jurisdiction and their choosing of the improved Hollister Road route.

The inclusion of the other alternate routes is due to recognition of the County's concern for Gaviota Beach Park and the housing of workers during construction. The use of a gate and guard at the beginning of the access road in lieu of at the LNG terminal would help ensure privacy to the existing landowners and maintain the remoteness of the area as desired by both the County and the CCC.

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17. <u>Public Access</u> Condition:

Western Terminal shall submit to the Commission a plan providing limited public recreational access to the coastal area in the vicinity of the terminal site. Such access shall be consistent with protection of coastal resources, adequate terminal security, and public safety. This public access requirement may be waived if the Commission determines that necessary security or safety precautions so dictate.

Discussion:

We adopt CCC Finding 25 insofar as it is applicable to the above Condition 17. Although the Coastal Act (PRC Section 30212) is a condition applied to new coastal development and hence is one that the CCC must follow, this Commission must act under the more recent legislative mandate of Sections 5552, 5582 and 5632 which taken together must be read to mean that public presence near an LNG facility is not in the public interest and is contrary to public health and safety. Nevertheless we will require submission of a plan for future Commission consideration.

18. Partial Ingrounding of Storage Tanks

Condition:

Western Terminal shall submit to the Commission a visual impact mitigation plan which shall provide for:

(1) Partial ingrounding of LNG storage tanks in a manner such that the upper portion of each tank shall not protrude more than 50 feet above the ground level of the facility, unless Western Terminal demonstrates to the Commission satisfaction that there are significant advantages to a protrusion greater than 50 feet, taking into account such factors as operational feasibility, safety, cost, and environmental consequences.

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(2) Contouring and landscaping dikes surrounding the tanks in a manner that will help to keep the facility visually compatible with the natural land forms of the area, as well as preserving the public view.

(3) Maximum feasible compatibility of all above-ground structures with the character of the area.

(4) Painting of above-ground structures to achieve minimum visual contrast with the surrounding area to the extent permitted by safety and operational requirements.
(5) Site landscaping that provides the maximum feasible screening of plant facilities consistent with the open-space character of the area.

Construction shall not begin until the Commission, after consultation with the CCC and Santa Barbara County, has determined that the plan complies with this condition.

Discussion:

Imposition of CCC Condition 26 would adversely affect the public health and safety. CCC Condition 26 has been modified with respect to jurisdiction, certification, founding of tanks on bedrock, the protrusion of tanks more than 50 feet upon adequate showing, and mitigation of overall visual impact.

The provision of founding the tanks only on bedrock as recommended by the CCC is addressed in Condition 39.

The provision for greater than 50-foot protrusion has been included because the record herein does not support such a requirement since the 50-foot case has not been aired at the Commission hearings.

19. Kelp Harvesting

Condition:

To the extent feasible, Western Terminal shall avoid interference with kelp harvesting from Kelp Bed 32. If studies implemented under Conditions 3, 4, and 5 indicate that terminal construction or operation will decrease the amount of kelp that can be harvested under existing Department of Fish and Game leases, Western Terminal shall develop a program to minimize the decrease and to mitigate the loss suffered by the Bed 32 lessor or lessee. The Commission, after consultation with the CCC, shall approve and enforce such plan.

Discussion:

We adopt CCC Finding 28 insofar as it is applicable to the above Condition 19. This CCC staff condition has been modified in regard to jurisdiction and elimination of the CCC proposed committee. The Department of Fish and Game as the lessee should

have recourse to mitigate losses, but the placing of that Department on a committee to determine mitigation would create a conflict of interest.

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20. Procedures Governing Design and Construction

Condition:

The proposed facilities shall be constructed substantially in accordance with the conceptual designs described in this record, except where mitigation measures are ordered herein. Additional design and construction requirements will be adopted by the Commission in OII 1.

Discussion:

This is similar to the condition typically imposed by the Commission in granting certificates of public convenience and necessity. The condition avoids the necessity of spelling out detailed specifications.

21. Commencement of Construction

Condition:

Unless construction of the LNG terminal is commenced within 18 months after the date when all required permits and regulatory authorizations have been issued and are no longer subject to . judicial review, this permit will be deemed null and void and of no further effect or force. The Commission may grant an extension of time for good cause.

Discussion:

This condition corresponds to the County's Recommendation No. 2, modified to recognize the case where all necessary permits and authorities are not yet final and effective.

22. Domestic Well-Water System

Condition:

Domestic well-water system facilities shall be designed by a California registered professional engineer in accordance with the "California Safe Drinking Water Act" (Health and Safety Code, Section 4010, et seq.). Construction of such wells shall be in

accordance with standards set forth by the Department of Water Resources; Bulletin No. 74, "Water Well Standards: State of California."

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Discussion:

This condition was requested by the County as part of its Recommendation No. 42. It has been modified to remove permitting requirements by the County. The balance of the County's Recommendation No. 22 contains specifics which will be considered during the design phase of the project.

23. Food Handling Facilities

Condition:

Food handling facilities construction, operation, and maintenance, both during plant construction, as well as after the facility is in operation, shall comply with all applicable provisions of the "California Restaurant Act" (Health and Safety Code, Section 28520 et seq.).

Discussion:

This condition responds to the County's Recommendation No. 43. 24. Sewage and Waste Water Disposal

Condition:

Sewage and waste water shall be disposed of in a sanitary manner which neither endangers the public health, degrades the groundwater supply, nor creates a public nuisance condition.

Discussion:

This condition responds to the County's Recommendation No. 44. 25. Solid Waste Disposal

Condition:

Solid waste collection and disposal, both during construction of the plant as well as during its operation, shall be in a safe, sanitary manner and shall comply with all applicable provisions of the "Solid Waste Management and Recovery Act," Government Code, Section 66700 <u>et seq</u>.

Discussion:

This condition responds to the County's Recommendation No. 45.

26. Disaster Plan Condition:

An onsite disaster plan shall be prepared which includes provisions for prevention and correction of environmental health hazards resulting from possible disasters and shall address water supply, sewage disposal, food service, shelter, vector control, and refuse disposal. Said plan shall be approved by the Commission after consultation with Santa Barbara County, prior to the commencement of terminal operations.

Discussion:

This condition responds to the County's Recommendation No. 46. 27. Pipeline Review

Condition:

Prior to completion of plan and profile drawings of the gas pipeline, Western Terminal shall consult with the Santa Barbara County Transportation Department and with Kern County and San Luis Obispo County to assure coordination with existing and future road facilities. Western Terminal shall comply with all reasonable requests resulting from this consultation. All disputed requirements will be submitted to the Commission for determination.

Discussion:

This condition responds to the County's Recommendation No. 50 with Kern and San Luis Obispo Counties added. However, the County's related Recommendation No. 51, which required county encroachment permits, has been deleted as being in violation of Section 5581 of the Act.

28. Employees' Temporary Housing

Condition:

No permanent or temporary dwellings shall be built or installed on the site for residential use other than those needed for construction-related activity, such as those for foremen, supervisors, or watchmen.

Western Terminal shall report to the County of Santa Barbara County-Cities Area Planning Council information including the number of employees and their general area of residents (i.e. within a two-mile radius of the residence) and their mode of transportation to the LNG facility construction site. This data shall be provided on a quarterly basis, the first set of data following, as soon as possible, the start of construction of the LNG facility, including the installation of the pipeline and electric transmission lines if applicable, and be discontinued when the facility begins operating.

Discussion:

This condition responds to the County's request for data to ascertain the impact of the construction work force on the County.

29. Natural Gas Transmission Pipeline

PG&E and PLS shall file with the Commission all applicable engineering plans, specifications, design calculations, and any other applicable information at least 100 days prior to pipeline construction.

Discussion:

One hundred days for pipeline plan review will be required because of the magnitude of the required pipeline construction.

30. Facility Lighting

Condition:

No beam or exterior lighting originating in the facility, within the limits approved by the Coast Guard for navigational and pier lighting, shall be directed toward adjacent areas without intermediate obstruction. Night lighting of any kind shall be restricted to that required for (1) construction activities and (2) essential lighting for safety and security purposes during operations.

Discussion: .

This recommendation is adopted in order to minimize visual impacts on residents at Hollister Ranch.

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31. <u>Notice of Proposed Offshore Work</u> Condition:

Western Terminal shall provide, insofar as practicable, written notification to affected commercial fishermen, kelp harvesters, local marinas, and boat-launch facilities of the proposed offshore work, including but not limited to the location(s), dates, duration, and type of construction to be performed.

Discussion:

This type of notice will help minimize impact on the local marine-oriented business.

32. Meteorological and Oceanographic Monitoring

Condition:

Western Terminal shall continue its meteorologic and oceanographic monitoring program to further evaluate actual sea-state conditions at the Point Conception marine terminal area. A minimum of two years of continuous on-site measurement of seastate conditions including wind, wave, swell, current, and fog shall be recorded. After review and analysis of this data, the Commission will make a further determination as to the safety and reliability of the project's maritime operations. If deemed necessary, further conditions may be placed upon the permit in order to assure the safety and reliability of the marine operations.

This data shall be submitted to the Commission not later than January 15, 1980 and shall encompass the period December, 1977 through December, 1979.

Discussion:

A preliminary conclusion that maritime conditions at Point Conception are acceptable for safe and reliable operations is based on evidence utilizing data developed by hindcasting methods. The record evidence shows there is some uncertainty in the conclusions reached on sea-state conditions at Point Conception due to differing interpretations of the source data. Therefore, the Commission finds it prudent to guarantee the satisfactory resolution of these weather-related uncertainties by requiring onsite measurement data to verify that the proposed maritime operations at Point Conception are conducive to safety and reliability.

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33. : <u>Miscellaneous EIR Mitigation Measures</u> Condition:

Applicant shall implement all mitigation measures in Appendix F which are referenced to Condition 33, to the extent feasible.

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Discussion:

Several minor mitigation measures shown to be useful in reducing environmental impacts in the EIR and found to be feasible in this decision are not covered in the major conditions. These measures are required by Condition 33.

34. Air Quality

Condition:

Western Terminal shall implement the mitigation measures ultimately adopted after further hearings before this Commission regarding air quality requirements.

Discussion:

Further hearings are required to consider recommended conditions of the ARB as set forth in Response Bll of volume 2 of the Final EIR.

35. Maritime Measures

Condition:

To the degree they are consistent with United States Coast Guard regulations and sound maritime practices, Western Terminal is directed to adopt and implement the maritime equipment and procedure measures delineated in Appendix F of this decision.

Discussion:

Adoption of the above-referenced measures will serve to reduce the risk associated with LNG vessel traffic to and from Point Conception.

36. <u>Geological and Geotechnical Investigations</u> Condition:

Western Terminal shall undertake the further geological and geotechnical investigations outlined in ALJ Doran's June 16, 1978, order to Western Terminal. At a minimum, additional trenching to the east and west side of Arroyo Central is required to further

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evaluate the significance of the fault identified as the Arroyo Fault. Additionally, two trenches on seismic line "C" as shown on Plate 1.DC of Exhibit 0-106 are required to analyze the significance of geological anomalies identified to the north of Arroyo Central. Any further trenching and investigation, as required, will be the subject of future Commission directives.

Discussion:

Currently available data indicates that the Arroyo fault is not causative but rather a secondary fault resulting from activity on one or more significant faults immediately offshore. However, the absence of definitive geological and geotechnical data precludes the Commission from conclusively affirming the proposition that an LNG facility can be reliably constructed and operated at Point Conception consistent with interests of public safety. Because an active fault has been identified within the Point Conception site - the Arroyo fault - the physical and seismic characteristics of this fault must be thoroughly evaluated to determine the suitability of the site. Given the possibility of on-site surface rupture and corresponding strong ground motions which can threaten the viability of the entire project, it is incumbent that the Commission have placed before it sufficient and detailed information upon which to make its independent judgment respecting the nature and extent of the Arroyo fault and accordingly, its impact on the issue of locating an LNG facility at Point Conception.

37. <u>Subsurface Exploration</u> Condition:

Due to the recognition of secondary faults within the site, e.g. Arroyo fault, Beach fault, if subsequent investigation confirms the site's suitability, Western Terminal is directed to undertake detailed subsurface exploration to insure that no critical LNG component will be located within the distance of 100 feet (30 m.) from any fault trace.

<u>Discussion</u>:

Location of critical components at sufficient distances from existing fault traces will serve to preclude damage to such components resulting from any surface ground rupture along the traces.

38. Storage Tank Foundations

Condition:

Western Terminal is directed to place a reinforced concrete mat under the LNG storage tanks, unless a careful analysis demonstrates conclusively that it is not needed and is approved by the Commission.

Discussion:

The Commission has concern for the behavior of the supporting elements of the LNG storage tank and the base anchorage system. The concern is that a relatively thin base plate is supported on 25 in. of foamglass insulation, 1 in. of sand, and a 4-in. leveling layer of concrete. None of these supporting materials have significant tensile strength. Tensile stresses can result from high shear stresses, created by the dynamic response of the tank to seismic stress waves propagating through the foundation. A very careful analysis of the seismic stress conditions that develop in these supporting materials supported by experimental tests is required.

39. Uniform Foundation Materials

Condition:

Western Terminal is directed to site critical components such as the LNG tanks, on uniform compacted fill material or firm, unweathered bedrock, unless a careful analysis demonstrates concluzively that the measure is unnecessary and is approved by the

Commission.

Discussion:

In view of significant seismic velocity differentials between the terrace deposits and the firm bedrock taken in conjunction with the irregularity of the ancient wave-cut platform surface, the location of critical components upon soils of different density with varying settlement rates must be avoided.

40. Seismic Categories Condition:

Western Terminal is directed to classify all structures, components and systems for the LNG facility into one of three seismic safety categories which are defined as follows:

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<u>Category I</u>: This category includes all structures, components, and systems required to shut down the facility during and following a Safe Shutdown Earthquake (SSE) and maintain the on-site LNG in a safe condition. <u>Category II</u>: This category includes all structures, com-

ponents, and systems required to permit continued safe plant operation during and following an Operating Basic Earthquake (OBE).

<u>Category III</u>: This category includes all structures, components, and systems not included in Categories I or II, but essential for maintaining support or normal plant operations.

Regulatory Guide 1.60 response operator, properly scaled to the peak ground accelerations recommended for the SSE and OBE shall be used in the design of Category I and II structures, components and systems.

A quality assurance program in accordance with Appendix B of 10 CFR 50 should be established that assures reliable performance of all Category I and II structures, components and systems in their respectively-defined seismic environments.

Discussion:

The recommended seismic classification procedure simplifies design as different levels of seismic performance are permitted for each category. Also, it permits Western Terminal to relate the design to both safety and economy in operation. For example, ~ items required to maintain the on-site LNG in a safe condition must be designed to withstand the most severe seismic environment, the SSE. Other items required to maintain plant operation without interruption of service are designed to a lower seismic level, the A. 57626 et al. ALT.-RDG-IM

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OBE. This level can be established by a cost trade-off study between the added cost of designing to a given OBE seismic level versus the savings in the cost of probable damage and service interruption of the facilities that are not designed to this level.

41. Critical Earthquake Intensity

Condition:

Western Terminal, in the design of critical LNG components, such as storage tanks, is directed to utilize accelerations associated with a 7.5 magnitude earthquake on the North and South Branches of the Santa Ynez fault and/or on the F-l fault. Accordingly, Western Terminal shall design all critical components to a peak bedrock acceleration of .7 g (gravity) at the site.

Discussion:

Prudence and the public interest dictate that the LNG facility be designed to withstand and to continue to operate after occurrence of that earthquake which would produce an intensity of earthquake ground motion at the site that has a very high probability - on the order of 99.5 percent - of not being exceeded during the 50 year service life of the facility. To assure this high probability of plant and investment protection, the Commission is directing Western Terminal to design and construct the terminal to withstand ground motion at the site associated with the earthquake on the North and South Branches of the Santa Ynez fault and/or on the F-l fault or that earthquake which has a probability of occurring one time in 10,000 years (10-4 per year) correspondingly, a peak bedrock acceleration of .7g at the site is appropriate for design purposes.

C. Rejected CCC Conditions

The following CCC recommended terms and conditions are rejected:

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1. <u>CCC Condition 15 - Public Utilities Commission Denial</u> <u>of Conditions</u>.

For the reasons stated above under "General Comments," we are of the opinion that imposition of this condition will adversely affect the public health and safety. We further find that imposition of the term or condition will cause delays in commencement of terminal operations that will result in significant curtailment of high-priority natural gas requirements and that deletion or modification of this condition will avoid or significantly reduce such curtailment.

2. <u>CCC Condition 23 - Seawater Exchange System and</u> <u>Transmission Lines.</u>

Exhibit A-40 shows that the use of gas-fired vaporizers is undesirable from economic and energy conservation standpoints. Air pollution (mainly NO_x) produced by the base-load vaporizers, as listed in the DEIR and Exhibit A-87 would exceed the threshold level established by the EPA, requiring a Prevention of Significant Deterioration permit from EPA. This would require trade-offs, which could be very difficult to achieve in Santa Barbara County. If this condition is adopted, it would cause lengthy delays, or it could block the project completely.

This air pollution argument against gas-fired vaporizers is also applicable to onsite generation by conventional methods. The parallel condition suggested by the County for exotic methods of generation is inappropriate because these methods are not sufficiently developed. The transmission line mitigating measures specified in our Condition 15 will significantly reduce the impacts that concern these agencies.

In addition, this condition is adequately addressed by our Condition 4, Marine Resources: Seawater Intake and Discharge System, as well as our Condition 15, Electric Transmission Lines.

We are of the opinion that imposition of CCC Condition 23 will cause delays in commencement of terminal operations that will

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result in significant curtailment of high-priority natural gas requirements and that deletion of the condition will avoid or significantly reduce such curtailment.

While we reject this condition at this time we also point out to the CCC and to our staff that the further hearings, provided for in our order, to deal with the question of air quality mitigation measures are broad enough to allow CCC and ARB to present their respective recommendations and evidence with respect to CCC Condition 23.

3. <u>CCC Condition 27 - Surfing Breaks</u>

The CCC concept of constructing, if necessary, an artificial reef for surfing is vague and impractical. There is no indication of whether it is feasible, where it might be placed, the cost, or what the environmental consequences of this structure might be. An alternative, the providing of surfing access in an area not presently accessible by the public, is included within our Condition 17. Western Terminal, moreover, has stated that it will not restrict nearshore recreation. Further, the proposed location of the trestle is not in the actual area "renowned" for its surfing breaks. Consequently we believe surfing opportunity in the site vicinity will be at the same level after construction as it was before and that such situation is consistent with public health and safety.

We are of the opinion that CCC Condition 27 was not based on substantial evidence considering the record as a whole.

4. <u>CCC Condition 14 - Geologic Hazards</u>

The operation and funding of an independent terminal design and construction review panel in addition to the funded Safety and Construction Monitoring Program of this Commission, would be unwarranted and uneconomical. It would be an unnecessary duplication of expert effort, investigation, and review. The Commission's Safety and Construction Monitoring Program will employ a permanent staff of professionals as well as utilize consultants. Our monitoring program will assure that the construc-

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tion drawings and calculations are thoroughly reviewed and that the construction is adequately inspected. Furthermore, at the present time there are ongoing specific site investigations by a variety of competent professional geologists. Various government agencies and other interested parties are evaluating the geotechnical hazards that might affect the terminal.

We aremof the opinion that imposition of CCC Condition 14 will cause delays in commencement of terminal operations that will result in significant curtailment of high-priority natural gas requirements and that deletion of the condition will avoid or significantly reduce such curtailment.

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D. Responses to Certain Santa Barbara County Recommendations

Set forth below are specific responses to the terms and conditions recommended for adoption by the Board of Supervisors of the County.

1. Recommendation 1

The Commission retains all responsibility for implementing and enforcing each and every condition adopted as part of the permit.

2. Recommendation 2

Our Condition 21 should cover the County's concern for unreasonable delay in commencement of project construction.

3. Recommendation 3

Staff Guidelines (1) and (3) as detailed in our policy statement (see General Comments, above) should satisfy the County's concern for availability of information.

4. Recommendations 4 through 22 - Safety

Section 5637 of the Act requires the Commission to adopt regulations governing the safety and construction of the terminal. The Commission already has adopted regulations, General Order No. 112, governing design, construction, testing, maintenance, and operation of utility gas transmission and distribution piping systems. Section 5637 requires the Commission to establish a: monitoring system to ensure that terminal construction and operation is in compliance with all applicable regulations adopted and terms and conditions established. Our current investigation, OII 1, is addressing the safety aspects of the project and considering the particulars of a Commission Monitoring Program. All the specifics concerning the safety and construction monitoring 'aspects of the project are expected to be formulated and detailed

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at the conclusion of the OII 1 proceeding. To specify detailed safety control measures at this time would be ill-advised and premature.

5. Recommendations 23 through 32 - Flood Control

Staff Guidelines (2) and (4) provide the opportunity for the County Flood Control Engineer to review all engineering and construction plans and to determine whether such plans conform with the County Flood Control Department's standards.

6. <u>Recommendations 33 through 38 - Fire Control</u>

Our Condition 14 should adequately cover the County's concern in this area. Staff Guidelines (1), (2), (3), and (4) will afford the County Fire Department an opportunity to review Western Terminal's fire protection plan and to correct any variance with its standards. The Commission will monitor all activities regarding the fire protection plan to ensure compliance.

7. <u>Recommendation 41</u>

Our Condition 7 provides for a noise monitoring program. Staff Guidelines (1), (2), (3), and (4) will afford the County the opportunity to provide input and make known its concerns prior to plan approval. The staff is required to modify to the greatest extent reasonably possible such a plan in order to include the County's recommendations and to assure that the plan is in conformance with County standards.

8. <u>Recommendation 42</u>

Our Condition 22 requires the development of a potable water supply to be in accordance with the California Safe Drinking Water Act and the Department of Water Resources - Water-Well Standards. Staff Guidelines (2) and (4) allow for additional appropriate standards to be followed, as well as modification of any plans in order to include other reasonable requirements as requested by other interested government agencies.

9. Recommendation 43

Our Condition 23 fulfills the needs of this County recommendation with the exception of allowance for Santa Barbara County approvals.

10. Recommendations 44 and 45

Our Conditions 24 and 25 incorporate the basic concerns of the County's Recommendations 44 and 45. Specifics as to the sewage and waste water facilities and as to solid waste collection and disposal methods will be determined prior to plan approval and after consultation with appropriate state and local agencies.

11. Recommendation 46

Our Condition 26 accepts the County's Recommendation 46, except that the Commission is responsible for all approvals. Staff Guidelines (1) and (2) allow for local agency review and opportunity to revise the disaster plan so that the legitimate concerns of the agency may be addressed.

12. Recommendation 47

The Commission, utilizing its Monitoring Program, will determine all necessary inspection. This does not preclude the Commission's Monitoring Program from allowing the County Health Department officials from making necessary inspections and evaluations and to report their findings to the Commission.

13. Recommendation 48

Ingrounding of LNG storage tanks is covered in our Condition 18.

14. Recommendation 49

Our Condition 16 covers site access.

15. Recommendation 50

This has been adopted as our Condition 27. The Monitoring Program will ensure compliance by Western Terminal.

16. Recommendation 51

Access road approval rests with the Commission. The County Transportation Department will be consulted by the staff monitoring team. The County will be furnished requested data.

17. Recommendations 52 and 53

Access road conditions are covered by our Condition 16.

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18. Recommendation 54

Staging areas and the parking plan are covered by our Condition 16.

19. Recommendation 55

Safety rules applying to the terminal will be developed by the Commission in OII 1. (Also, see the response to Recommendations 4 through 22.) Our Condition 20 requires terminal design to comply with Commission rules.

20. Recommendations 56 through 64

The intent of these recommendations is covered by our Condition 7. The Commission's Construction and Safety Monitoring Program involves review of plans for the terminal. (See, also the discussion of Recommendations 23 through 32.)

21. Recommendations 65 through 68

Standards for the access road construction will be determined by the Commission's monitoring team in consultation with the County Public Works Department. It is our intent that the road be built to County standards, to the extent feasible. The procedure for accomplishing this is established by Staff Guideline (2).

22. Recommendation 69

See the discussion under Recommendations 23 through 32.

23. Recommendation 70

All final design plans shall be submitted to the Commission for review in accordance with the Consruction and Safety Monitoring Program.

24. Recommendations 71 and 72

The intent of these recommendations is covered by our Conditions 7 and 8.

25. Recommendations 73 through 77

Our Condition 34 establishes air pollution control requirements. The Commission's monitoring team will work closely with the County Air Pollution Control District in the review of construction and operation plans.

26. Recommendation 78

Electric power for the facility will be provided by a transmission line from the initial stages of operation of the terminal A. 57626 et al. ______ RDG

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in order to prevent significant deterioration of air quality by emissions from gas turbine generators. The impact of the transmission line will be mitigated, if possible, by a combination of undergrounding and using of wood-pole line supports. Western Terminal has been directed in our Condition 15 to study these mitigation measures and submit a plan for Commission approval.

The use of cold power systems, solar, or wind power generation of electricity is not practical at this time. These are considered supplemental energy sources that may become available for use at the LNG terminal some time in the future after additional research and development are accomplished. The terminal will require a reliable supply of electricity, available 24 hours a day, seven days a week, using proven technology. This can be most reasonably accomplished by installation of an electric transmission line and standby gas turbine generators at the terminal site.

Recommendation 78 deals with air quality among other things and. should be readdressed by the County in the further hearings we order herein with respect to air quality mitigation measures. We will expect ARB, among others, to comment further on this recommendation.

27. Recommendation 80

The intent of this recommendation is covered by our Condition 10, which deals with replacement of lost habitat, and our Condition 19, which deals with commercial kelp harvesting.

28. Recommendation 81

This recommendation is covered by our Conditions 7 and 8.

29. Recommendation 82

This recommendation is covered by our Condition 16.

30. Recommendations 83 through 85

These recommendations are covered by our Condition 28. 31. <u>Recommendation 86</u>

See the discussion under Recommendations 23 through 32. 32. Recommendation 87

Petroleum and other spills are dealt with in our Condition 6. Our staff will consult with County personnel to ensure that County requirements are satisfied to the extent they are not preempted by EPA and Coast Guard requirements.

33. Recommendation 88

Our Condition 9 deals with decommissioning the terminal.

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34. Recommendation 89

Removal of debris on the beach is required by our Condition 2. Our staff will see that the construction plan provides for removal of man-made junk and debris.

35. Recommendations 90 through 92

Pipeline requirements are covered in our Conditions 8 and 27. It is not in the best interests of the ratepayers to loop the pipeline before it is required.

36. Recommendation 93

Ingrounding of the tanks is treated in our Condition 18. This should significantly reduce the visual impact of the tanks. The necessity and desirability of dense landscaping will be determined during review of terminal plans. The staff will consult with the County according to Staff Guideline (2) and consider its position prior to approving plans.

37. Recommendation 94

This recommendation is covered by our Condition 30.

38. Recommendation 95

In our opinion this condition is not within our jurisdiction. Existing law governing liability is adequate and will be administered by the courts. Western Terminal will carry adequate liability insurance.

39. Recommendations 96 through 111

LNG ship safety matters are outside the jurisdiction of the Commission. The Coast Guard is the proper agency to establish these requirements. The Commission has transmitted a copy of these recommendations to the Coast Guard for its evaluation.

40. Recommendations 112 and 113

Our Conditions 3 and 4 cover the impact of marine facilities on the environment.

41. Recommendation 114

This recommendation has been adopted as our Condition 31.

42. Recommendation 115

This recommendation has been rejected as counterproductive.

43. Recommendations 116 through 123 - Environmental Monitoring

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These recommendations are adequately covered by our Conditions 3, 4, 5, and 7 and the Commission's Monitoring Program.

44. Recommendations 124 through 134 - Cultural Resources

Our Condition 12 covers cultural resources. Additional specific requirements will be negotiated, as required, under Staff Guidelines (1), (2), and (3).

45. Recommendation 135 - Pipeline

This recommendation is encompassed under Staff Guidelines (2) and (4).

46. Recommendations 136 and 137 - Access Road

The County's concern about the design of the access road is covered by Staff Guidelines (2) and (4). Further, our Conditions. 7 and 16 consider the access road mitigation measures, as well as requiring studies for alternate routes and a transportation plan.

47. Recommendation 139

Section 5583 of the Act precludes any local government from undertaking any development which would be in nonconformance with the population density criteria of the Act or development incompatible with the operation of the terminal. Section 5582 and 5583 cover the intent of County's Recommendation 139. Insufficient information is available concerning the cost of this recommendation. Property owners have recourse to the courts.

48. Recommendation 140

The Commission is responsible for all inspection and enforcement procedures. Any contracts for consultation or independent inspection will be determined by the Commission.

49. Recommendation 141

Any contracts between the Commission and the County must be mutually agreeable. If they determine that contracts are necessary, these can be concluded under the Commission's Monitoring Program.

50. Recommendation 142

The Commission, under the Act, will decide upon any conflict-

XV. MOTIONS

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A. <u>Outstanding Motions</u>

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At the submission of each of these proceedings, several motions were still awaiting our decision. Below is our discussion and rulings on these motions. All other motions still outstanding shall be deemed denied.

B. Bixby Motion - Objection to Jurisdiction

Counsel for Bixby filed written "Notice of Objection of Jurisdiction" on October 28, 1977. On November 2, 1977, Bixby filed a "Notice of Motion to Dismiss for Lack of Jurisdiction" in the consolidated matters here before the Commission. A Memorandum of Points and Authorities in support of this motion was filed on November 2, 1977.

Additional material filed by Bixby in support of its objections to the jurisdiction of this Commission in these consolidated proceedings may be summarized as follows:

- 1. Letter dated February 3, 1978, advising that Federal Executive Order No. 10485 would not be relied on (withdrawing the argument presented in the Memorandum of Points and Authorities filed November 2, 1977, mimeo. pages 15-22).
 - 2. Supplemental Memorandum in Support of the Motion to Dismiss and Request for Official Notice filed February 24, 1978.
 - 3. Second Request for Official Notice filed March 1, 1978.
 - 4. Summary of Cases Inaccurately Cited, presented March 2, 1978 (see Case No. 10342, RT Vol. 30, page 3138).
 - 5. Rebuttal Memorandum of the Fred H. Bixby Ranch Company in Support of Motion to Dismiss filed March 24, 1978.
 - 6. Letter dated May 22, 1978 objecting to the staff's proposed LNG safety regulations in OII 1, enclosi g a Memorandum of the FERC staff in FERC Docket Nos. CP75-140 and CP75-83-2.

Oral argument was held on the Bixby motion on March 3, 1978 before ALJ Mattson. Pursuant to the ALJ's ruling setting oral argument, parties desiring to present argument were required to file briefs prior to oral argument.

Staff counsel and counsel for the applicants in Application No. 57626 filed briefs in opposition to the Bixby motion on February 24, 1978. Bixby, applicants, and staff participated in oral argument March 3, 1978.

Pursuant to submission at oral argument, applicant and staff filed their closing briefs on March 17, 1978. Bixby filed a reply brief on March 24, 1978.

1. Bixby's Contentions

We have reviewed the documents filed by Bixby. Bixby's major contentions are:

- 1. Federal law has preempted the siting of LNG terminals and the Act is to that extent invalid.
- 2. The Commission cannot exercise the power to determine a site for an LNG terminal because the power to decide the location of an LNG terminal is exclusively a federal decision.
- 3. The Commission cannot establish safety regulations in OII 1 since regulation of facilities used to process LNG moved in interstate commerce has been specifically preempted by the Federal Natural Gas Pipeline Safety Act of 1968 (49 USC 1671 et seq.).
- 4. The Act unconstitutionally burdens interstate and foreign commerce.
- 5. The duties assigned the Commission are outside the jurisdiction set by the California constitution.

2. Discussion

a. Federal Preemption

Bixby's primary basis for asserting the unconstitutionality of the LNG Terminal Act is its contention that federal law has preempted both the siting and safety regulation of LNG terminals. Bixby repeatedly asserts that federal jurisdiction is "exclusive".

However, "[s]tatements concerning the 'exclusive jurisdiction' of Congress beg the only controversial question: whether Congress intended to make its jurisdiction exclusive." <u>California v. Zook</u>, (1949) 336 U.S. 725, 731.

The existence of a federal law relating to the subject matter of a state statute "poses, rather than disposes of" the preemption issue. <u>Florida Lime and Avocado Growers, Inc. v. Paul</u>, (1963) 373 U.S. 132, 141. Once this issue is posed, two further questions arise, at least one of which must be answered affirmatively in order for federal legislation to be preemptive. First, the federal and state laws must be in actual conflict; failing this, the federal law must expressly or by implication manifest Congressional intent to wholly occupy the field. We believe neither of these questions can be answered in the affirmative, and that consequently, California's LNG legislation is not preempted by federal law.

Regarding the question of actual conflict, the test under this inquiry is whether there is "such <u>actual</u> conflict between the two schemes of regulation that both cannot stand in the same area." <u>Florida Lime, supra, 373 U.S. at 141 (emphasis added).</u> It is <u>actual</u>, not potential or hypothetical conflict, which will invalidate a state statute. See e.g., <u>Goldstein v. California</u>, (1973) 412 U.S. 546. Even where an actual conflict can be shown to exist, a State statute will be preempted only to the extent of the conflict, since "the proper approach is to reconcile the 'operation of both statutory schemes with one another rather than holding [the State scheme] completely ousted'." <u>DeCanas v. Bica</u>, (1976) 424 U.S. 351, 357, fn. 5.^{±/}

However, petitioner has not seriously suggested that an actual conflict exists between the California and federal laws. Those laws do not expressly make compliance with both impossible, and neither California nor the federal government has definitively and conclusively applied those laws to the present applications.



The DOE Administrator's Final Opinion and Order, issued December 30, 1977, conditionally approving the Oxnard site, is expressly <u>not</u> exclusive approval of that site alone. Largely because of insufficient evidence on the record, Point Conception could not be considered in this Opinion (Opinion at 41). However, the Opinion clearly states:

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"DOE's decision today approving Oxnard does not preclude anyone from pursuing an LNG project (including this one) sited at Point Conception. DOE is not disapproving any alternative site." (Opinion p. 42)

More importantly, the Opinion clearly states DOE's intention to give full force and effect to California's LNG Terminal Act. The Opinion states at page 38:

"...the DOE has determined it has the authority to take into account the procedures established in the California legislation for state consideration of an appropriate site, and we choose to exercise that authority...."

Moreover:

"In the circumstances of this case, and at least at this stage of the proceeding, California should have an opportunity to decide whether or not the operation of an LNG facility at Oxnard is acceptable to it as a means of facilitating the import and distribution of that gas to its citizens. Thus, pursuant to the Terminal Act, as well as any other applicable California legislation (present or future), California will have the opportunity to weigh and evaluate the safety and environmental characteristics of [sic] LNG site, taking into account the projected need for gas and supply thereof." (Opinion, p. 40)

The Opinion makes clear that its conditional approval of Oxnard does not necessarily exclude Point Conception or any proposed site, in part because of the policy expressed in the President's National Energy Plan which favors siting an LNG terminal away from densely populated areas, and in part because of the population density criteria and consolidated site selection process established by the LNG Terminal Act:



^{*/} PacIndonesia LNG Company, DOE/ERA Opinion No. 1. (Mimeo, Docket No. 77-001-LNG) (December 30, 1977), hereinafter DOE Final Opinion and Order, or Opinion.

"The California site screening process now under way may, by July 31, 1978, the deadline fixed by California law, produce a site that is also acceptable, or even preferable to Oxnard. The DOE will cooperate with the State to settle on a mutually acceptable site by that date. Unless that effort fails, the DOE finds no cause to exercise its authority under Section 3 of the Natural Gas Act in disregard of the legitimate interests of the State of California to participate in the site selection process." (Opinion, p. 8.)

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DOE quite clearly recognizes that it does not automatically preempt California:

"Since it is clear...that DOE is afforded a degree of latitude in asserting its jurisdiction over 'Section 7 type' issues such as siting in an import case, it follows that DOE has discretion in such cases to determine whether and the extent to which a state has a legitimate interest in the siting issues and should be deferred to in whole or in part to resolve those issues." (Footnote omitted; Opinion, p. 39.)

Actual conflict is therefore simply not a basis for asserting federal preemption.

The test for the second inquiry, regarding Congressional intent to occupy the field, was well stated by the Supreme Court in <u>Florida</u> <u>Lime, supra</u>. In the absence of an irreconcilable conflict, the settled rule, in deference to a State's legislative exercise of its traditional police powers, is:

"...not to decree such a federal displacement 'unless that was the clear and manifest purpose of Congress.' <u>Rice v. Santa Fe Elevator Corp.</u>, 331 U.S. 218, 230, 57 S.Ct. 1146, 1152, 91 L.Ed. 1447. In other words, we are not to conclude that Congress legislated the <u>ouster of this California statute...in the absence</u> of an unambiguous congressional mandate to that effect." 373 U.S. at 146-147 (emphasis added).

An examination of the relevant federal statutes and the case law interpreting them demonstrates no "clear and manifest purpose of Congress" to preempt State regulation, even concerning matters within the State's traditional police powers.

Bixby repeatedly states that federal regulation of all sales or transportation of gas in interstate or foreign commerce is exclusive. We agree that California cannot approve these transactions; Bixby has pointed to nothing in the California statute that would alter this conclusion. Rather, Bixby assumes that the exclusive federal jurisdiction over transportation or sales necessarily gives the federal government exclusive jurisdiction over the siting of an LNG terminal, without presenting any rationale supporting the elimination of this distinction. We agree with the staff that Bixby's argument presupposes that references in the legislative history of the statute, the language of the statute itself, and the cases interpreting the Natural Gas Act, which all deal with aspects of sales or transfers of natural gas, must be read to include the very different and distinct concerns related to siting and constructing a terminal. We also believe that Bixby's "exclusive federal jurisdiction" argument is unfounded; we find no evidence that either Congress or the courts have intended sales, transfers, or transportation in interstate commerce to include siting concerns.

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The United States Supreme Court has clearly held that the Gas Act is not preemptive of the entire field of regulation of natural gas. In <u>Panhandle Eastern Pipe Line Co. v. Public</u> <u>Service Commission of Indiana</u>, (1947) 332 U.S. 507, the Court upheld a State regulatory commission's assertion of authority over certain sales of gas being transported through an interstate pipeline. After a lengthy review of the legislative history, the Court concluded:

"The Act, though extending federal regulation, had no purpose or effect to cut down state power. On the contrary, perhaps its primary purpose was to aid in making state regulation effective, by adding the weight of federal regulation to supplement and reinforce it in the gap created by the prior decisions. The Act was drawn with meticulous regard for the continued exercise of state power, not to handicap or dilute it in any way." 332 U.S. at 517-518 (emphasis added; citations omitted).



To the pipeline company's assertion of total federal preemption, the Court replied:

"It would be an exceedingly incongruous result if a statute so motivated, designed and shaped to bring about more effective regulation, and particularly more effective state regulation, were construed in the teeth of those objects, and the import of its wording as well, to cut down regulatory power and to do so in a manner making the states less capable of regulation than before the statute's adoption. Yet this, in effect, is what appellant asks us to do. For the essence of its position, apart from standing directly on the commerce clause, is that Congress by enacting the Natural Gas Act has 'occupied the field,' i.e. the entire field open to federal regulation,... The exact opposite is the fact. Congress, it is true, occupied a field. But it was meticulous to take in only territory which this Court had held the states could not reach." (332 U.S. at 519)

The Supreme Court's interpretation of Congressional intent was even more clear in a second <u>Panhandle Eastern</u> decision. There the Court stated:

"Without entering upon another review of its legislative history, (footnote omitted) suffice it to say that the Natural Gas Act did not envisage federal regulation of the entire natural gas field to the limit of constitutional power. Rather it contemplated the exercise of federal power as specified in the Act, particularly in that interstate segment which the states were powerless to regulate because of the Commerce Clause of the Federal Constitution (footnote omitted). The jurisdiction of the Federal Power Commission was to complement that of the state regulatory bodies (footnotes omitted.)" (Federal Power Commission v. Panhandle Eastern Pipe Line Company, 337 U.S. 498, 502-503.)

The alleged "manifest purpose of Congress" to totally preempt all aspects of natural gas regulation also does not appear in the relevant sections of the Natural Gas Act or the cases interpreting them.

Bixby first argues that Section 3 of the Natural Gas Act preempts State regulation. Section 3 gives the FPC (now the DOE) the authority to grant or deny an application to import or export natural gas. Nothing in the language of Section 3 refers to site selection or construction of facilities. At the same time, the LNG Terminal Act is to regulate site selection and construction of

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a terminal. It does not purport to regulate imports or exports. Bixby nowhene has presented an analysis of why "importation" is equivalent to "siting and construction." Bixby's case for preemption under Section 3 appears to rest entirely upon the leading case of <u>Distrigas Corporation v. Federal Power Commission</u>, (D.C. Cir. 1974) 495 F.2d 1057. However, we are persuaded that <u>Distrigas</u> and its progeny, including the aforereferenced DOE Opinion, affirmatively demonstrate that Section 3 does not preempt State siting legislation.

The <u>Distrigas</u> case arose when the FPC attempted to assert jurisdiction over Distrigas' LNG terminal facilities <u>after</u> having initially determined that the facilities were exempt from federal regulation. Briefly summarized the <u>Distrigas</u> decision held that the authority of the FPC to impose conditions over importation of natural gas is broad enough that the FPC could, <u>in its discretion</u>, attach to an import permit terms and conditions relating to facilities. The Court found that the FPC did not automatically preempt state regulation, but did have discretionary regulatory power over such facilities under Section 3, which could be exercised by imposing facility-related conditions on permit authorization. 495 F.2d at 1064. The Court stressed the "elastic" nature of Section 3 jurisdiction:

"Under Section 3, the Commission's authority over imports of natural gas is at once plenary and elastic. It may <u>authorize imports</u>, as it did in Opinion 613, <u>subject to</u> <u>no conditions whatever as to facilities and subsequent use</u>; it may deny import authorization altogether. So long as its conclusion is reasonable...the Commission may also and quite properly adopt a position somewhere between these two poles, granting import authority but subjecting it to 'terms and conditions' that it finds 'necessary or appropriate' to the public interest." 495 F.2d at 1064. (Emphasis added.)

Thus, the "plenary" Section 3 jurisdiction to impose regulation is discretionary, and does not in itself compel a finding of preemption.~

Of equal significance is the standard put forth by the <u>Distrigas</u> Court by which the FPC should decide whether to exercise its discretion to impose conditions on facilities: the FPC should consider

whether "such regulation cannot or will not, as a practical matter, be imposed by the states...." 495 F.2d at 1064.

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In the present case, DOE's Final Opinion has expressed that agency's determination not to preempt California's siting jurisdiction:

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"(Q) The authorizations granted herein will not take effect as to any facility, or operation of any part of any facility, until all necessary Federal, state and local authorization as to that part of the facility, or operation thereof, have been secured, <u>including the</u> <u>appropriate authorization from the California Public</u> <u>Utility Commission under the State's Liquified Natural</u> <u>Gas Terminal Act of 1977...." (Emphasis added.) DOE</u> Final Opinion and Order, pp. 62-63.

This express condition is significant evidence that no federal preemption is present, and substantiates our view, expressed earlier, that DOE's statements in the body of the opinion relating to siting and construction of a terminal indicate DOE's firm intention to defer to California on these matters. (See this Decision, pp DOE Final Opinion and Order, pp. 38-42.) Section 3 of the Natural Gas Act thus provides no basis for finding federal preemption.

Bixby also argues that Section 7 of the Natural Gas Act preempts California's LNG terminal siting legislation. This argument is apparently based on language in Section 7(c) stating that no "interstate" gas facilities shall be constructed without a certificate of public convenience and necessity from the federal government. From this, Bixby asserts that the federal government has exclusive siting jurisdiction.

However, the existence <u>vel non</u> of a federal permit requirement is not indicative, in itself, of the extent of any federal preemption. In a case closely analogous to the present one, the California Supreme Court held that the State's power to impose reasonable regulatory conditions includes the power to determine the siting of a federally certificated facility. <u>Northern California Ass'n. to</u> = <u>Preserve Bodega Head and Harbor, Inc. v. Public Utilities Commission</u> (1964) 61 C.2d 126, 133. In that case, the Court affirmed the

authority of this Commission to pass upon the site of a federally certificated nuclear power plant. The Court rejected a claim that the Atomic Energy Act preempted such state regulation.

The language of Section 7 supports this analysis. Similar to the implied authority of Section 3, Section 7 explicitly recognizes that the federal agency has the <u>discretionary</u> authority to impose terms and conditions on interstate facilities. This authority is not mandatory, and in the presence of reasonable state regulation, the federal agency can choose to not exercise it.

Moreover, as with its argument under Section 3, Bixby completely fails to address the issue of whether matters related to siting and construction are logically and legally included within "sale for resale in interstate commerce." This type of issue was crucial in all of the cases Bixby cites for preemption. None of those cases has held that the holder of a Section 7 certificate was exempt from reasonable state regulation."

When the nature of the LNG terminal and the purpose of the LNG Terminal Act are closely examined, it becomes clear that the State regulation is reasonable, valid, and comports with the Congressional scheme. The LNG terminal is a huge facility costing hundreds of millions of dollars, and will have an impact on the environment for many years to come. Every federal environmental law enacted in recent years includes either an intent to have state input into the federal decision making process, or a direct requirement for state permits.-

See the National Environmental Policy Act (NEPA), 42 U.S.C. §4332; Coastal Zone Management Act (CZMA), 16 U.S.C. §1451; Federal Water Pollution Control Act, 33 U.S.C. §1151; Clean Air Act, 42 U.S.C. §1857; Estuarine Act of 1968, 16 U.S.C. §1221; Deepwater Ports Act of 1974, 33 U.S.C. §1501.

Bixby has cited cases (e.g., New York State Natural Gas Corp. <u>v. Town of Elma</u> (W.D.N.Y. (1960) 182 F.Supp. 1) in which a local authority unsuccessfully attempted to prohibit federally authorized construction. Those cases are inapplicable because they involved an actual (rather than hypothetical) and direct conflict between local and federal jurisdictions. Bixby cites no cases which say that a State may not subject federally authorized construction to reasonable and harmonious regulation.

Even if Section 7 were to be found preemptive of all state regulation based on its police powers, Bixby's argument must fail. because it erroneously relies on purely hypothetical factual outcomes.

First, Bixby assumes that because the LNG Terminal Act contemplates receipt of gas from Indonesia and south Alaska, the proposed terminal will in fact receive Alaskan gas. However, the applicants' proposal before the FERC in the <u>Pac Alaska</u> proceeding has not even reached the Initial Decision stage. If the application is not approved, no "interstate" gas would be involved, and the allegedly preemptive provisions of Section 7 would be wholly inapplicable.

Secondly, Bixby assumes that if a Section 7 order is issued, it will <u>not</u> contain an express requirement for a California permit. Particularly in view of FPC precedent and the DOE's final <u>PacIndonesia</u> Opinion imposing just such a condition, this assumption is unwarranted. Moreover, an order containing such a condition clearly is not preemptive.

Since Bixby's constitutional argument is founded upon hypothetical fact situations, it cannot be assessed unless and until these hypotheses are borne out. If any of them are not, Bixby's argument fails. Certainly at the present time, this constitutional attack cannot be sustained.

We are persuaded that Bixby's assertion of total preemption over siting and construction of an LNG terminal has never been recognized, either by Congress or the courts. Without some showing that these matters fall within what Congress intended as transportation or sale for resale in interstate and foreign commerce, Bixby's argument based on the Natural Gas Act fails.

b. <u>Federal Preemption-Pipeline Safety Act</u> Bixby further argues that the federal Pipeline Safety Act, which imposes mandatory minimum safety standards on the interstate transportation of natural gas by pipeline, necessarily preempts state regulation of LNG terminal siting and construction. We disagree.

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> First, it is unclear whether the Pipeline Safety Act covers an LNG regatification terminal in California at all. This act only regulates interstate transportation, or "pipeline", facilities. "Pipeline facilities" are defined as including:

"...without limitation, new and existing pipe rightsof-way and any equipment facility, or building used in the transportation of gas or the treatment of gas during the course of transportation <u>but 'rights-of-way' as used</u> in this chapter does not authorize the secretary to prescribe the location or routing of any pipeline facility. (Emphasis added; 49 U.S.C. 1671(4).)

It is questionable whether the LNG terminal at issue is such an interstate facility. Further, whether interstate or not, the Act may not cover an LNG terminal. The pipeline Safety Act was written prior to the development of LNG facilities and was concerned with interstate pipelines. An LNG terminal is not a pipeline, in any sense of the word. It involves storage, transportation, and processing of gas. Such a facility necessarily requires different regulations than does a pipeline. A bald conclusion that the Pipeline Safety Act governs the siting of this type of facility is thus unwarranted.*/

Moreover, even if the Pipeline Safety Act covers the California LNG terminal, it is preemptive, if at all, only of safety regulations applying to the facility. But under §5613(a), "safety" (risk to life and property) is only one factor to consider

^{*/} Petitioner simply assumes that "interstate transmission ? facilities" are involved. This would hardly be the case even if the proposed terminal processed gas which had travelled in interstate commerce. The Court in Tenneco Inc. v. Public Service Commission of West Virginia, (4th Cir. 1973) 409 F.2d 334, 336, pointed out that the Pipeline Safety Act has preempted safety regulation of "interstate transmission of gas by pipeline." (Emphasis added.) In the instant case, no interstate transmission "by pipeline" is even proposed.

in evaluating and ranking potential sites. All of the other concerns relating to site selection, which are primarily environmental factors, are not preempted. Bixby fails to recognize this distinction. Its argument merely assumes that because the Pipeline Safety Act regulates actual operation and construction of an interstate gas transportation facility, the Act also regulates all aspects of <u>siting</u>.

Concerning the proposed pipeline which is to be built from the proposed LNG terminal, the question of safety preemption turns on whether the pipeline is interstate or intrastate. This is because Congress, while preempting safety regulation for interstate pipeline facilities, specified that "[a]ny State agency may adopt additional or more stringent standards for intrastate pipeline transportation if such standards are compatible with the Federal minimum standards." (49 U.S.C. §1672(b)).

At page 9 of their application to the PUC under the LNG Terminal Act, the applicants state that the proposed pipeline to be built under that Act would stretch from the proposed terminal at Point Conception, California to Gosford, California. It would therefore appear that the proposed pipeline is an intrastate pipeline expressly subject to state regulation. Indeed, no federal certification for this pipeline has been applied for; the applicants, and everyone else, have proceeded on the basis that the only pipeline involved would be solely intrastate.

Except for Bixby's mere assertion to the contrary, all of the evidence before this Commission, based upon facts as they presently exist, indicates that the proposed pipeline is "intrastate." We must therefore conclude that state regulation of this pipeline is not preempted by the Pipeline Safety Act.

c. Burden on Interstate Commerce

At pages 2223 of its Memorandum, Bixby contends that "[a]ny limitation imposed by the State of California upon siting of an LNG facility and the condition of population density of the locale is invalid as an undue burden on interstate and foreign commerce."

It is difficult to understand the basis for Bixby's assertion, because BixBy fails completely to identify the "burden" the LNG Terminal Act would impose on interstate commerce. Apparently, California's assertion of jurisdiction is enough. Bixby also mentions "the condition of population density criteria of the locale," but again fails to explain why this condition, which is a valid expression of California's authority to regulate under its police power, poses enough of a "burden" to invalidate California's statute.

Even if the LNG Terminal Act were found to impose some as yet unidentified burden upon interstate commerce, and it is a rare state regulation which will not have <u>some</u> impact on such commerce, the inquiry is not over. Only an "undue" burden is impermissible. The U.S. Supreme Court has definitively stated the test to be applied:

"Although the criteria for determining the validity of state statutes affecting interstate commerce have been variously stated, the general rule that emerges can be phrased as follows: Where the statute regulates even-handedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits. Huron Cement Co. v. Detroit, 362 U.S. 440, 443, 80 S.Ct. 813, 4 L.Ed.2d 852. If a legitimate local purpose is found, then the question becomes one of degree. And the extent of the the burden that will be tolerated will of course depend on the nature of the local interest involved, and on whether it could be promoted as well with a lesser impact on interstate activities." <u>Pike v. Bruce Church, Inc.,</u> (1970) 397 U.S. 137, 142. (See also Great Atlantic & <u>Pacific Tea Company, Inc. v. Cottrell</u>, (1976) 424 U.S. 306, 371-372.)

An important aspect of this analysis is the fact that the LNG Terminal Act imposes site selection criteria based on environmental and safety grounds. As stated previously, these are exactly the types of considerations contemplated and even required by NEPA and the Coastal Zone Management Act. Furthermore, the permitting authority of the LNG Terminal Act is a valid exercise by California of its police power.

Several of the cases cited by Bixby utilized the balancing test discussed above in assessing whether or not zoning ordinances-another exercise of police power--created undue burdens on interstate commerce. For purposes of this analysis, we find the courts' rationales, and not the outcome of the cases, to be most important. For example, in New York Natural Gas Corp. v. Town of Elma, W.D.N.Y. 1960) 182 F.Supp. 1, 5, the court found that absent an undue burden on interstate commerce, there is room for local authorities to enact zoning ordinances under the state's police power. Bixby also relies heavily on Transcontinental Gas Pipe Line Corp. v. Hackensack Meadowlands Development Commission (3d Cir. 1972) 464 F.2d 1358, as an example of zoning which impermissibly interferred with interstate commerce. However, that case involved an extreme fact situation where facilities were already built and where local authorities were attempting to prohibit any and all new construction at or near the site. While the court struck such a zoning ordinance down, it reaffirmed states' (and local governments') authority to impose reasonable restrictions on interstate commerce through the use of zoning ordinances and the police power.

Applying the rules of law set forth in the above cases, we must weigh the burdens imposed by California's siting legislation against the state's interest, including the environmental and other risks inherent in such a project as the proposed LNG terminal. Here, the burdens are small. The site selection alternative study and state input are already requirements under both NEPA and the Coastal Zone Management Act. Since no facility has been built, and no final inexorable federal decision has yet been reached on acceptable federal locations for a facility, no undue interference with interstate commerce can possibly exist. On the other hand, California's interest is clear and direct. The terminal, proposed to be located on the coast, is a very large facility costing approximately 500 million dollars. Its cogeneration potential may attract industry. Its projected life is at least 20 to 25 years, during which it will receive at least two supertankers each week. Moreover, it will significantly alter its surrounding environment, including the temperature of the ocean around it. Safety problems,
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while great, are as yet poorly understood. It <u>is</u> known, however, that an accident, while not probable, could kill thousands of people. Furthermore, the presence of the facility presents California with a 20-25 year gas supply which will have a major impact upon the state in many different ways. Given all of these factors, California can, and has, validly exercised its police power without creating an undue burden on interstate commerce. In fact, the LNG Terminal Act may even facilitate interstate commerce because of its integrated, expedited siting procedure.

d. State Constitutional Authority

Bixby further contends that the duties assigned to the Commission by the LNG Terminal Act are outside the jurisdiction set by the California Constitution. We must disagree with this contention.

While Bixby recognizes this Commission's authority granted by Article XII, Sections 4 and 6, Bixby has failed to mention, much less discuss, Article XII, Section 5, which states in relevant part:

"The Legislature has <u>plenary power</u>, unlimited by the other provisions of this constitution but consistent with this article, to confer additional authority and jurisdiction upon the Commission...." (Emphasis added.)

The California Supreme Court has consistently interpreted this power to be of very broad scope. As long as the legislatively granted authority is "cognate and germane" to matters surrounding the regulation of public utilities, the Court will not invalidate the legislation. <u>Pacific Telephone and Telegraph v. Eshleman</u>, (1913) 166 C. 640. The Court in that case expressly rejected a claim that the Commission's power was limited to supervising and regulating public utilities, thereby declaring that "cognate and germane" was a far-reaching concept. This holding has never been overturned.

The Legislature's broad power to expand this Commission's authority over nonpublic utility businesses (see, for example, the Highway Carriers Act, Pub. Util. Code §§3501 <u>et seq</u>.) and in a limited way over publicly-owned utilities (the Los Angeles Metropolitan Transit Authority and the Bay Area Rapid Transit District) A. 57626 et al. AMP

has consistently been upheld by the Court. See Los Angeles Metropolitan_Transit Authority v. PUC, (1963) 59 C.2d 863; and discussion in Richfield Oil Corporation v. PUC, (1960) 54 C.2d 419, 434.

The only question presented here is whether the LNG Terminal Act is "cognate and germane" to matters relating to the regulation of public utilities. We find this question must be answered in the affirmative. Even without the LNG Terminal Act, this Commission would have jurisdiction over the rates charged by California gas corporations and the adequacy of their service. See California Constitution, Article XII, Section 1-9, particularly Section 6. Moreover, Cal.Pub.Util. Code Section 1001 requires that:

"No railroad corporation whose railroad is operated primarily by electric energy, street railroad corporation, gas corporation, electrical corporation, telegraph corporation, telephone corporation, water corporation or sewer corporation shall begin the construction of a street railroad, or of a line, plant, or system, or of any extension thereof, without having first obtained from the Commission a certificate that the present or future public convenience and necessity require or will require such construction...." */

The additional authority <u>conferred directly by the Legislature</u> over the procedure for permitting a site for the LNG terminal facility is quite clearly related to and an extension of this Commission's already existing authority over intrastate gas rates, adequacy of service, and siting and construction of any gas plant. Moreover, in recognition of the possibility of serious future shortages of natural gas, the Legislature's primary purpose for enacting the LNG Terminal Act was to expedite the siting process, in part by giving siting authority to the state agency most directly responsible for all other state regulatory aspects of the LNG project. Pub.Util. Code §5551. Any argument that the LNG Terminal Act is not "cognate and germane" to matters concerning regulation of public utilities simply cannot stand.



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Pub. Util. Code Sections 221 and 222 define "gas plant" and "gas corporation".

C. Bixby Motion to Reopen the Proceeding

Bixby, citing Rule 84 of the Commission's Rules of Practice and Procedure, filed a motion on May 30, 1978 to have the portion of these proceedings dealing with the anticipated berth availability and the design of the marine facilities at the proposed Point Conception LNG terminal reopened. Bixby requested that additional evidence be taken respecting the validity of estimates of adverse wind and wave conditions which have been put into the record by Western Terminal in support of the reliability and design of its proposed project.

Bixby states that the LNG terminal which Western Terminal desires to construct on the California coast is designed to provide a dependable supply of natural gas for high priority uses, including residential and commercial space heating. It is therefore important that the terminal be able to continue operating and to provide a reliable supply of natural gas at all times--and especially during periods of peak demand. Bixby reiterates its contention that the project design must assure the terminal's ability to receive LNG from carrier ships on an almost constant basis during even the most severe wind and wave conditions which can be expected to occur over the 20-year life of the project.

This motion is a repetition of a similar motion previously made by Bixby and denied by ALJ Doran on May 4, 1978. The Bixby motion which was denied on May 4, 1978 sought to require Western Terminal to produce additional witnesses and all documents falling within several general categories, all of which related to the studies of a Western Terminal consultant, OSI, concerning wind and wave conditions at Point Conception. Although the instant motion does not expressly request the same relief, it is apparent that it is, in fact, a repetition of the previous motion.

Rule 84 requires that a motion to reopen a proceeding "shall specify the facts claimed to constitute grounds in justification thereof, including material changes of fact or of law alleged to A. 57626 et al. IM *

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have occurred since the conclusion of the hearing." (Emphasis added.) The primary purpose of Rule 84 is to permit the reopening of a proceeding when new developments have occurred after submission. Bixby's motion does not cite any such developments. This alone constitutes grounds for denial of the motion.

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Rule 84 also requires a party moving to reopen a submitted proceeding to provide, in its motion, "a brief statement of the proposed additional evidence ..." it contends should be added to the record. The motion contains only a very general statement that OII 1 should be reopened "so that additional evidence can be taken respecting the validity of estimates of adverse wind and wave conditions which have been put into the record by Applicants in support of the reliability and design of their proposed project." A further flaw in Bixby's motion is its failure to provide specific information concerning the nature of the additional evidence and its relevance.

Further, the present filing states that Bixby premised its May 4 motion and this motion on the belief that the OSI studies were the foundation of Western Terminal's analysis of project reliability. However, Western Terminal did not directly rely on the OSI studies for its analysis of project reliability.

Western Terminal filed a response on June 28, 1978 opposing the motion of Bixby to reopen OII 1 to take further evidence on wind and wave conditions at Point Conception. The response points out that Delft Hydraulics Laboratory's study of optimum berth orientation, which utilized the questioned OSI data, reached conclusions concerning "downtime" at the berth due to wind and wave conditions and the percentage of time that the berth is available to receive vessels on an annual basis. It was <u>not</u> a statement of project reliability or an analysis of the entire LNG transportation system, a concept which considers many factors other than wind and wave conditions.

Accordingly, Bixby's motion to reopen the proceeding for receipt of additional evidence respecting wind and wave conditions at Point Conception is deficient in both law and fact. The motion fails to allege the occurrence of any "material changes in fact or law" since the submission of this issue. Further, Bixby misapprehends the relevance and significance of the OSI testimony, data which was utilized to determine optimum berth orientation and not as direct support for Western Terminal's analysis of project reliability. For the above-mentioned reasons, Bixby's motion to reopen the proceedings is denied.

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D. Motion of the Indian Center of Santa Barbara - Compliance To CEQA of Request for Trenching at Point Conception.

On July 3, 1978, intervenor Indian Center of Santa Barbara, Inc. ("Indian Center"), filed a motion in the OII 1 proceeding pursuant to Rule 17.1(e)(1) of the Commission's Rules of Practice and Procedure. The motion requested the Commission to determine whether certain trenching and excavation work on the Point Conception site involved a "project" under the California Environmental Quality Act ("CEQA") and sought a stay of further excavation work pending a hearing on the motion. The Indian Center's supporting Points and Authorities filed July 7 also requested that the Commission prepare an EIR on the trenching and excavation activity before such work continued at the site, although the Center did not specifically request that relief in its moving papers.

On July 5, 1978, the California Native American Heritage Commission ("NAHC"), represented by the Attorney General, filed a brief purportedly as an "Interested Party" joining in the Indian Center's motion. " This brief described the requested relief in part as a Motion for Rehearing on the Commission's order requiring further trenching. However, as the request for relief is styled, the basic contention is that trenching and excavation to ascertain the existence of possible earthquake faults at the Point Conception site will irreparably damage property which has religious significance to Native Americans and has archaeological and historical importance both to Native Americans and to all Californians.

In July 27, 1978, the Commission received a copy of the findings made by the NAHC relating to the proposed LNG terminal at Little Cojo Bay near Point Conception. Their findings relating to the archaeological and cultural resources and the religious importance of this area to Native Americans are similar to those impacts identified in the Final EIR. Pursuant to the NAHC's comments on the Draft EIR, the Commission has prepared a study of the ethnohistory of this area for the Final EIR.

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The controversy concerning the trenching began shortly after May 2, 1978, when, in response to evidence of the existence of a possible fault at the site submitted by intervenor Hollister Ranch Owners' Association, the Commission requested Western Terminal to perform certain trenching and excavation work by June 2, 1978 to determine the nature, extent, and capability of the apparent fault. Western Terminal already had done some trenching at the site when concerned Native Americans began to protest the excavation activities.

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As a result of subsequent negotiations, Western Terminal and the Indian Center, as well as representatives of various Native American groups, signed an agreement dated May 14, 1978, permitting trenching work to continue with the implementation of certain mitigation measures, including monitoring by an archaeologist and other interested persons. Western Terminal completed excavation of two trenches and, on June 9, 1978, submitted to the Commission a report by their geotechnical consultants (Dames and Moore) discussing the results of the on-site investigation. No further trenching activity has been performed at the site to date.

On June 12, additional hearings in the OII 1 proceeding began and continued through June 22 to consider the results of the trenching and the possible need for additional excavation. Anticipating a Commission request for additional trenching, on June 12, Western Terminal obtained a grading permit from the Santa Barbara County Department of Public Works authorizing further trenching at the site. On June 16, Administrative Law Judge Doran granted permission to undertake renewed trenching, which the Commission requested by letter of the same date to Western Terminal (Exhibit "A" to Indian Center's Motion).

The Indian Center meanwhile had appealed the issuance of the grading permit to the Santa Barbara County Board of Supervisors which denied the appeal on June 19. On June 20, the Center therefore petitioned the Santa Barbara County Superior Court for a writ of mandate compelling the County to seek environmental review by the County Department of Environmental Resources prior to any

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further trenching. At the same time, the Indian Center moved the Court for a temporary stay of any further on-site geotechnical investigation pending a hearing as to whether the grading permit was granted unlawfully absent approval of the Department of Environmental Resources. The Court granted a temporary stay, but after a hearing on June 23, dissolved the stay order and denied the petition for a writ of mandate, on grounds that the sole permitting authority and forum for environmental review was this Commission.

On June 27, 1978 the Commission wrote to Western Terminal advising that no further excavation could commence until the Commission staff had met with Native American representatives to discuss adoption of measures to mitigate the impact of the trenching on cultural resources (Exhibit "B" to Indian Center's Motion). The meeting took place on June 28, 1978 but failed to resolve the problems concerning the additional trenching.

On June 29, 1978 the Commission received a mailgram from NAHC requesting a stay of further trenching pending the outcome of a NAHC meeting scheduled for July 8. On June 30, the Commission advised Western Terminal by letter that no new agreement with the Native Americans had been reached, but urged that additional trenching following certain mitigation measures specified in the letter, or those set forth in the May 14, 1978 agreement with the Indian Center, be undertaken. Thereafter, the Indian Center, joined by NAHC, filed the instant Motion.

On July 6, 1978, Western Terminal wrote to the Commission stating that in view of opposition by Native American representatives and unavailability of archaeologists to implement the mitigation measures, the company would defer further trenching activity. The Commission responded by letter of July 11 prohibiting any excavation at the site until further order of the Commission.

As appears from the foregoing summary of recent events, it does not appear necessary to address the merits of the instant Motion at this juncture. The only trenching that has taken place to date is the excavation of Trenches Nos. 1 and 2 referred to in and approved or ratified by the May 14, 1978 agreement between

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the Indian Center and Western Terminal. The Commission's letter of July 11, 1978 prohibited additional trenching until further order of the Commission and, as a practical matter, implemented at least a portion of the relief sought by this Motion. Moreover, contemporaneously with the authorization to perform additional trenching set forth in today's Order, we have issued and certified the Final EIR. For these reasons, we believe that the matters raised by the Motions are effectively moot.

The Indian Center contends that the trenching activities constitute a "project" within the meaning of CEQA and for which an EIR must be prepared. NAHC extends this argument to encompass within the definition of "project" the Administrative Law Judge's Order of June 16 directing Western Terminal to excavate additional trenches beyond the two completed pursuant to the May 14, 1978 agreement with the Indian Center. We need not reach these issues, however, since the Final EIR certified today amply considers the environmental impact of excavation and related activities at the terminal site within the larger context of construction of the LNG facility.

The Final EIR discusses earth-moving activities, including trenching to perform the subject geotechnical investigations, at pages 1-9 and 3-1 to 3-3. In addition, response to Comment El79 addresses this subject. The EIR also covers archaeological, historical, and religious resources at the site and the impact of the project, including various types of construction activity, such as soil testing by backhoes, leveling of the earth surface, and trenching, on these resources. (See Technical Report 8, "Cultural Resources" (especially pages 14-16 and 84-86), and the Final EIR text at pages 1-17 and 3-41 to 3-43.)

While we respect NAHC's expression of concern in this matter by the filing of its brief joining in the Indian Center's Motion purportedly as an "Interested Party," we must question NAHC's standing to do so. The procedure for an interested person becoming a party to a proceeding before this Commission without formal intervention is set forth in Rule 54 of our Rules of Practice and

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Procedure. The Rule requires that an appearance be entered at the hearing, the effect of which is to submit the person to the Commission's jurisdiction and entitle him to participate in the proceedings, including making motions. See <u>City of Visalia</u>, 69 CPUC 310, 311 (1969). NAHC apparently did not request to enter its appearance at any of the hearings in the OII 1 proceeding or other related proceedings.

Secondly, questions of procedural compliance aside, we do not believe that NAHC is empowered under its statutory mandate to seek the relief requested herein. Public Resources Code Sections 5097.9 <u>et seq</u>., the statute creating NAHC, provides for the bringing of an action to prevent irreparable damage to Native American sacred, ceremonial, or religious sites <u>located on public property</u>. (Section 5097.94(g).) NAHC's powers with regard to <u>private</u> land are limited to consultative and information-gathering functions. (Sections 5097.95(a),(b),(c),(h).) The site of the LNG terminal and subject trenching activities is privately owned land, and therefore, NAHC has no power to act under Public Resources Code Section 5097.94(g) or to join in the Indian Center's Motion.

For all of the above reasons, we must deny the instant motion.

#/ Rule 54 provides:

"Participation Without Intervention. In an investigation or application proceeding, or in such a proceeding when heard on a consolidated record with a complaint proceeding, an appearance may be entered at the hearing without filing a pleading, if no affirmative relief is sought, if there is full disclosure of the persons or entities in whose behalf the appearance is to be entered, if the interest of such persons or entities in the proceeding and the position intended to be taken are stated fairly, and if the contentions will be reasonably pertinent to the issues already presented and any right to broaden them unduly is disclaimed.

A person or entity in whose behalf an appearance is entered in this manner becomes a party to and may participate in the proceeding to the degree indicated by the presiding officer." A. 57626 et al. ALT.-RB-ap

XVI. NEED FOR AMENDED APPLICATION IN THE EVENT FINAL PERMIT CANNOT BE ISSUED FOR POINT CONCEPTION

As fully discussed above, the Commission believes that the evidence of record to date justifies the issuance of a <u>conditional</u> <u>permit</u> to construct and operate an LNG terminal at the Point Conception (Little Cojo Bay) site. However, our above discussion clearly indicates that further investigations and hearings are necessary before the Commission would be in a position to issue a <u>final permit</u> for the Point Conception site. As a result of these further investigations and hearings regarding the Point Conception site, it may be determined that actual construction of an LNG terminal at Point Conception may not be feasible. For example, if further excavation at the Point Conception site produces convincing evidence that causative faults exist at the site which would make construction of an LNG terminal at Point Conception either impossible or prohibitively expensive, this Commission would not allow an LNG terminal to be constructed at Point Conception.

Thus, while we today grant a <u>conditional permit</u> for the construction of an LNG terminal at Point Conception, we would be fundamentally remiss in our responsibilities, if we were to fail to address possible solutions to the problems that would be created by our inability to issue a <u>final permit</u> for Point Conception. Our conclusions with regard to the need for supplemental gas supplies are <u>unconditional</u>. We consider the need for an LNG terminal in this state by 1983 to be an irrefutable fact. Therefore, we place Western Terminal on notice that if the further studies and investigations ordered herein result in a determination that a final permit for construction of an LNG terminal at Point Conception cannot be issued, we will order Western Terminal to amend its application before this Commission and the appropriate federal agencies (ERA and/or FERC) to include those alternate sites which would allow for the receipt of LNG to California at the earliest possible date.

This-Commission will also urge all relevent federal agencies to participate with this Commission (including the possibility of joint hearings) to process the amended application as expeditiously as possible. [] Our actions are based on the fact that our

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paramount objective must be to insure the timely construction of an ING terminal whether that construction is authorized and mandated by the Liquefied Natural Gas Terminal Act of 1977 or some other state or federal law. Ē

XVII. FINDINGS AND CONCLUSIONS

Based upon the evidence presented in Applications Nos. 57626 and 57792, Case No. 10342, and OII 1, this Commission makes the findings and conclusions which follow. Findings

1. In compliance with Sections 5600 and 5601 of the Act, Western LNG Terminal Associates (Western Terminal) submitted Application No. 57626 on October 14, 1977 for a permit to construct and operate an LNG receiving terminal near Point Conception on the Santa Barbara County coast.

2. The estimated baseload natural gas supplies available to California gas utilities are as set forth in Appendix B.

3. Commission Pl through P4 gas requirements, when satisfied, maintain employment, essential residential consumption levels, and air quality.

4. The estimated gas customer requirements by customer class (end-use priority) are as set forth in Appendix C.

5. Supply-requirement relationships, absent supplemental gas supplies, are set forth at Tables 5, 6 and 7 of this decision. These tables are based on cold weather, normal weather and warm weather years, respectively.

6. Supply-requirements relationships, including baseload supplemental supplies, are set forth at Tables 10, 11 and 12 of this decision. The tables are based on cold weather, normal weather and warm weather years, respectively.

7. California cannot reasonably rely on synthetic natural gas, liquefied petroleum gas, or Elk Hills gas as baseload supplies between now and 1990.

8. <u>Baseload</u> supplemental supply projects for California include Canadian "bubble gas" (gas surplus to the needs of Canada). Mexican gas from the Reforma area of southeastern Mexico, LNG from Algeria as part of the El Paso Algeria II project, Indonesian LNG. South Alaskan LNG, and Alaska North Slope gas.

9. California cannot reasonably rely on receipt of supplemental gas supplies from Canada, Algeria, Mexico or the North Slope of Alaska to substitute for supplies of LNG from Indonesia and South Alaska.

10. California cannot reasonably rely on the gas which is temporarily surplus to the needs of other areas as a substitute for supplies of LNG from Indonesia or South Alaska.

11. The estimated costs of traditional gas supplies to California are set forth at Table 8 (page 72) of the decision.

12. The estimated costs of potential baseload supplemental gas supplies are set forth at Table 9 (page 73) of the decision.

13. The estimated costs of LNG from Indonesia and South Alaska are comparable with the costs of traditional supplies to California at the projected date of deliveries of the Indonesian and South Alaska LNG.

14. Curtailment of natural gas zervice to Priority 4 customers has commenced in southern California. Without any baseload supplemental gas supplies, gas service to southern California P2B, P3 and P4 customers will be curtailed by 1981 (under cold-year conditions), by 1983 (under normal weather conditions) and by 1984 (under warm year conditions).

15. Full curtailment of California P3 and P4 gas customers will require capital investment in alternate fuel facilities of over \$200 million, direct loss of 90,000 jobs, and over \$116 million in increased operation costs.

16. Supplemental gas supplies are needed to provide long-term baseload gas supply to California. The proposed importation of 500 MMcf/d for 20 years from Indonesia will provide gas needed to meet California gas requirements by 1983.

17. The proposed importation of LNG from South Alaska will provide long-term baseload gas supply needed to meet California gas requirements by 1984 and 1985.

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18. Curtailment of service to P3 through P5 customers will adversely affect air quality in the San Francisco Bay and Los Angeles areas, and delay air pollution abatement programs.

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19. The past federal allocation policy has been to allocate declining gas supply equally to utilities, based on customer priority. Gas diverted by federal authorities to meet national emergency conditions has subsequently been replaced without disadvantage to California utilities.

20. California utilities and this Commission participate in federal allocation and pricing proceedings. Such participation asserts the right of this state to fair and equal treatment under federal allocation and pricing policies. The acquisition of higher cost new gas supplies has not, under past federal policy, resulted in loss of existing gas supply.

21. The need to protect high priority gas customers in southern California by transfers of gas from northern California requires an increase in intertie capacity at an estimated cost of \$5 million.

22. Pacific Gas and Electric Company (PG&E) and Pacific Lighting Service Company (PLS) should file an application for a certificate of public convenience and necessity for a new pipeline required to increase the ability to transfer gas supplies between northern and southern California. Such a pipeline could substantially increase high priority gas customer protection from the interruption of gas service.

23. PG&E should be required to divert its P5 gas to the system of Southern California Gas Company (SoCal), in order to protect SoCal's P2B, P3 and P4 customers from curtailment. SoCal should be required to pay back these volumes with P5 gas when available to SoCal.

24. Both PG&E and SoCal submitted contingency plans in the event of both short- and long-term interruptions of LNG gas supply. These plans, in conjunction with the requirements set forth in the decision, will be sufficient to protect California gas customers against undue supply interruptions.

25. Fertamina, the Indonesian state oil company, has had the contractual right to cancel the LNG gas sales agreement since October 6, 1977.

26. The Alaskan gas producers have had the contractual right to terminate their sales agreements since July 1, 1978.

27. The preliminary design for the Point Conception LNG terminal is based upon existing and proven technology.

28. The preliminary design information submitted in the application is sufficient for the LNG permitting and environmental review process.

29. The construction cost estimates submitted by Western Terminal are representative of order-of-magnitude costs expected to be incurred for the project in terms of mid-1977 dollars.

30. The preliminary terminal design will require modification during the design stage of the project to include mitigation measures required by the conditions of this decision.

31. It is necessary for Western Terminal to submit to the Commission, prior to commencement of construction, updated cost estimates for the project.

32. The cost monitoring plan of the staff, as described herein, is reasonable for the Point Conception project and fully meets the requirements of Section 5638 of the Act.

33. The safety and construction monitoring plan of the staff, as described herein and subject to refinement in Phase II of OII 1, is reasonable for the Point Conception project and meets the requirements of Section 5637 of the Act.

34. The safety and construction monitoring plan as submitted by the staff will be expanded to include monitoring of environmental terms and conditions to be adopted as part of this permit.

35. The cost of establishing and implementing the monitoring 7 program is most appropriately borne by Western Terminal.

36. The costs of designing and constructing the proposed terminal are, to the extent they are prudently incurred, in the best interest of the ratepayers; however, the action hereinafter

taken is not to be considered as indicative of amounts to be included in future proceedings for the purpose of determining just and reasonable rates.

37. Western Terminal and its sponsors (PLC and PG&E) have the ability to finance the PacIndonesia and PacAlaska projects including the Point Conception terminal.

38. Project financing, as proposed, is in the public interest.

39. Delay of a decision to issue a permit for an LNG terminal will lead to a risk of loss of gas supply contracts for gas from Indonesia and south Alaska.

40. Delay due to selection of a site, other than the applied for site, will lead to the risk of loss of the LNG gas supply contracts.

41. Delay due to selection of a site, other than the applied for site, would greatly increase the capital cost of the project and thereby would place an unjustifiable burden on the ratepayer or may even preclude financing of the project.

42. Selection of a site, other than the applied for site, will lead, at a minimum, to a two-to-four year delay before a terminal at any one of the alternate sites could be operational.

43. Severe environmental impacts would arise at Rattlesnake Canyon due to construction of a massive breakwater, blasting of offshore pinnacles, greater throughput of seawater for vaporization, and the inability to avoid significant cultural resources.

44. The project, as proposed, would have a significant impact on air quality.

45. Mitigation measures which substantially reduce the air quality impact of the project are feasible.

46. Further hearings are necessary to establish the extent to which air quality mitigation is necessary and feasible.

47. The project, as proposed, would have a significant impact 2 on marine biology due to fish and plankton entrainment. An uncertain level of impact would result from the discharge of chlorinated organic compounds with the cooled seawater. In addition, commercial utilization of kelp and fish at the site would be hindered.

48. Fish entrainment can probably be mitigated through the use of a "caisson type" seawater intake system.

49. No feasible method exists for mitigating plankton entrainment.

50. The impact on kelp associated resources can be largely mitigated by minimizing the size of any safety-related exclusion zone and by considering kelp harvesting and fishing needs in planning terminal operations.

51. Impacts caused by the discharge of chlorinated compounds can be reduced by the use of anti-fouling coatings and scheduled maintenance.

52. Significant terrestrial biology impacts will result from the construction of the proposed pipeline and access road. Minor impacts on terrestrial biology will result from the use of terminal site acreage.

53. Terrestrial impacts due to the construction of the pipeline can be minimized by realigning the route to avoid rare or endangered species and sensitive habitats.

54. Terrestrial impacts caused by the construction of an access road can be minimized by choosing an alternative route which does not require major fill in the coastal ravines.

55. Terminal site impacts can be mitigated by acquiring habitat of equivalent value and maintaining it in a natural state.

56. This project will sharply contrast with the undeveloped setting of the region. The powerline and access road as proposed will impact views from the coastal terrace and Gaviota State Park.

57. Visual impact of terminal structures can be reduced by camouflage painting, proper landscaping, and by partial inground-ing of the tanks.

58. Visual impacts of powerlines can be reduced with careful alignment, use of existing wood poles, or undergrounding.

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59. Visual impacts of the access road can be reduced by using the 25-MPH Hollister Ranch road alternative or other alternatives to be studied.

60. The project will conflict with existing land use trends toward recreational and low density residential uses.

61. Construction activities will bring a significant temporary in-migrant population to Santa Barbara County and place additional demands on the housing market. Residential development on ranches adjacent to the site will be adversely affected by the project.

62. There are known archaeological sites that will be affected or, in some cases, destroyed by the proposed terminal, pipeline and access road. Development of the site will adversely affect access to a small portion of the Point Conception area for Native Americans who place religious significance on the vicinity.

63. Significant archaeological sites at the terminal site can be largely avoided by shifting the location of project facilities 1500 feet eastward.

64. The proposed pipeline route can be realigned to avoid significant archaeological resources.

65. Impacts of the access road on archaeological resources can be reduced by using the 25 MPH Hollister Ranch road alternative.

66. Adverse environmental impacts of lesser significance will occur in the areas of topography and soils, hydrology, noise, marine traffic, public services, induced development, and onshore transportation.

67. Various mitigation measures required in the conditions discussed in Section XIV will substantially reduce many of these environmental impacts.

68. Further study is required to determine the access route having the least adverse environmental impact.

69. Further study is required to determine the powerline configuration having the least adverse environmental impact.

70. The proposed pipeline corridor has the least adverse environmental impact.

71. The project's impact on safety is minimal and acceptable.

72. The development of the Point Conception site does not appear to be sufficient incentive to attract industry to such a remote location.

73. The project will consume significant quantities of electricity, however its net energy impact will be a major increase in gas supply to California.

74. Western Terminal's marine operations plan shows that no marine vessel transporting LNG will be required or permitted to pass within one mile of an area of population density of ten persons per square mile nor within four miles of a population density of 60 persons per square mile.

75. Staff's proposal to require Western Terminal to construct the LNG storage tanks on bedrock seems prudent but requires further evaluation.

76. Western Terminal's plans for the construction, operation and maintenance of a 34-inch pipeline from the proposed LNG terminal at Point Conception to Gosford, California, indicate that Western Terminal will construct, operate and maintain that pipeline in accordance with the provisions of General Order No. 112-C.

77. The staff's recommended site approach routes for LNG vessels to the degree they are consistent with sound maritime practice, should be adopted.

78. Subject to Finding No. 77, the staff's recommended maritime equipment and procedure requirements will reduce the risk associated with LNG vessel traffic in the Santa Barbara Channel and should be adopted.

79. The probability of an accident involving ten or more casualties at the proposed site is approximately one chance in 100 million years at existing population levels.

80. The probability of an accident involving one or more casualties at the proposed site is one chance in 1 million years with the existing population level.

81. Western Terminal's security plan, when implemented as proposed, will provide greater security than at other LNG facilities, will approach that employed at nuclear plants and Department of Defense installations, and will serve to deter and protect against sabotage attacks.

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82. Western Terminal will obtain liability insurance covering third party property damage and personal injuries in an amount not less than \$50 million per occurrence.

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83. Western Terminal will require that each LNG vessel which is used in the proposed project carry protection and indemnity insurance of not less than \$50 million per occurrence.

84. Western Terminal's insurance plan is adequate to protect the public in the event of personal or property damage resulting from terminal operations. But Western Terminal's ultimate liability in the event of a mishap could exceed the \$50 million policy limits.

85. The probability of an airplane penetrating a critical LNG system at the proposed site is approximately one chance per 20,000 years for LNG pipelines, one chance per 100,000 years for the LNG tank roof and one occurrence per 1,666,700 years for the LNG tank sidewall.

86. The probability of a tank, pipe or tanker being penetrated by a meteorite is approximately one chance per 10 million years.

87. The average annual probability of one or more missile fragments penetrating an LNG storage tank, pipeline or LNG tanker is less than one chance in 333,300 years in 1980 and declines to less than one chance in 2,500,000 years by 1987.

88. For purposes of determining the reliability of the proposed LNG transportation system berthing will be precluded if any of the following conditions exist: waves of six feet or greater, winds of twenty-five knots or greater or visibility of one mile or less.

89. While evidence of record does not support a finding that long-period swell activity could seriously impair operations at Point Conception, further on-site observations are appropriate and should be ordered.

90. Based on available data optimum berth orientation at Point Conception appears to be within the sector of 225° to 255°.

91. While annual weather related downtime at Point Conception may exceed 17% during some years, <u>average</u> annual related downtime will fall within the range of 0% to 17% during the life of the project.

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92. The projected level of weather related berth downtime is acceptable-and will not seriously impair the project's ability to deliver the contract quantities.

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93. / The threat posed by soil creep, landsliding, flooding, erosion and liquefaction at Point Conception is minimal.

94. While we find that a high degree of conservatism is appropriate in the design, construction and operation of an LNG facility, the strict application of NRC siting criteria to those activities is inappropriate.

95. The geologic criterion for identifying areas of high seismicity, which is critical to the siting and design of a safe and reliable LNG facility, shall include activity in the late Pleistocene period.

96. The Arroyo fault is an active fault. Further geological and geotechnical investigation is required prior to any conclusive determination of the nature and length of the fault, and the associated potential magnitude and ground acceleration of the fault.

97. Currently available evidence indicates that the Arroyo fault is not causative, i.e. capable of generating a 5.0 magnitude or greater earthquake; but rather it is a secondary rupture resulting from seismic activity on a nearby significant offshore fault.

98. Pending receipt of further geologic and geotechnical information, we may conclude that the predominant seismic hazards to the Point Conception site are the North and South Branches of the Santa Ynez fault as well as the F-l fault.

99. There exists the possibility of a 7.5 magnitude earthquake, with associated bedrock accelerations of .6 g to .68 g, occurring on either the North and South Branches of the Santa Ynez fault as well as on the F-l fault at distances of 3 to 4, 5, or 3 miles respectively from the site.

100. Prudence and the public interest dictate that the LNG facility be designed to withstand and continue operation after occurrence of that earthquake which would produce an intensity of earthquake ground motion at the site that has a very high probability—on the order of 99.5%—of not being exceeded during the 50-year service life of the facility.

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101. To assure a high level of plant safety and investment protection,_Western Terminal should be directed to design and construct portions of the terminal to withstand ground motions at the site associated with an earthquake on the North and South Branches of the Santa Ynez fault as well as F-1 fault or that earthquake which has a probability of occurring one time in 10,000 years $(10^{-4} \text{ per year})$.

102. Caution dictates that the critical components of the LNG facility should be designed to withstand a maximum earthquake of Richter Magnitude 7.5 using a bedrock acceleration-time history with a maximum peak acceleration of 0.7 g (gravity) at the site.

103. Utilization of two levels of earthquakes and three categories of equipment for purposes of seismic design incorporates a prudent level of conservatism into design and allows for safe and reliable operation of the ING terminal.

104. Regulatory Guide 1.60 response spectra, properly scaled to the peak ground accelerations recommended for the SSE and OBE, should be used in the design of Category I and II structures, components and systems.

105. In accordance with Appendix B of 10 CFR 50, a quality assurance program should be established that assures reliable performance of all Categories I and II structures, components and systems in their respectively-defined seismic environments.

106. A reinforced concrete mat should be placed under the LNG storage tanks, unless careful analysis proves it unnecessary.

107. Western Terminal should demonstrate by appropriate analysis or test that the inner and outer LNG storage tanks respond independently to seismic excitation or that the potential for their interaction has been considered in design.

108. The only trenches which have been excavated at the site are Trench No. 1 and Trench No. 2 referred to in the May 14, 1978 agreement between the Indian Center and Western Terminal.

109. No further excavation or earthmoving activities have been undertaken at the site to date.

110. NAHC did not enter an appearance at the hearings in OII 1 or any related proceeding.

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111. The Point Conception site is the only site where an LNG terminal could be constructed and operational in sufficient time to prevent curtailment of high priority requirements for natural gas, thereby maintaining employment, essential residential consumption levels, and air quality.

112. Point Conception is the only feasible site for which a permit can be granted that will allow the securing of the Indonesian and South Alaskan gas supplies.

113. At the time operation of the terminal commences, Western Terminal's proposed site at Point Conception will fully comply with the population density requirements of the Act.

114. Subject to the terms and conditions of this decision, it is consistent with public health, safety, and welfare to construct and operate a terminal at Point Conception.

115. Subject to the LNG safety standards to be adopted in OII 1, it is consistent with public health, safety, and welfare to construct and operate an LNG facility at Point Conception.

116. Present and future public convenience and necessity will require the construction and operation of the proposed gas transmission pipeline from the Point Conception terminal facility to Gosford in Kern County.

117. It is not feasible to complete construction and commence operations of a terminal at Camp Pendleton, Rattlesnake Canyon, or Deer Canyon in sufficient time to prevent significant curtailment of high priority requirements for natural gas as defined by the Act.

118. A terminal at the Camp Pendleton site would not be consistent with public health, safety, and welfare because it would conflict with military operations, does not qualify under population density requirements of the Act, is near areas of extensive public recreational use, and may preclude the operation of the existing nuclear facility at San Onofre. A terminal at the Deer Canyon site

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would not be consistent with public health, safety and welfare because it is inconsistent with the remoteness criteria required by Section 5552 of the Act, in that the public parks boardering the site would put transient public users in close proximity to a terminal. Also, the cost of constructing a terminal at Deer Canyon is exorbitantly expensive.

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119. A terminal at the Rattlesnake Canyon site would not be consistent with public health, safety, and welfare because of the hostile marine environment, the excessive capital cost of construction, the potential preclusion of the operations of a nuclear facility at Diablo Canyon and because it does not meet the legislative mandate of remoteness spelled out in Sections 5550 et seq.

120. Impacts caused by the placement of an LNG terminal at Point Conception are necessary and acceptable in order to locate the terminal in a "remote" location as required by the Act.

121. The construction and operation of the proposed facility will not produce an unreasonable burden on natural resources, aesthetics of the area in which the proposed facilities are to be located, air and water quality in the vicinity, parks, recreational, and scenic areas, wildlife and vegetation, historic sites, archaeological sites, or community values.

122. The overall level of environmental impacts associated with this project are moderate in comparison with other energy related projects of similar value.

123. The benefits of the project outweigh its adverse environmental impacts.

124. The procedures used to prepare the EIR were in compliance with CEQA and the State EIR Guidelines.

125. The Draft EIR was prepared in compliance with the requirements of CEQA and the State EIR Guidelines.

126. The Final EIR is adequate and meets the requirements of CEQA and the State EIR Guidelines.

127. The terms and conditions recommended to this Commission by Santa Barbara County (Appendix E) should be accepted, modified, or rejected, to the extent indicated in Section XIV of this decision.

128. In the event a final permit cannot be issued for the construction and operation of an LNG terminal at Point Conception, Western Terminal should be required to amend its application before this Commission and the appropriate federal agencies to include those alternate sites which would allow for the receipt of LNG to California at the earliest possible date.

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Conclusions of Law

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1. Conditions Nos. 1 through 12, 15, 16, 24, 25, and 26 recommended by the CCC in its final report to this Commission are contrary to the general intent of the Act. Each of these conditions will cause delay in commencement of terminal operations that will result in significant curtailment of high priority natural gas requirements and deletion or modification of each such term or condition will avoid or significantly reduce such curtailment.

2. Conditions Nos. 9, 10, 11, 14, 23, 25, 26, and 27 recommended by the CCC in its final report to this Commission are not based on substantial evidence, considering the record as a whole, and deletion or modification of each such term or condition is required.

3. Condition No. 13 recommended by the CCC in its final report to the Commission is contrary to the specific language of Section 5637 that requires the Commission to establish a monitoring program to ensure that the LNG terminal is constructed and operated in compliance with all applicable regulations adopted and terms and conditions established. Modification of this condition is required.

4. Condition No. 28 recommended by the CCC in its final report to the Commission is contrary to specific language in Section 5637 of the Act and modification of this condition is therefore required.

5. Each and every condition recommended by the CCC in its final report to this Commission which requires approval by the CCC or some other agency prior to the commencement of construction or operation is contrary to the general intent of the Act to make this Commission the exclusive permitting authority for the applied for LNG terminal.

6. Congress has not intended to grant federal agencies exclusive jurisdiction pertaining to the siting, construction and operation of the proposed LNG terminal.

7. There is no manifest Congressional intent to preempt harmonious state regulations pertaining to the siting, construction, and operation of the proposed LNG terminal.

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8. There is no actual conflict between existing federal laws and the LNG Terminal Act of 1977.

9. By enacting the Natural Gas Act, Congress intended no manifest purpose to preempt harmonious state regulation of siting, construction, and operation of the proposed LNG terminal.

10. The Pipeline Safety Act does not preempt state laws regulating LNG terminal siting and construction.

11. The LNG Terminal Act of 1977 is not preempted by federal law.

12. The LNG Terminal Act of 1977 places no undue burden on interstate commerce.

13. The duties assigned the Commission under the LNG Terminal Act of 1977 are cognate and germane to the Commission's responsibilities to regulate public utility gas companies.

14. The Commission has the jurisdiction to permit the siting, construction and operation of an LNG terminal in California.

15. Bixby's motion to reopen the proceedings in OII 1 presents no new factual allegations or material changes of fact or law and should be denied.

16. Bixby's motion to reopen the proceedings in OII 1 to present additional evidence is without merit and should be denied.

17. The Commission has complied with CEQA with regard to additional trenching by issuing a final EIR which covers trenching and related earthmoving activities.

18. The Santa Barbara Indian Center's Motion should be denied as moot.

19. NAHC lacks standing to appear and join in the Indian Center's motion.

20. The Commission certifies that the Final EIR has been completed in compliance with CEQA and the Guidelines, and that the Commission has reviewed and considered the information contained = in the EIR.

Because of the urgency nature of the Act and the necessity for conducting hearings relating to the conditions set forth in the decision, this decision should be effective immediately.

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XVIII. INTERIM ORDER

IT IS ORDERED that:

- 1. Pursuant to the Liquefied Natural Gas Terminal Act of 1977:
 - a. Western LNG Terminal Associates (Western Terminal) is granted a conditional permit authorizing it to construct and operate a liquefied natural gas terminal at Little Cojo near Point Conception in Santa Barbara County, California.
 - Pacific Gas and Electric Company (PG&E) and Pacific Lighting Service Company (PLS) are granted a permit to construct and operate a pipeline and appurtenances thereto necessary for the transmission of the regasified liquefied natural gas from the metering station at the outlet of the terminal over a ll2-mile route to an existing pipeline near Gosford in Kern County, California.

2. Pursuant to Section 1001 of the Public Utilities Code, PG&E and PLS are granted a conditional certificate of public convenience and necessity to construct and operate the pipeline described in Ordering Paragraph 1.b.

3. The certificate herein granted is subject to the following provision of law:

> The Commission shall have no power to authorize the capitalization of this certificate of public convenience and necessity or the right to own, operate, or enjoy such certificate of public convenience and necessity in excess of the amount (exclusive of any tax or annual charge) actually paid to the State as the consideration for the issuance of such certificate of public convenience and necessity or right.

4. The authorizations granted in Ordering Paragraphs 1 and 2 are subject to the terms and conditions adopted in Section XIV of this decision.

5. The Commission staff is directed to establish cost, environmental, and safety and construction monitoring programs for the terminal and pipeline construction authorized herein.

6. Western Terminal shall reimburse the Commission for all. costs incurred that relate to these proceedings after July 31, 1978, and for all costs incurred in establishing and implementing the monitoring programs described above.

7. Western Terminal shall submit to the Commission, prior to commencement of construction, updated cost estimates for the total project.

8. PG&E and PLS shall, within 180 days after the effective date of this order, modify existing interties on their respective systems to provide a capability of diverting to the SoCal system from the PG&E system on a best efforts basis up to 500 MMcf/d.

9. PG&E, and PLS, shall, within 180 days after the effective date of this order, file an application with this Commission for a certificate of public convenience and necessity for a north-south pipeline system having the capability of delivering up to 100 billion cubic feet annually.

10. PG&E and SoCal shall, within 90 days after the effective date of this order, modify the mutual assistance agreement required by Decision No. 85189 (to protect PL and P2A service statewide) to provide for best-efforts delivery of P5 natural gas from one system to alleviate any curtailment of P2B, P3 and P4 customers on the other system and to provide for repayment with P5 gas to the extent such P5 gas is available.

11. The motion of the Fred H. Bixby Ranch Company to set aside submission and reopen the proceedings for additional evidence on wind and wave conditions at Point Conception is denied.

12. The motion of Fred H. Bixby Ranch Company to dismiss' these consolidated proceedings for lack of jurisdiction is denied.

13. The motion of the Santa Barbara Indian Center to require the preparation of an environmental impact report prior to additional trenching at the site is denied.

14. To the degree permitted by federal law, Western Terminal shall design, construct, and operate the facility in compliance with relevant Commission safety standards to be adopted in OII 1.

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15. Further hearings will be held in these proceedings to:

- a. Establish the extent to which air quality mitigation measures are necessary and feasible.
- b. Evaluate the environmental and economic impacts of the alternate access roads and select the appropriate route.
- c. Evaluate the seawater alternatives heretofore discussed and select the appropriate system.
- d. Determine the environmental and economic impacts of alternate electric transmission line routes proposed and select the most appropriate route.

16. Further hearings will be held in Phase II of this proceeding on the issues of (1) Western Terminal's proposed changes in seismic design criteria, (2) the staff's proposed general order on liquefied natural gas safety standards, (3) refinement of the staff's proposed safety and construction monitoring plan, (4) additional seismic evidence required by Conditions 36 and 37, and (5) additional wind and wave evidence required by Condition 32.

17. The Executive Director of the Commission is directed to file a Notice of Determination for the project, with contents as set forth in Appendix G to this decision, with the Secretary for Resources.

18. In the event a final permit cannot be issued for construction and operation of an LNG terminal at Point Conception, Western Terminal shall submit an amended application to this Commission and all appropriate federal agencies which shall include those alternate sites which would provide for receipt of LNG to California at the earliest possible date.

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The effective date of this order shall be the date hereof. Dated at <u>San Francisco</u>, California, this <u>31st</u> day of <u>July</u>, 1978. •

ROBERT BATINOVICH I concur: President See attached opinion. /s/ RICHARD D. GRAVELLE WILLIAM SYMONS, JR. Commissioner I will concur in part. /s/ WILLIAM SYMONS, JR. VERNON L. STURGEON Commissioner I will file a concurrence RICHARD D. GRAVELLE . . for myself and join in Commissioner Gravelle's. /s/ CLAIRE T. DEDRICK • • CLAIRE T. DEDRICK Commissioner Commissioners OII 41 C. 10342 A. 57626, A. 57792 D. 89177

RICHARD D. GRAVELLE, Commissioner, Concurring:

I concur. .

It is my firm hope that today's action by the Commission does not ultimately become a vain attempt to provide an essential commodity for the health and welfare of the people of California.

I am not optimistic, however, that we have accomplished anything worthwhile. S.B. 1081 (The Act) was structured, in its critical formative stages, as much by those who, devoid of any record, had already made up their minds that supplemental gas supplies in the form of LNG were unacceptable for California, as it was by those who desired that the final decision be based upon an evidentiary record to establish the facts of the matter. Those who in 1977 claimed the clairvoyant ability to perceive California's energy needs in the mid 1980's shaped The Act so that Point Conception would be the only viable site that might be accepted under the statute. Point Conception was their choice because of their belief that there were so many known or potential problems with the site that they felt confident no facility could be constructed there in time to keep the Indonesian and South Alaskan contracts open - and that there was a great likelihood that no facility would ever be sited there.

The Act <u>mandates</u> a remote site and spells out specific criteria defining what qualifies as remote. At the time of its enactment, Western Terminal had only one choice to make for its application; Point Conception.

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The California Coastal Commission (CCC) was given the inherently inconsistent task (for an agency with its statutory responsibility) of nominating sites other than that selected by Western Terminal. I commend the effort of the CCC. Its labors, necessarily conducted in a self-destruct atmosphere, produced as good a selection of alternative sites as could be achieved by any person or entity. But what in fact do we have, bearing in mind the mandate of remoteness?

Horno Canyon, which clearly falls outside the statutory definition of remoteness, is jealously guarded by its owner, the U. S. Government, and is located in close proximity to a nuclear facility which the Nuclear Regulatory Commission tells us might cause the closure of the generating plant.

Rattlesnake Canyon, a site while not clearly outside the specific permanent population criteria of the act cannot in any way be said to meet the legislative mandate of remoteness because of the heavy transient population existing within two miles of the site, also facing the same NRC problem that plagues Horno Canyon, and one which would do massive ecological damage through breakwater construction and sea bottom disruption.

Deer Canyon, another site located between two state parks with a trestle carrying LNG passing over U. S. Highway 1 (This is remote?), where earth movement of massive proportions are required, and where the naval commander of Point Mugu urged that a facility there would interfere with missile firing.

We are left with Point Conception. Remote it is. Other problems exist there, however, that could and indeed may result

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in what I fear most. The facility may never be built. It would be repetitive to state here the problems with Point Conception that are chronicled elsewhere in this decision.

Why has this proceeding, this issue, taken on such importance that it involves the myriad interests that have appeared before us and before the federal regulatory bodies that also address the subject of LNG. Because the subject is one that is basic to the future well-being of every Californian through the next two decades. California is a gas dependent state. It is also a growing state with a vibrant economy that gobbles energy in increasing quantities in spite of successful and continuing efforts at conservation and alternate energy development.

Some, those who manipulated the Act included, believe that stopping LNG development will force a lifestyle change upon our citizens that they perceive to be beneficial. These are not the ones who bear the responsibility for seeing that California is able to meet its energy needs in the future, their interests lie elsewhere. As one Commissioner, with the obligation to see that the general population and the economy, which is sometimes its slave and sometimes its master, will be able to meet their energy needs in the future, I do not feel the privilege of doing less than examine those needs in the light of recent history. Two consecutive years of drought did this state great damage. Two consecutive years of cold weather could do worse. WE NEED LNG !-WE NEED ALL THE GAS WE CAN GET! Certainly, there are constraints on procurement. Safety, price and environmental impact are all possible deterrents. That is why we are dealing with a regulated business. Public protection in the way of safety, price and

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environmental impacts are legitimate roles of government,

but to work effectively we cannot expect either industry or the regulatory bodies to play with a stacked deck. The Act was such a deck.

I sincerely hope that in spite of the handicap we will be able to enjoy the use of LNG in California by 1983.

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Alaine J. Desmin

San Francisco, California July 31, 1978

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COMMISSIONER CLAIRE T. DEDRICK, VISSERIENCE TOM CHVYING

The accelerated ING terminal site approval process just completed by the State was designed to assure that a reliable gas supply would be available at a time to be determined during the process. The action of this commission will have the opposite effect.

The results of the investigations carried out in the ten months since the effective date of SB 1081 are inconclusive on all matters.

Gas is needed between 1982 and 1986. Taking the most optimistic prediction of traditional gas supplies and the most optimistic prediction of gas needs, we will run out of gas for California's 5.9 million residential customers by 1986. It will cost at least one to two thousand dollars apiece for those 5.9 million customers to convert to <u>any</u> other energy source — solar or electricity generated by any means. In addition air pollution, at least in the Los Angeles Basin, and probably downwind from San Francisco, is literally killing people. Burning coal or oil in industrial facilities can only exacerbate the situation. To accept the "no gas" alternative is quite simply not a responsible govemmental decision.

The Federal government controls new gas supplies that California needs to augment our diminishing supplies from traditional sources. But at this time not only have no Federal decisions been made, but there is no indication to California what the Federal government may decide. In fact, it is within the power of the Federal government to strangle both the economy of California and literally the people of California through its power to control gas supplies to the State.

The statute gave the Coastal Commission responsibility to locate a site, but barred that body from considering on off-shore site and required that Point Conception, regardless of its merits, be considered in the final ranking. The statute requires the POC to adopt the Coastal Commission priority unless we find that significant gas curtailments would result. Yet, the statute did not allow enough time for this commission to consider any other site but Point Conception. Suitable sites are sharply limited by the severity of weather, wind, current, and rough coastal topography in the central and northern parts of the coast
and by the density of pulation on the temperate subern coast. Nevertheless, five potential sites were identified by the Coastal Commission. Las Varas was later eliminated when an active earthquake fault was discovered on it.

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It is apparent from the data developed by both commissions that every site onshore is plaqued by safety hazards of seismic and wind/ wave/weather conditions and with serious conflicts with fish and wildlife resources, cultural and recreational needs. Many of these problems would be reduced or removed by the selection of an appropriate offshore site. However, the statute specifically requires that the first site <u>must</u> be onshore. This shortsighted policy has now delayed and will continue to delay a viable operating ING facility in California.

But while the Coastal Commission was considering these five sites, the Public Utilities Commission was considering the only one before us - Point Conception.

Point Conception has unusually valuable fish and wildlife resources which would be seriously damaged by the project, as shown in the record. The rocky reef-filled near shore area is extraordinarily rich in marine life and supports substantial commercial and recreational fisheries. Kelp Bed 32, in the area of the project, is the most productive commercial kelp bed in the state.

Point Conception itself is sacred to the California Chumash Tribe and has been declared by the NAHC as a site which "has had religious and spiritual significance since time immemorial." A feasible alternative site exists at Pendleton which such resources would not be irreparably damaged. This is clear in the Coastal Commission record.

Continuously, since 1835, Point Conception has been known to mariners as the "Cape Horn of the Pacific." This strong phrase is still used today in the <u>Pacific Coast Pilot</u>, the official U.S. Government document advising mariners of all nations. Gales of 70 knots, lasting three days and nights, have been frequently described over the years. The Point is the meeting place of two strong opposing coastal currents, resulting in turbulent and unpredictable sea conditions as well as very rich marine life. Wave heights are infamous among both fishermen and surfers. But despite official publications and record of 200 years of Pacific Coast navigation, there appears to be too little evidence <u>in the record</u> for the FUC staff to either verify or reject this information. Is this the place to locate a major industrial seaport for vessels 1,000 feet long, drawing only 35 feet and carrying a highly flammable cargo weighing much less than water? These ships act like gigantic sails, difficult to maneuver by all maritime standards. To provide reliable gas supply of 1.3 billion cubic feet per day, 190 of these vessels must be unloaded each year. How can a port with weather and sea conditions like this be expected to allow reliable delivery? Would a breakwater belp? We don't know because construction of a breakwater was never considered. Why? Because the applicants say they don't need one and this commission did not have enough evidence in the record of wind and sea conditions to challenge that contention. So the proposed order requires a two-year study before construction can begin. But, the time frame set forth in the order allows only one year before start of construction.

Point Conception is located in the most tectonically active portion of the California coast. The Point itself is surrounded by major active faults 12 miles to the north, 5 miles to the east, and 3 miles to the south. Seismic events of 7.5 magnitude or greater have occurred in the offshore area twice within the last 175 years. Action on these faults is thrusting the block of land on which the site is located upward and inward, warping and cracking its surface. Four active earthquake faults are visible on the surface of the site itself. These faults were not seen by the applicant's geologists. One was identified in studies on the site in April 1978 by other geologists; the applicant and our consultant then detected the others. These facts <u>are</u> in the record.

Is this the area in which to locate a major industrial seaport for a highly flammable cargo, which must be transported in a massive cryogenic pipeline from the ship on a trestle nearly a mile long, constructed on a highly seismic sea bottom to three cryogenic tanks 240 feet in diameter and 145 feet high? Will such an assortment of interconnected structures survive an earthquake and perhaps a taumani of even half the 50 foot tidal wave associated with the earthquake of 1812? Will this be a reliable source of gas supply for California?

And, what will all this cost the gas users — the citizens of California? Make no mistake, this is a bill which will be paid by the public. What will it cost to make the structures earthquake resistant, if that is possible? There is no answer in the record. What will it cost to build a dock and trestle to withstand the forces of wind, sea, earthquake and tsumanis? There is no answer in the record. And even if all these questions are answered satisfactorily and expeditiously, the earliest possible date for completion is 1984 on the showing in the record.

But what if some or all of these questions are answered negatively? We will have no ING terminal in 1985. We will have wasted another two years trying to put bandaids on a marginal project.

The statute requires that the POC accept the site priority ranking determined and approved by the Coastal Commission, unless we find:

". . . with respect to each higher ranked site that it is not feasible to complete construction and commence operations of the terminal at such higher ranked site in sufficient time to prevent significant curtailment of high priority requirements for natural gas and that approval of the lower ranked site will significantly reduce such curtailment."

The priority ranking places Camp Pendleton and Rattlesnake Campon before Point Conception. We have virtually no evidence in the record on which to make a finding that Point Conception could be built before either of the other two sites. The record contains statements to that effect, but no proof. Camp Pendleton is located in an area of tranquil weather and sea conditions, technically known as "the doldrums." The seismicity of the area is known to be of both a different type and frequency than is found on the central coast. Its marine resources would not be severely affected by the project. It may be much less timeconsuming and much less disruptive of other resources to locate a terminal there. It may result in a much more reliable gas supply at a much lower cost than any other site. But we don't know that <u>because there</u> <u>is no evidence in the record</u>.

The order says it would take until 1987 to complete a terminal at Camp Pendleton. But it includes an undersea pipeline, the need for which has been no more clearly established than the lack of need for a breakwater at Point Conception. If that pipeline is not needed, the completion date would be 1985. If a breakwater is needed at Point Conception the completion of the project is unlikely to occur at all.

The <u>only</u> substantive reason given for rejecting the Coastal Commission's first choice — Camp Pendleton — is that the property belongs to the United States Government which will not release it and would not allow consideration of it in the EIR. Who is the United States Government which owns 50% of the land in California? It is <u>our</u> government. California is 10% of the population of the United States. It has the equivalent economic value to the seventh wealthiest nation on earth. It has 45 representatives in the Congress of the United States. It is the largest industrial state in the nation.

Should the interests of the State of California be dismissed as nothing? Can we accept that the decision not to release 120 of the 125,000 acres at Camp Pendleton is insumountable?

The answer is "NO"! The decisions of a single bureaucracy, no matter how unwilling to bend, are much more susceptible of reversal than the decisions of nature.

Another binding portion of the statute we are acting under states:

"The Commission shall not issue a permit for construction and operation at any site unless it finds that to do so is consistent with public health, safety and welfare . . . "

It is clear from the record that such a determination cannot be made on Point Conception. It is not clear from the record that such a determination could not be made on Camp Pendleton.

I believe that natural gas <u>is</u> important for California; that we do need a reliable gas port. Nature itself has excluded Point Conception. The very least that this commission should do is take action to begin the process of authorizing another site at Camp Pendleton by directing the applicant to amend its application to include Camp Pendleton. At least more years would not then be wasted while Point Conception excludes itself.

CLAIRE T. DEDRICK

San Francisco, California July 31, 1978 -5-

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APPENDIX A Page 1 of 2 LIST OF APPEARANCES Applicants and respondents: Malcolm H. Furbush, Robert Ohlbach, Peter W. Hanschen, Bernard J. Della Santa, Kermit R. Kubitz, and Harry W. Long, Jr., Attorneys at Law, for Pacific Gas and Electric Company; Jonel C. Hill, Attorney at Law, for Pacific Lighting Service Company; Thomas D. Clarke and James P. Greene, Attorneys at Law, for Western LNG Terminal Associates; and Jane C. L. Goichman and John P. Meck, Attorneys at Law, for Western LNG Terminal Associates and Pacific Lighting Service Company.

Respondents: Gordon Pearce, C. Edward Gibson, Vincent P. Master, Jr., Stephen A. Edwards, and Barton M. Myerson, Attorneys at Law, and Chickering & Gregory, by David R. Pigott, Shand L. Green, and Dennis V. Swanson, Attorneys at Law, for San Diego Gas & Electric Company; and John H. Craig, J. C. Hill, and E. R. Island, Attorneys at Law, for Southern California Gas Company.

Interested Parties: <u>George H. Allen</u>, Attorney at Law, for Hollister Ranch Owners Association; <u>C. William Altman</u>, Attorney at Law, for Santa Barbara County; George Gilmour, Jonathan Blees, and Dion Grueneich, Attorneys at Law, for California Energy Resources Conservation and Development Commission; <u>Samuel Blitman</u>, for himself; Brobeck, Phleger & Harrison, by Gordon E. Davis and William H. Booth, Attorneys at Law, for California Manufacturers Association; Fulop, Rolston, Burns & McKittrick, by Marvin G. Burns, K. Phillip Knierim, and Kenneth K. Bley, for Fred H. Bixby Ranch Company; Stephen Chesnoff, Attorney at Law, for J. C. Penney; Vernon E. Cullum, for City of Long Beach; Norbert H. Dall, for the Sierra Club; James M. Doyle, for California Department of Parks and Recreation; John L. Geesman, Attorney at Law, Barry Epstein, and Jerry Simmons, for California Citizen Action Group; Malcolm H. Furbush and Gilbert L. Harrick, Attorneys at Law, for Pacific Gas ING Terminal Company; Beardsley, Hufstedler & Kemble, by Burton J. Gindler, Attorney at Law, for Kelco Company; Lt. Commander John L. Hair, for the United States Coast Guard; Rollin E. Woodbury, and Robert J. Cahall, <u>Dennis G. Monge</u>, and Carol B. Henningson, Attorneys at Law, for Southern California Edison Company; <u>Jimmie</u> Jones, for International Union of Operating Engineers - Local #12; Thomas D. Kampas, for himself; Garard Kapuscik, for Ventura County Concerned Citizens Committee, Inc.; Tom Knox, Attorney at Law, for California Retailers Association; Graham & James, by Borís H. Lakusta, David J. Marchant, and Jerry J. Suich, Attorneys at Law, for Collier Carbon & Chemical Corporation; Henry F. Lippitt, 2nd, Attorney at Law, for California Gas Producers

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Association; Vaughan, Paul & Lyons, by John G. Lyons, Attorney at Law, for California Fertilizer Association; Philip W. Marking, Attorney at Law, for Santa Barbara Citizens for Environmental Defense; Philip R. Mann, Attorney at Law, for Solar Turbines International; Baker & Botts, by John P. Mathis, Attorney at Law, and R. F. Smith, for Union Carbide Corporation; Pettit, Evers & Martin, by <u>Susan Paulus</u>, Attorney at Law, for Owens-Corning Fiberglas; J. W. Whitsett and Curtis L. Coleman, by <u>Linda T.</u> Phillips, Attorney at Law, for South Coast Air Quality Management District; Ervin Poka, for Nissho-Iwai American Corporation; C. Suzanne Reed, for Governor's Office of Planning and Research; Kenneth M. Robinson, Attorney at Law, for Kaiser Steel Corporation; Robert W. Russell, by Manuel Kroman, for Department of Public Utilities & Transportation, City of Los Angeles; Mark W. Russo, for Friends of the Earth; Latham & Watkins, by <u>Barry A. Sanders</u>, Attorney at Law, and Thomas R. Rice, for Applied Decision Analysis, Inc.; Andrew Segal, for San Diego Air Pollution Control District; John W. Witt, City Attorney, by William S. Shaffran, Attorney at Law, for City of San Diego; Edward Goebel, Attorney at Law, for Toward Utility Rate Normalization; Sylvia M. Siegel, for Toward Utility Rate Normalization, Consumer Federation of California, Consumer Cooperative of Berkeley, and San Francisco Consumer Action; Downey, Brand, Seymour & Rohwer, by <u>Philip A. Stohr</u>, Attorney at Law, for General Motors Corporation; <u>Glen J. Sullivan</u>, Attorney at Law, for California Farm Bureau Federation; <u>Robert R. Talley</u>, for Western Division, Naval Facilities Engineering Command, U.S. Navy; Allen B. Wagner, Attorney at Law, for University of California; Herbert A. Waterman, David Long, and W. Harney Wilson, Attorneys at Law, for Southern Pacific Transportation Company; Joseph-Weinstein, for California Coastal Commission; Joan Werner and Brad Williams, for San Diego County Integrated Planning Office; Robert James Whitacre, for American Surfing Association; Burt-Wilson, for Campaign Against Utility Service Exploitation; David Woodworth, for Surfer Magazine; and Marc McGinnes, Attorney at Law, for Santa Barbara Indian Center, Inc.

Commission Staff: Lionel B. Wilson, James Squeri, Thomas Grant, Anne Mester, and Randolph W. Deutsch, Attorneys at Law, Edmind

Anne Mester, and Randolph W. Deutsch, Attorneys at Law, Edmind Texelra, Don King, and Raymond J. Czahar.

APPENDIX B

Page 1 of 2

BASE LOAD SUPPLIES

Base Case Supply*

(MMcfd)



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APPENDIX B

Page 2 of 2

BASE LOAD SUPPLIES

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Potential Supplemental Supplies *

(MMcfd)

	• • •		NORTHERN	CALIFORNIA		
Year	Prudhoe Bay	<u>Mexico</u>	Algeria (MMcfd)	<u>Indonesia</u>	<u>So. Alaska</u>	Canadian " <u>Bubble Gas</u> "
1979 1981 1982 19883 19883 19884 19886 19887 19888 19888 199889 1998	200 200 200 200 200 200 200	1 11 59 756 93 101 129 129 124 134	175 174 185 209 211 215 230	250 250 250 250 250 250 250 250	100 200 200 200 200 200 200	
	•		SOUTHERN	I CALIFORNIA		
1979 19812 198812 198834 198834 19887 19887 19887 19889 1999	400 400 400 400 400 400 400	7 42 160 190 221 228 237 243 250 265 265 265	307 313 311 296 291 285 269	250 250 250 250 250 250 250 250 250	100 200 200 200 200 200 200 200	215 215 215 215 215 215 215 215 215 215

* Does not include short-term supplements that may be acquired from gas supplies temporarily surplus to the needs of others.

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NATURAL CAS REQUIREMENTS.

Normal Weather Tear

(Marcia)

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		::01	thern Ga	1110771.4		
	1.117	1.35	151	187		1 61 6
	1.978	1.036	15/	18:	212	2.616
	1.419 -	1.04	1.510	263	112	1.7583
	1900 -	2.037	2.4.2			1.00
					2. JU	
	1981	1.04	2.54	203	247.1	1 632
	1932 -	1.055	157	203		126/3
	1983 -	1.61.8	151	202	24	1
	1.981	1.002	151-	203	136	1175
	1989	1.0%	1.51	203	276	6.173
		-,-,-				
	1.26-	1-12-12	16E	202	.	وشهرته
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		1 1 5 6 1	1.244 1.244	1997 - 1997 -	· · / ·	
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	1740	14 g 4 CV		1815	•• Sta	1,174

Southern Chlitornin

19778 1978 1979 1921	1,432 1,436 1,441 1,445	1/15 1/18 1/18 1/18	221 313 323 307	114 113 113 113	1,975 2,010 2,015 2,015
1981 1982 1982 1932 1933 1935 1975	1,452 1,479 1,479 1,510 1,510 1,579	1133 1135 1135 1135 1135 1135	309 309 308 308 307	113 113 114 115 115	2,032 2,079 2,065 2,033 2,039
1986 ² 1987 2988 1988 1988 1988 1988 1988 1990 1	1,553 1,577 1,602 1,625 1,655	148 12:8 149 149 149 149	307 306 305 305 305	1:15 1:15 1:15 1:15 1:15 1:15 1:15 1:15	2,177 2,177 2,177 2,19 2,219

Note: P28, 23 and 24 requirements are the estimated fuel requirements of customers connected to the utilities' systems as of the end of 1976 as adjusted for the transfer of P2A (temporary) customers and the elimination of cement plant requirements.

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APPENDIX C Page 2 of 3

NATURAL CAS REQUIREMENTS.

Cold Weather Year (Micid)

: Year :	71+F2A	: 728	: P3	: P4	:	Total :
		Norti	ern Cali	for.via		· · · · · · · · · · · · · · · · · · ·
1977 1978 1979 1980	1,112 1,115 1,125 1,119	154 154 154 154	184 184 203 203	21,2 21,2 21,2 236	•	1,692 1,695 1,724 1,712
1981 1982 1983 1984 1985	1,130 1,141 1,153 1,172 1,188	154 154 154 154 154	203 203 203 203 203	236 236 236 236 236	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1,723 1,734 1,746 1,765 1,781
1985 1987 1982 1989 1999	1,204 1,221 1,239 1,251 1,279	154 154 154 154 154	203 203 203 203 203	236 236 236 236 236	10	1,797 1,814 1,832 1,847 1,872
·		Sou	thern Cal	مندمت		
1977 1978 1979 1980	1,559 1,566 1,574 1,581	148 148 148 148 148	281 313 313 309	114 113 113 113	5 - - - 	2,102 2,140 2,148 2,151
1981 1982 1983 1984 1985	1,600 1,619 1,639 1,658 1,677	148 148 148 148 148	309 309 308 308 307	113 113 113 113		2,170 2,189 2,209 2,229 2,247
1986. 1987 1988 1989. 1989.	1,703 1,730 1,756 1,783 1,809	148 148 148 148 148	307 306 305 305	115 115 116 116 116		2,273 2,299 2,325 2,352 2,378

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แไปประชุกวัณ (100) การสุดชังการสะสะสัง และจะและก็ให้ และการสะสะด (100) กร้างของเป็นการการและ การสะสะสะสะสะการ พระแน่งระหากระเป็นการสะการสะนวัฒนิการการสะการ การการที่ได้ระหาก (100) (100) สะผู้สู่สะระควารไช่หางประการสะการสะการสะการในการสะดาษฐรโทรมนาโหญโทรมนาโหญโทรงการการและ สร้างสะสะสะการให้หางและทำการสะการและ

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NATURAL CAS REQUIREMENTIS

Warm Weather Year

(Micfd) ·

: Year :	<u> </u>	: P2B	P3	= P4.	: Total :		
		North	Northern California				
1977 1978 1979 1980	928 927 932 922	154 154 154 154	184 184 203 203	242 242 242 236	1,509 1,507 1,531 1,515		
1981 1982 1983 198 <i>1</i> , 1985	929 935 942 956 968	154 154 154 154 154	203 203 203 203 203	236 236 236 236 236 236	1,522 1,528 1,535 1,549 1,561		
1986 1987 1988 1989 1989	981 594 1,008 1,019 1,041	154 154 154 154 154	203 203 203 203 203	236 236 236 236 236 236	1,574 1,587 1,601 1,612 1,634		
		South	ern Cali:	<u>fornia</u>			
1977 1978 1979 1930	1,290 1,291 1,292 1,293	148 148 148 148	281 313 313 309	113 113 113	1,833 1,865 1,866 1,863		
1981 1982 1983 1984 1985	1,307 1,320 1,334 1,347 1,261	148 148 148 148 148	309 309 308 308 307	113 113 114 115 115	1,877 1,890 1,904 1,918 1,931		
1986 1987 1983 1989 1989	1,383 1,405 1,427 1,449 1,471	778 778 775 775 775	307 306 305 305	115 115 116 116 116	1,953 1,974 1,997 2,018 2,040		

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FINAL REPORT EVALUATING AND RANKING LNG TERMINAL SITES

On May 24, 1978, the California Coastal Commission adopted the following ranking of potential LNG terminal sites:

- 1. HORNO CANYON on Camp Pendleton in San Diego County where a terminal would have the least adverse impacts on coastal resources.
- 2. RATTLESNAKE CANYON in San Luis Obispo County.
- 3. LITTLE COJO near Point Conception in Santa Barbara County.
- 4. DEER CANYON in Ventura County where a terminal would have the most overall adverse impact on coastal resources.

The Commission eliminated a fifth site, at LAS VARAS in Santa Barbara County (Figure 1), due to the recently confirmed presence of a small active earthquake fault passing through the site. A similar fault has been identified at the LITTLE COJO site, which is nevertheless retained in the ranking because the LNG Terminal Act of 19:7 requires that the Commission rank the site selected by Western LNG Terminal Associates in its application to the Public Utilities Commission (PUC).

The Commission also adopted thirty-one terms and conditions designed to minimize adverse LNG terminal impacts, at any of the sites, on recreation, natural resources, public views and other resources protected by the policies of the California Coastal Act of 1976. The Commission is required to submit a site ranking with recommended conditions to the PUC by May 31, 1978. The PUC must then reach a decision on whether a permit should be granted for construction and operation of an LNG terminal at one of the sites by July 31, 1978.

It has been difficult to identify possible onshore LNG terminal sites on the 1.100 mile long California coast. The Commission evaluated 82 possible sites, including 18 nominated by the public, and retained only five as potentially feasible sites for further study and ranking. Adverse wind, wave and fog conditions, nearby urban areas, earthquake faults and rugged land ruled out most of the coast for siting potentially hazardous LNG terminal operations. Seismic evaluations of the five sites resulted in discovering small active surface faults at two of them, and such faults may be found at the other sites after additional evaluation.

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Figure 1

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The Commission contracted with a number of consultants to assist in technical evaluations of the sites, and correspondence has been received on the site ranking from many federal and state agencies, environmental groups, surfers, property owners, Western LNG Terminal Associates and other interested parties. The Commission held four public hearings in April near the sites to be ranked and received testimony from more than 150 groups and individuals. A final public hearing on this report was held in Los Angeles on May 15, 1978. The process established by the Coastal Commission has been an open public process. The record contains over 2000 letters and reports commenting on all aspects of the site ranking process.

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II. TERMINAL SITE RANKING AND FINDINGS

A. Site Ranking

The Coastal Commission adopts the following ranking for possible LNG terminal sites. The sites are ranked in order, starting with the site where LNG terminal construction and operation would have the Teast adverse impacts on resources protected by the policies of the California Coastal Act of 1976 and ending with the site having the most adverse impacts:

- 7355 H 193 I. HORNO CANYON on Camp Pendleton in San Diego County
- 2. RATTLESNAKE CANYON in San Luis Obispo County

- 3. LITTLE COJO near Point Conception in Santa Barbara County
- 4. DEER CANYON in Ventura County

The Commission removes the LAS VARAS site in Santa Barbara County from the ranking due to the recently confirmed presence of a small but active earthquake fault on the site. A similar fault has been detected on the LITTLE COJO site, and the Public Utilities Commission and federal Department of Energy may not be able to approve this site given this seismic problem. However, because this site was selected by the applicant Western LNG Terminal Associates and must be ranked by the Commission, it is retained in the ranking, recognizing that it too may be eliminated from the ranking by the PUC or Department of Energy.

B. Findings on Site Rankings

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The Commission adopts the following findings and declarations:

The Coastal Commission Has a Limited Role in the LNG Project Decision. The LNG Terminal Act of 1977 deleted the Coastal Commission's permit authority over the construction and operation of California's first LNG terminal. Under the California Coastal Act of 1976, the Coastal Commission had the authority to approve or deny an application for an LNG terminal on the California coast. The LNG Terminal Act replaced the Commission's permitting authority with a more limited role, to determine by ranking, which possible LNG terminal sites would have the least adverse impacts on the objectives of the Coastal Act and to submit that ranking to the Public Utilities Commission (PUC). That Commission has the exclusive state authority to make the decision on whether to approve an LNG project, based on overall consideration of the public health, safety, and welfare. The LNG Terminal Act does not allow the Coastal Commission to make a finding that an LNG terminal is not needed or adversely affects public welfare and therefore should not be permitted.

The Commission recognizes that the project has national energy policy implications, and that the level of gas supply affects the State's

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economy and environment. In reaching its final decision on the location of an LNG_terminal_ the PUC is the State agency which will weigh these other. factors, and will represent the State of California in the federal proceedings on this project and

2. An LNG Terminal at Any Site Will Cause Serious Impacts to Coastal Resources. The Commission finds that after an evaluation of 82 potential Lh. terminal sites along the 1,100-mile long California coast and after intensive evaluations of five of those sites there is no possible remote onshore terminal site that would not cause major adverse impacts to natural marine and wildlife resources, public recreation areas, and other resources protected by the California Coastal Act of 1976. Conditions imposed on the construction and operation of a terminal at each sfte would help reduce, but will not eliminate, these adverse impacts. The marine environment in these remote coastal areas will be disturbed by massive construction activities, including trenching, blasting, and pile driving. Regular LNG tanker maneuverings, fuel oil deliveries, and tug and line boat activity will continuously intrude noise and activity into areas used by sea birds and mammals, including the California grey whales. Onshore, because all sites are remote and relatively undisturbed, an LNG terminal will alter the character of the area and disturb valuable wildlife populations?" The Commission unges the Public Utilities Commission to give these adverse impacts heavy weight in its decision whether to approve the proposed LNG project.

3. The Safety of LNG Operations Remains Uncertail. Section 5552 of the LNG Terminal Act of 1977 states in part: ______

"The Legislature further finds and declares that current uncertainties about the safety of liquefied natural gas require that the sincle terminal authonized by this chapter be located at a site remote from human population in order to provide the maximum possible protection to the public against the possibility of accident."

To implement this policy; the Act limits the population density within one and four miles of a terminal authorized under the Act. To further minimize risks from LNG terminal operations, the Act also requires the Public Utilities Commission to adopt regulations governing the safety and construction of an LNG terminal and to consult with the Division of Industrial Safety and the Energy Commission. At the federal level, the Department of Energy requires an LNG terminal operator to submit and receive approval of a Final Safety Analysis Report prior to operation of the terminal, and safety requirements of the U.S. Coast Guard, the Office of Pipeline Safety Operations, the Occupational Health and Safety Luministration, and other federal agencies must also be meture of

to (2 pro A comp The Commission therefore finds that the major state consideration of the safety factors in UNG terminal siting, design, and operation has been addressed in the legislation and assigned to the PUC. Since the safety of LNG terminal and tanker operations is not within the Commission's legislative jurisdiction; only limited study was made of these safety issues and the possible consequences of LNG accidents to people, property and natural resources. However, the Commission has serious concerns about the adequacy of measures to prevent and to cope with LNG accidents and about the research-undertaken so far to predict the consequences of LNG spills, fires, and vapor cloud dispersion (see Staff Notes). The Commission recognizes a decision on transporting LNG to California cannot wait until the completion of long term

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research projects on LNG risks. The Commission therefore urges the PUC and Department of Energy, if they approve a terminal, to develop stringent safety regulations and a monitoring program to ensure that LNG risks to people and property are minimized, regardless of the "remoteness" of the terminal location. In addition, the Commission urges the Coast Guard to institute a program to inspect the LNG vessels for structural integrity and other safety risks for the life of the vessel.

The Basis for the Site Ranking Is the Heavy Weighting of Coastal Act Policies on Recreation, Public Access, Protection of Natural Resources, and Minimizing Adverse Development Impacts. The LNG Terminal Act requires the Commission to base its site ranking on findings applying the policies, goals, and objectives of Chapter 3 of the Coastal Act. Most of these policies provide for the protection and enhancement of public recreation opportunities and public access to and along the coast, for the protection of valuable marine and wildlife resources, and for minimizing adverse impacts of coastal developments on public views and the character of coastal areas. The Commission has given greatest weight to these policies in ranking the sites. Less weight has been given to the Coastal Act policies providing for consideration of terminal cost and safety differences at the sites. Although the LNG Terminal Act restricts the number of permanent residents and workers in the terminal area, the Commission finds that visitors; campers, and travelers within four miles of an LNG terminal and, to a lesser extent, people and property beyond four miles may also be at risk from LNG accidents. Therefore the "remoteness" of the sites from transients, permanent:populations, and nuclear power plants has been considered in the site ranking.

5. Seismic Safety Considerations.

a. <u>Seismic Siting Criteria</u>. In December the Commission published criteria for evaluating possible sites for an LNG terminal. The seismic criterion stated that no site would be retained for the ranking if it were on or within 50 feet of an active earthquake fault. Public comment emphasized that this standard was not conservative enough. Although Nuclear Regulatory Commission seismic criteria for nuclear power plant siting are not directly applicable to LNG terminals, for purposes of comparison, the NRC does not license nuclear power plants that lie upon or are in close proximity to "capable" earthquake faults. These are defined as those with movement within the last 35,000 years or multiple movements within 500,000 years. The NRC generally considers as not suitable sites located within five miles of a surface capable fault longer than 1,000 feet. Draft regulations of the Department of Transportation's Office of Pipeline Safety Operations would also prohibit LNG terminal siting near a capable fault.

b. Seismic Safety Considerations Remove LAS VARAS from the Ranking. The Commission authorized its geologic consultants to trench the Las Varas site (Figures 4 and 5) to investigate a questionable surface feature. The trenches at that site confirmed the presence of a small thrust fault that apparently has moved approximately three feet at some time within the past 30,000 to 50,000 years. LNG storage tanks and other critical components at a terminal would be in close proximity to this relatively youthful fault (Figure 5). There is a very good possibility of similar and related geologic features on the site. Because of the possibility of future surface faulting at this site, and in spite of the low probability of a failure, the Commission has removed Las Varas from further consideration as an LNG terminal site to minimize risks to persons and property. This action is consistent with the siting criteria published in December.





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The removal of Las Varas from the ranking is done even though the Commission's own consultants believe that design features can minimize risks due to surface faulting. The Commission believes that it is not prudent to locate such a large and potentially hazardous industrial facility on a site with known recent faulting.

c. Little Cojo Must Be Ranked Despite Seismic Problems. Recent information presented by geologists employed by the Hollister Ranch, and confirmed by the Commission's consultants, indicates that the Little Cojo (Point Conception) site has a fault (Figure 11) similar to that found at Las Varas. Applying the same reasoning and caution which caused the Commission to remove Las Varas would also mean eliminating the Little Cojo site from further evaulation. However, the Liquefied Natural Gas Terminal Act of 1977 precludes that action. Since it is the applied-for isite, it must be ranked by the Coastal Commission. If it were not for the requirements of the legislation, that specific site would no longer be considered.

Both the PUC and the federal Department of Energy (DOE) have requested Western LNG Terminal Associates to further evaluate the seismic hazards at the Little Cojo site. It is possible, after more evaluation, terminal design work, and possibly shifting the site away from the fault within the same siting area, that Western LNG Terminal Associates could convince the PUC and DOE that licensing a terminal at Little Cojo would be acceptable.

It is also possible that more detailed seismic evaluations, including trenching, at one of the other three sites, if approved, will discover small faults similar to those found at Las Varas and Little Cojo. If these common faults in California coastal areas are also discovered at other sites, and if there is an overriding need for an LNG terminal site, all the sites, including Las Varas and Little Cojo, should be reevaluated to select the one upon which design features can minimize the risks. However, authorization to construct an LNG terminal on a site with an active surface fault nearby would be a significant departure from currently accepted regulatory practice.

6. Adding Facilities to a Terminal. The Commission's maritime consultants indicate that if an approved terminal reaches the maximum gas delivery rate authonized under the LNG Terminal Act, 1.3 billion cubic feet per day. additions may be needed to the terminal to increase the reliability of LNG tanker berthing and unloading (see Staff Notes). Possible additions that might be considered would include a fourth LNG storage tank, second berth, or a breakwater to protect the berthing area. In this site ranking, the Commission is considering a breakwater only at the Rattlesnake Canyon site, and a breakwater at other sites, particularly Little Cojo, would lower the ranking of such site.

The three options for improving gas supply reliability that involve terminal additions are not part of any application. There is no clear State regulatory process for approving such additions after a permit-is granted under the LNG Terminal Act of 1977. If proposals are made in the future to add facilities to a terminal, all alternatives and their degree of environmental damage should be evaluated. The Commission urges the legislature and the PUC to develop a review and approval process for terminal additions, and the Commission should have a major role in selecting an alternative and developing terms and conditions.

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7. Horno Canyon on Camp Pendleton is Ranked First. The Commission ranks the Horno Canyon site on Camp Pendleton (Figures 6 and 7) first among the four sites because construction and operation of an LNG terminal, there would have the least adverse effects on the objectives of Chapter 3 of the California Coastal Act of 1976. The basis for this ranking is that a Horno Canyon LNG terminal would have low adverse impacts on public access, recreation, and natural resources and would not be inconsistent with most of the development policies of the Act. It is ranked first despite statements from the Navy and Marine Corps that the site would not be available for an LNG terminal, because the military does not necessarily exercise final control over the use of federal property. Federal property is not subject to state authorized eminent domain proceedings. Consideration of national energy priorities and a federal LNG terminal siting policy to locate such terminals where they will be least damaging to the environment, however, could cause other officials in the executive branch, including the President, to make the land available.

The Commission recognizes that under both the federal Coastal Zone Management Act and the California Coastal Act the Commission does not regulate lands on the coast in federal ownership. However, the LNG Terminal Act of 1977 expressly states that the Commission shall study, evaluate, and rank "potential onshore sites for an LNG terminal" (Section 5611) and that "onshore" is defined as "any location on the mainland of California landward of the mean high tide line" (Section 5565). Thus the Act requires an evaluation of all potential sites regardless of site ownership, even though use of federal lands for a terminal would have to be a federal decision. Given the small number of feasible sites remaining after an evaluation of 82 sites, this has turned out to be a prudent legislative directive.

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Public Access and Recreation. A Horno Canyon terminal would have more adverse impacts on coastal recreation and public access than a Rattlesnake Canyon or Little Cojo terminal and less adverse impacts than a terminal at Deer Canyon.

Public Access. The Horno Canyon site is owned and used by the U.S. Marines and is not open to the public. Visitors can reach it by walking south along the beach from San Onofre State Park, which extends to about a mile from the site, but Marine patrols prevent public use. Recommended conditions 1 and 18 would, at a minimum, preserve the existing public access in the area, and perhaps increase it.

<u>Recreation</u>. The terminal's 8700-foot long trestle would degrade the recreation experience for some visitors at San Onofre State Park, but the most heavily used area of the park, popular for surfing, is five miles from the site and is divided by the large San Onofre Nuclear Power Plant. Boating from Oceanside and San Clemente is popular in the area, and tanker operations could result in some restrictions on boating near the terminal. The Department of Parks and Recreation indicates that only a Rattlesnake Canyon terminal, of the other three sites, would cause less adverse recreation impacts than a Horno Canyon terminal. In fact, the Department did express hope that someday this last major block of undeveloped coastal property in Southern California. Camp Pendleton, might be a park (Exhibit 00502). Given the site's present use and lack of access, however, the Commission finds a Horno Canyon terminal would have a low adverse effect on public recreation opportunities if recommended conditions are imposed by the PUC. APPENDIX D Page 11 of +9



Figure 6





Figure 7

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Marine Environment and Land Resources.

Marine Resources. A Horno Canyon LNG terminal would have the least adverse impacts on marine resources protected by the policies of Article 4 Chapter 3 of the Coastal Act. The lack of suitable offshore rock or reef bottom prevents the offshore area from supporting more than intermittent kelp beds of comparatively low importance. Although the area supports ver good commercial and sport fisheries, most of the species which are fished are not dependent on nearshore features, such as Kelp beds or rocky reef areas, that would be affected by terminal construction and operation. The fishing catch per unit of effort is low. Therefore the Department of Fish and Game judged the adverse impacts on marine resources as less significant than at the other three sites (April 17, 1978 Tetter from Charles Fullerton to the Coastal Commission).

Land Resources. The onshore wildlife resources of the site, which consist of a natural coastal sage scrub community and are of low diversity and abundance, are common to the general area. Military activities. mainly vehicle travel over the site, have affected the scrub communities. The site is not presently inhabited by any rare or endangered species of animals or plants, although it is probably visited by the California brown pelican, an endangered species, and the white-tailed kite, a fully protected species. The area is of relatively low importance to marine bird and mammal populations, so the Department of Fish and Game has concluded that LNG facilities would have the least adverse impact on wildlife species of special concernation any other site.

Archaeological Resources. The State Historic Preservation Office indicates no cultural and archaeological resources are known to exist at the site (Exhibit 00774).

Land Use and Development Policies. The Camp Pendleton Marine Corps Base has helped to limit urban expansion into the largest remaining undeveloped coastal area in southern California. The Commission believes that open space is a desirable use of this 10's miles coastline and its conclusions on the siting of an LNG terminal should not be viewed as encouraging other kinds of development. The requirements of the LNG Terminal Act could have the effect of limiting possible future development within four miles of the site. The 100-acre site constitutes less than .1% of the Camp Pendleton . Marine Corps Base and is not used for military operations. Testimony by representatives of the U.S. Navy and Marine Corps indicates that a Horno Canyon LNS terminal would, however, conflict with amphibious military training exercises considered necessary to maintain national defense preparedness (see Staff Notes). The nearest beach at which amphibious landings take place is less than 2 miles south of the site, but the Navy indicates vessel maneuvers take place where the LNG terminal trestle would be located. In addition, the Marines operate airplane flight paths over the site. Therefore, if an LNG terminal is located at this Camp Pendleton site, vessel and aircraft maneuvering areas would probably have to be changed

Public Services. The Horno Canyon site comes closest, given the pop-ulation restrictions in the LNG Terminal Act, to meeting the coastal policy of locating new industrial development in areas of existing industrial facilities. The site is readily accessible by an existing highway and railroad, and public services, including emergency medical facilities, are nearby. Adequate electrical transmission lines are within a few thousand feet of the site.

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<u>Alteration of Natural Landforms</u>. Little landform alteration would be required to prepare the fairly level site, although some minimal offsite disposal of dirt may be necessary.

Offshore construction would not require any reef removal or breakwater construction.

Public Views. The relatively undeveloped and open stretch of coast between the San Onofre Nuclear Power Plant and Oceanside provides a comparatively uninterrupted sweeping view of the ocean to the west and rolling hills to the east along heavily traveled Interstate 5. It provides visual relief from the highly developed Orange County and San Diego County coastal areas and, of the four sites, is viewed by the most people. Immediately adjacent to the southern boundary of the site is a scenic viewpoint on IS. A Horno Canyon terminal would intrude a major industrial facility in the middle of this stretch of coast. A terminal would be less visually incompatible with the imposition of condition 18, which requires partially undergrounded LNG storage tanks, but the 8,700-foot long trestel would be visible from much of the San Diego County coastal areas.

Weighing the different impacts on views to and along the coast at the different sites is complicated and subjective. While the view along Camp Pendleton's coastal terrace provides a sweeping vista for Interstate 5 drivers, the terrace itself is generally flat and not spectacular. By contrast, the view of the coastal terrace at Little Cojo is spectacular, with bays and curving bluffs along the shore, and ravines dropping to sandy beaches from the steep canyons of the Santa Ynez Mountains. However this Little Cojo view can be seen only by fortunate residents and visitors to the private Hollister and Bixby Ranches and those who can reach the offshore area by boat, while the Camp Pendleton view is seen by 60 to 80,000 drivers a day.

<u>Remoteness</u>. The risks to population concentrations associated with a Horno Canyon terminal seem roughly comparable to terminals at the other sites except at Little Cojo, the most distant site from urban areas. The nearest permanent population concentrations to Horno Canyon are at least ten miles away at Oceanside and San Clemente. Some Marine barracks may have to be relocated to meet population density standards within four miles of the site. As with the Rattlesnake Canyon site, and unlike the other two sites, a nuclear power plant is about five miles north of the site (see Staff Notes).

The Horno Canyon site provides the opportunity for LNG tanker traffic to travel outside the Santa Barbara Channel shipping lanes should the Coast Guard determine that such a route provides greater safety.

<u>Cost</u>. The Public Utilities Commission indicates that construction costs at Horno Canyon would be comparable to those at Little Cojo, which is currently estimated as costing about \$47515 million. Terminal construction at both sites would cost about \$250-300 million less than at Rattlesnake and Deer Canyons. The Horno Canyon cost would be comparatively low because the site is on a level coastal terrace and no breakwater would be required.

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8. Rattlesnake_Canyon is Ranked Second. The Commission finds that the Rattlesnake Canyon site (Figures 8 and 9) would have the second. least adverse impacts on the objectives of Chapter 3 Coastal Act policies. The basis for this ranking is that construction and operation of an LNG terminal at Rattlesnake Canyon would have the least adverse impacts on public access and recreation and would not be inconsistent with most of the development policies of the Act. It is ranked second, below Horno-Canyon, primarily because of the adverse impacts on natural marine and wildlife resources; which are more diverse and abundant than at Horno Canyon and Deer Canyon, but less than at Little Cojo. Other adverse factors contributing to the second place ranking include major alteration of the offshore reef area by construction of a breakwater, an increased construction cost, according, to the PUC, of about \$350 million above the Horno Canyon cost, potential damage to archaeological resources, and the generally-more severe fog, wind, and wave conditions. If the PUC approves this site instead of the first ranked Horno Canyon site, there would be an overall moderate increase in adverse impacts on Coastal Act objectives,

<u>Public Access and Recreation</u>. The Commission finds that adverse impacts of a Rattlesnake Canyon terminal on public access and recreation would be the least significant of the four sites.

<u>Public Access</u>. Public access to the area is prohibited by a PG&E guard station which provides security for the Diablo Canyon Nuclear Power Plant. While the other three sites have sandy beaches at the base of bluffs, the shore below the bluffs at this site is steep and rocky, without a beach, and inaccessible.

Recreation. The Department of Parks and Recreation concludes that, of the four sites, this site would be the least disruptive of existing park units and proposed development and acquisition. Montano de Oro State Park is 5½ miles north of the site, and Avila Beach State Park is about 2 miles southeast. The terminal would not be visible from either park or otherwise affect their use, with the exception of increased construction traffic on the Avila Road.

Marine Environment and Land Resources.

<u>Marine Resources</u>. The Department of Fish and Game concludes, and the Commission finds, that marine resources at Rattlesnake Canyon are very sensitive, second only to those at Little Cojo. The nearshore environment supports diverse and abundant marine life, although the repopulation of the area by the sea otter has depleted historic abalone and sea urchin fisheries. Some kelp is present, and the site area supports commercial and sport fisheries for finfish, especially rockfish. The area is important to marine birds and mammals since nesting and resting areas for cormorants, sea lions, and harbor seals are nearby, and these would be disturbed by construction activities and tanker operations offshore.

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Figure 8



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Figure 9

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Land Resources. The Department of Fish and Game concludes that adverse impacts on natural resources of a terminal at this site would be more significant, in general, than at Horno Canyon and Deer Canyon, and less significant than at Little Cojo. Onshore, the site itself is being cultivated for barley and snow peas, but a good riparian community of plants and animals along Pecho Creek would be unavoidably altered by construction. Introducing industrial activity onto this section of terrace in front of the grazed but relatively undeveloped Irish Hills would disturb the valuable long-term wildlife resources. While condition 7 would minimize disturbance to natural resources at this site, the major disturbance is due to the intrusion of industrial activity, with bright lights, noise, and equipment movements which cannot be prevented.

Archaeological Resources. The State Office of Historic Preservation considers this site the least preferred, because at least four Chumash archaeological sites listed on the National Register of Historic Places and a possible prehistoric period ceremonial shrine are located on the site (Exhibit 00774). This factor contributes to ranking this site below Horno Canyon, but it does not contribute in a major way to making it less adverse than Little Cojo or Deer Canyon, since those sites also have archaeological resources, though of somewhat less significance.

Land Use and Development Policies.

<u>Character of the Area</u>. The Rattlesnake Canyon site is on an isolated coastal terrace which is currently in agricultural use. Development plans have been discussed to take advantage of the scenic quality of the area. The character of this stretch of coast, however, has been altered by the construction of the Diablo Canyon nuclear power plant about four miles north of the site and the connecting transmission lines and access road.

Public Services. The availability of roads, utilities, and other facilities is a factor contributing to ranking Rattlesnake Canyon above Little Cojo and Deer Canyon. The coastal terrace area has already experienced a major construction project, the Diablo Canyon Nuclear Power Plant, and a barge terminal, heavy duty road, electric transmission line corridor, security fences, and other facilities are already in place to serve the site.

Alteration of Natural Landforms. Construction of a large 6.700-foot long breakwater offshore the site would be a significant alteration to the rocky nearshore area. The rock breakwater would go over Santa Rosa Reef to Westdahl Rock, and some blasting and removal of offshore rocks and reefs may be needed to insure safety for LNG tanker maneuvering. After construction, however, the Department of Fish and Game indicates that the effect of the breakwater on-kelp, fish, and invertebrates would not be adverse, since the breakwater would provide substrate habitat for these-organisms. Therefore the breakwater would be a major physical-landform alteration but not necessarily a major natural resources habitat alteration; thus, this factor does not contribute to changing the second-place ranking of this site.

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Construction onshore at the site itself would be possible with a nearly balanced cut and fill approach, minimizing the need for offsite removal of dirt by trucks.

Public Views. The site is not visible to the public because it is in the PG&E restricted area on the other side of the Irish Hills from Port San-Luis and Avila Beach. This contributes to a high ranking for the site, although the trestle, breakwater, and LNG tanker operations would be visible from ten or more miles away at Pismo Beach and the recreation areas along the south half of San Luis Obispo Bay.

Remoteness. The site is similar in remoteness and potential risks []. to people and property as the Deer and Horno Canyon sites and Tess remote than Little Cojo. The Rattlesnake Canyon site itself is somewhat shielded from Port San Luis and Avila Beach by the Irish Hills, but San Luis Obispo Bay would have no such protection from an accident at the berthing facility. The number of people potentially at risk, including permanent residents and workers, visitors, campers, and recreators, seems roughly similar to the number around Deer and Horno Canyons, so this factor does not have a large impact on this site's ranking. As at Horno Canyon, a nuclear power plant is about four miles north of the site, and the Nuclear Regulatory Commission would have to find that LNG terminal operations at Rattlesnake Canyon pose acceptable risks to safe nuclear plant operation before permitting this major PG&E investment to produce electricity from nuclear reactions (see Staff Notes).

The LNG tanker route would not come within about 10 miles of populated areas, and the vessel traffic in the site area is relatively light.

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Cost. Due to the need to construct a \$175.million breakwater and a long cryogenic pipeline, the total construction cost of a terminal at this site, about \$880 million according to the PUC, would be higher than that at Little Cojo or Horno Canyon and Similar to that at Deer Canyon, where large amounts of earth would have to be moved to prepare

9. Little Cojo near Point Conception is Ranked Thirds is an nero set

ine a glenterpe i los del tro trestertetto evale contrologicare The Commission finds that, of the four sites, the Little Cojo site at (Figures 10 and 11) would have the third least adverse effects on the objectives of Chapter 3 Coastal Act policies. This ranking does not take into account the recently confirmed presence of a potentially active earthquake fault on the site, because this fact would have caused the Commission to eliminate the site from consideration, as it does with Las Varas. But the LNG Terminal and Act requires that the Little Cojo site be ranked. The basis for ranking this site third is that construction and operation of and and LNG terminal at Little Cojo would have the most significant adverses impacts of the four sites on natural resources and the comparatively unspoiled character of a unique and remote coastal area especially to

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valued by surfers and fishermen. The views along this long, broad coastal terrace are spectacular. Little Cojo is ranked below Rattlesnake Canyon because it is more inconsistent with Coastal Act development policies and would have a greater adverse impact on the natural resources. Little Cojo ranks above Deer Canyon primarily because Deer Canyon would affect far more recreational users of the area and the landform alteration would be significantly greater.

With conditions 23 through 28 which prohibit a seawater intake system and electric transmission lines at the site, require partial ingrounding of storage tanks, and provide for public access to the area. the overall adverse impacts of a terminal at this site would be moderately more severe than at the higher ranked Rattlesnake Canyon site, but slightly less severe than the lower ranked Deer Canyon_site. If the PUC does not impose the specific conditions recommended for a terminal at Little Cojo, Little Cojo would be ranked fourth, with moderately more adverse impacts on Coastal Act objectives than Deer Canyon, which would then be ranked third:

Public Access and Recreation.

Public Access. Onshore public access to the site area is prevented by the locked gate policies of the Bixby and Hollister Ranches. Surfers, divers and fishermen reach the waters in front of the site using boats launched at Gaviota State Beach or elsewhere. If this site is selected for an LNG terminal, condition 25 would provide new public access to the area, and to that extent would further the Coestal Act objective of promoting public access to coastal areas.

Recreation. The Commission has received testimony and hundreds of letters from all over California and the world urging protection of the special surfing breaks off the Hollister Ranch: "A "point" break" at the west end of Little Cojo Bay is rated a "classic" break and one of the four best breaks in California, according to the Western Surfing Association. The construction of a trestle at this site and vessel operations would not necessarily prevent or directly interfere with surfing at Little Cojo, and if such interference does take place it would be substantially mitigated by condition 27 requiring construction of equivalent surfing breaks. But the presence of the 4600-foot long trestle would degrade the remote character of the Ranch surfing experience.

The area is also popular with sport and commercial offishermeniatdivers. and boaters. Heavy construction traffic could adversely affect Gaviota Beach State Park, where the Hollister access road connects to US 101. Marine Environment and Land Resources. St. 1 - deput for watters of a

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Marine Resources. The Department of Fish and Game identifies: the Point Conception marine environment as the most sensitive of the four sites because cold northerly waters and warmer southerly waters: meet and mix there. Therefore the area is considered the limit for the ranges of 24 species of fish and 20 species of invertebrates, and making the marine resources highly diverse. In addition, marine resources are particularly abundant in the area due to the upwelling of nutrient-laden colden waters. Commercial fishermen from Santa and

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Barbara testified that the waters off Little Cojo provide one of their most productive fishing grounds. The largest and most productive kelp bed off California, bed #32, extends along the site. The kelp is commercially harvested under a 20-year lease from the Department of Fish and Game and also serves as a rich habitat for associated marine life. The area near the site, relatively undisturbed by human activity, is very important to marine birds and mammals. It is believed to be used as a staging area by California grey whales during their migrations along the California coast. Adverse impacts of terminal construction and operation at this site would be minimized by the imposition of conditions 23 and 28 prohibiting seawater LNG vaporizers and reducing damage to the kelp resource, but major adverse impacts would still be associated with the intrusion of industrial activity into the nearshore area, including tanker, tug, and line boat maneuvering, shipping fuel oil to the site, and lights and vehicles on the trestle.

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Land Resources. The wildlife resources of the site itself, which is currently used for cattle grazing, are not significant, but because the large area around and inland of the site is relatively undeveloped and remote, the area in general, and particularly the foothills and canyons of the Santa Ynez Mountains, are important wildlife habitat. The area is especially valuable for birds, as large numbers of doublecrested cormorants, black brants, and pink-footed shearwaters area observed near the site. The intrusion of large scale industrial of activity into this remote site would, according to Fish and Game, cause greater damage to wildlife populations than would terminals at the three other sites. Some approximate some contractions of a second contraction of a second contraction of the second

Archaeological Resources. The State Historic-Preservation-Officer has stated that valuable Chumash archaeological resources are found in the site area. The proposed terminal site has been moved by the applicant to avoid some of these archaeological sites.

Land Use and Development Policies.

Character of the Area. A Little Cojo terminal would unavoidably be a major intrusion of an industrial facility and industrial activity on a unique area highly valued for natural resources. The entire stretch of coast from Gaviota around Point Conception to Jalama is the last major semi-wild coast left in Southern California and Its magnificent views and abundant wildlife make it a unique coastal expanse, lacking only in greater public use and enjoyment of the area. Hollister Ranch, to the east has been subdivided into large parcels of approximately 100 acres. The lack of more extensive residential and commercial development for more than ten miles around the site and lack of public access has preserved this coastal area in a lightly developed state. Small-scale development near the site includes an unused oil storage tank and a buoy type marine oil terminal in Little Cojo Bay, and the Southern Pacific Railroad tracks along the top of the bluffs.

Public Services. As the most remote site, Little Cojo is also the most inconsistent with Coastal Act policies favoring locations near existing public services. The existing Hollister Ranch road would have to be substantially upgraded to handle construction workers

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and equipment, the natural gas pipeline would have to pass through sensitive areas in new rights of way, and emergency services in the event of an accident are at least an hour away. The adverse impacts would be decreased by conditions 23 and 24, requiring onsite electricity generation to avoid new electric transmission lines and minimizing alterations caused by upgrading the Hollister Ranch road to the site.

Alteration of Natural Landforms. The alteration of natural landforms at the site would be minimal since the site is a comparatively level terrace. A breakwater at this site has not been proposed by the applicant, and the Commission has relied on the lack of a breakwater in ranking Little Cojo third. If a breakwater were a required feature of this site, the Commission would rank it fourth, after Deer Canyon 1-

Public Views. Since the public does not have easy access to the Point Conception area, a site at Little Cojo will not visually impact many people. On extremely clear days, however, the terminal and trestle would be visible from the Santa Barbara Channel coastline.

Remoteness. The Little Cojo site is by far the most remote from " population concentrations, with the Santa Barbara area about 40 miles to the east and areas to the north shielded by the steep Santa Ynez Mountains. There are a few Hollister Ranch residents within four miles of the site, and there are no campers, travelers or other transients within ten miles except for occasional nearshore surfers, divers, boaters, and fishermen. The LNG tanker routes would also be the furthest from population concentrations, barely entering the Santa Barbara Channel, while tankers to Deer and Horno Canyons would traverse the entire Channel, and, at Rattlesnake Canyon, the outer លក់ចំពោះ ប្រទេស () ប្រុស ដែលដែលដែលនេះ។ ខេត្ត។ ក្រោះ មុខស្វារ ប្រទេសស្ត្រភូលាភិបាលសម្មកម្ម ផ្លូវនេះ ផ្ទះដ part of San Luis Obispo Bay.

Cost. A Little Cojo terminal, estimated to cost about \$475 million, would be comparable to one at Horno Canyon and less than one at Rattlesnake STORE THROUGHE BOD AND BASE or Deer Canyons.

10. Deer Canyon is Ranked Fourth.

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Public Access and Recreation.

Public Access. The Commission finds that of all four sites, Deer Canyon is the most inconsistent with Coastal Act policies-protecting public use and enjoyment of the coast. Public access and recreational opportunities in the general area include-two heavilyvisited state parks, several camps, and the Pacific Coast Highway. Although the site itself is privately owned, public access to the inland canyon is possible for hiking and the beach is easily accessible just off the shoulder of the highway. It is part of a recreation area in the Santa Monica Mountains of increasing importance to the heavily populated Southern California urban areas. The construction traffic would cause heavy traffic conflicts on the narrow Pacific Coast Highway during times of peak use, and the construction noise and lights and activities would degrade the outdoor experience of the approximately two thousand children who use camps nearby during the summer and on weekends.

Recreation. Point Mugu Beach State Park extends to within 1's miles and Leo Carillo Beach State Park to within 2's miles of the entrance to Deer Canyon. A terminal at this site would not directly impact the parks, but it would intrude on the recreational experience in an area presently untouched by industrial development. These impacts would be mitigated if the PUC imposes condition 31 requiring dedication of added coastal land for public use. The offshore area is used by sport fishermen, boater, and divers. The site is part of the proposed Santa Monica Mountains National Park.

Marine Environment and Land Resources.

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Marine Resources. The marine resources offshore of the Deer Canyon site are judged by the Department of Fish and Game to be of less significance than the Little Cojo and Rattlesnake Canyon sites, but more significant than Horno Canyon. Offshore there is scattered kelp, and the area supports significant commercial and sport fisheries and recreational diving, but the fisheries are not dependent on nearshore kelp or reefs. The waters have been designated an Area of Special Biological Significance by the State Water Resources Control Board, but the Department of Fish and Game indicates that the marine resources at this site, while valuable, are less significant than those at Little Cojo or Rattlesnake Canyon. The site is along the migratory routes of California grey whales and some marine birds.

Land Resources. The wildlife and plants in Deer Canyon are more diverse and abundant than those at the other three sites since it is a coastal creek habitat that is relatively undisturbed. On the one hand, the presence of such wildlife and marine resources near the heavily populated Los Angeles area and the growing Oxnard Plain communities gives special value to these resources. On the other hand, the disturbance from the heavily traveled Pacific Coast Highway and popular parks and the approach of the residential development of northern Malibu detracts from the long-term significance of these wildlife populations. Therefore the Commission finds the adverse impacts on natural resources of a terminal at Deer Canyon would be moderate.


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Figure 13

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Archaeological Resources. A Deer Canyon LNG terminal would have adverse impacts on archaeological resources. The Office of Historic Preservation indicates there may be at least eight Chumasharchaeological sites in the site area and eight more nearby and that these resources are somewhat less significant than those at Little Cojo and Rattlesnake Canyon.

Land and Development Policies.

<u>Character of Area</u> Deer Canyon is part of the closest undeveloped coastal area to the Los Angeles urban area. Although residential development of the greater Malibu area now extends to about four miles from the site, there is no industrial development on this mountainous stretch of the coast.

Public Services. A terminal at the Deer Canyon site would be inconsistent with Coastal Act policies favoring locations near existing development. Although road access exists, Highway 1 would be severely disrupted during the construction period. Electrical transmission lines would be brought in over the Santa Monica Mountains in new rights-of-way and emergency services are a long distance away.

Alteration of Natural Landforms. Preparing this site for construction would be a major earthmoving job involving filling the Canyon bottom areas with material cut from the ridges and canyon slopes. With condition 30, the extent of this earthmoving in the Canyon would be minimized, but even if it is fifteen million cubic yards to be filled and cut, the now natural canyon and small intermittent creek would be massively altered. Nevertheless, the Commission generally tries to minimize even small grading associated with building single family homes in the scenic Santa Monica Mountains, and this massive alteration contributes to the low fourth place ranking for this site.

<u>Public Views</u>. This stretch of the Pacific Coast Highway has special scenic value, since the Santa Monica Mountains drop down to the ocean here and there are many unobstructed views of the sea. The trestle and its road and cryogenic pipeline would cross over or under the Pacific Coast Highway, which can be heavily used on weekends and holidays for recreational driving. The terminal site itself would be sheltered inside the Canyon, but the trestle and associated activities would be noticeable from Point Mugu Beach State Park to the west and Leo Carrillo Beach State Park and the County line surfing area to the east.

<u>Remoteness</u>. The site compares to Horno and Rattlesnake Canyons in the number of people potentially at risk from LNG accidents. Such populations would include campers at the children's camps and State Parks and travelers on Pacific Coast Highway. Tankers to the site would traverse the Santa Barbara Channel.

Cost. Due to the large amount of earth moving required to prepare this site, terminal construction costs would be about \$250 million higher than at the Little Cojo or Horno Canyon terminals. While this factor is given less weight by the Commission, it contributes to the low fourth place

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and a strategy of the The Commission finds that a simple numerical ranking of the four cases possible LNG terminal sites does not adequately indicate the differences in coastal resource impacts between the sites. Although the Public Utilities Commission may select a lower ranked site only off it determines that to do otherwise would result in significant natural gas curtablments in California, the Coastal Commission believes the public and other state and federal agencies should be aware of how much more desirable one site is

over another. Based on its evaluation of the four ranked sites, as conditioned, the Commission finds that the differences between the Horno Canyon, Rattlesnake Canyon, and Little Cojo sites are not minor or smalling and class

and the second The Horno Canyon site is on the Camp Pendleton Marine Corps: Base and public use of the area is prevented by Marine patrols. The marine: and terrestrial resources are not unique and are ranked the least significant by the Department of Fish and Game. There are no known archaeological resources in the area. The site is readily accessible by an existing highway, and railroad, and public services are nearby. Little landform alteration would be required since the site is nearly level. The principal effect of arfacility at this location would be upon the scenic quality of this last remaining large open space between urbanizing San Diego and Orange Counties. Overall, construction and operation of a terminal at this site would cause the least adverse impacts on the resources protected by the Coastal Act. Act.

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The Little Cojo site has many of the same disadvantages as Rattlesnake Canyon. but it is located remote from public services in an even more sensitive marine environment. As with the Horno and Rattlesnake Canyon sites, public access to the onshore area of the site is not now possible, but the marine life off Little Cojo is considered the most unique, abundant, and diverse of all the sites by the Department of Fish and Game. The marine environment in the Point Conception area is the most valuable because cold northerly waters and warmer southerly waters meet and mix there, making it the range limit for 14 species of fish and 20 species of invertebrates. In addition, Kelp Bed 23 is one of the most productive in the state and is a rich habitat for marine life. Condition 22 prohibiting seawater vaporizers would reduce the terminal's impact on these resources.

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but Lanker, tug and line boat maneuvering, shipping fuel oil to the site, and operating a terminal with its associated noise and lights would cause continuing and permanent disruption of this sensitive habitat. Unlike either the Horno or Rattlesnake sites, a terminal at the Little Cojo site would result in major changes to the character of the last major semi-wild coast left in Southern California. The site is located on a wide, sweeping, open coastal terrace providing a striking panorama which stretches ten miles to the east and three to the west.

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As with the Rattlesnake Canyon site, valuable archaeological resources are found in the Little Cojo area, which also has religious significance to Native Americans, and these resources would be difficult to avoid during construction, despite relocation of the terminal. The surfing breaks off Little Cojo are widely recognized as classic breaks providing a remote surfing experience. Although the Little Cojo site has some advantages over the Rattlesnake Canyon site because it does not require a breakwater as currently designed, would be more remote and cost less, a terminal at this site would be more inconsistent with the development policies of the Coastal Act and would have greater adverse impact on natural resources. The -Commission finds, therefore, that the Little Cojo site is clearly less desirable than Rattlesnake Canyon: but, as conditioned, the difference between Little Cojo and Rattlesnake is not as great as between Horno. Canyon and Rattlesnake Canyon: . . . 4. 14 LED & 15628 11.25

The Deer Canyon site would have major adverse impacts on nearly all coastal resource categories, including recreation, views, highway capacity for recreation and access, marine and terrestrial natural resources, and the natural canyon landform. The marine resources offshore among-scattered kelp. while less valuable than those at Little Cojo, are considerably more diverse and abundant than at Horno Canyon, and the offshore area is a designated Area of Special Biological Significance. The site, with a cryogenic pipeline crossing Pacific Coast Highway, is between two heavily used State parks, and construction activities and traffic would seriously interfere with recreational use of the Coast Highway. Massive changes to the Canyon bottom and its riparian habitat would be unavoidable since level construction pads would have to be built, filling in the Canyon to the 400 and 600 foot elevations. However, after construction period disruptions finish, a terminal would be mostly out of public view inside the Canyon and the long run adverse impact on the character of the Deer Canyon coastal area would not be as severe as at Little Cojo. Therefore, the Commission finds that the difference in adverse impacts between the Little Cojo site, as conditioned, and Deer Canyon would not be major overall and would be similar to that between Rattlesnake and Little Cojo.

The recommended conditions are necessary to minimize and mitigate the adverse environmental impacts of a terminal at all four sites. In general, the conditions make all the sites more suitable and would not change the ranking, except for the site specific conditions recommended for the Little Cojo site. If the PUC does permit the seawater intakes system, new above-ground electric transmission lines and full use of an upgraded road and if the PUC does not mitigate adverse impacts on surfing and wildlife, or, if a breakwater were to be included as part of these project, then the overall adverse impacts of a terminal at this site would be so substantial that the Commission would have ranked it last below Deer Canyon. A.57626 et al. /km

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III. TERMS AND CONDITIONS

The Commission adopts the following findings and the proposed terms and conditions for inclusion in a Public Utilities Commission permit for an LNG terminal •

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A. Incomplete Terminal Designs Warrant an Added Opportunity for the Commission to Develop Conditions

The LNG Terminal Act of 1977 requires the Commission to recommend terms and conditions to the PUC for inclusion in any terminal permit granted by the PUC. The Act requires the PUC to impose these conditions unless a condition jeopardizes gas supply for high priority gas customers, adversely affects public health or safety, or is not supported by substantial evidence: The purpose of these terms and conditions is toold ensure that the construction and operation of a terminal at any ranked site will be in accordance with the policies of Chapter 300f the Corstal Act. The only site which has at least some detail on terminal configuration and plans for construction and operation is Little Cojo, because Western LNG Terminal Associates prepared an application for st. The other state three sites have only conceptual designs and configurations and little detailed planning for construction or operation. Even at Little Cojo; the details of construction have changed. The site itself was moved. about 1.500 feet eastward to avoid archaeological sites; and the access road location and design have been changed to avoid damaging riparian. areas. In addition, requirements of the PUC or federal agencies may " change terminal design or operation to cause unforeseen adverse impacts on:coastal:resources: 10 (100 mm) statements of 100 several of 100 several for 500 several for

The Commission finds that, due to a general suncertainty about detailed designs and construction plans for terminals at each site, it is not possible in many cases to recommend specific terms and conditions to a protect a number of coastal resources. Therefore, the Commission recommends 31 general and site-specific conditions to the PUC that provide for Coastal Commission review of detailed plans developed by the applicant after a site is approved. The conditions provide for an additional opportunity for the Coastal Commission to develop added site specific conditions should they be necessary to prevent or minimize damage to coastal resources protected by Coastal Act policies. The general conditions also set guidelines for the applicant to follow in preparing detailed design, construction, and operating plans to minimize adverse environmental impacts. Since the PUC, and not the Coastal Commission, is the permit authority for an LNG terminal, the recommended conditions provide for the PUC's making findings to reject Commission conditions if they adversely affect health or safety, jeopardize gas supply for high priority users. Or are not supported by substantial evidence. To recover of the second of the second

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The staff recommends that the Commission adopt the following terms of and supporting findings for inclusion in a permit granted by the Claifornia Public Utilities Commission for anoLNG terminal atoany be /ranked site: or the second constant of a listend to the relations / constant of the relation of the relation of the relation of the relation / constant of the relation of the relation of the relation of the relation / constant of the relation of the relation of the relation of the relation / constant of the relation / constant of the relation / constant of the relation of t

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Condition 1--Onshore Public Access. Terminal operations shall not commence until the Coastal Commission expresses in writing its satisfaction that:

- (1) The beach area in front of the terminal has been restored as nearly as possible to its original condition.
- (2) Previously existing public access to or along sandy or rocky beaches is not diminished, restricted, or adversely affected.

Should federal or state law or regulations later interfere with public access, the applicant or its successor shall obtain the certification of the Coastal Commission that equivalent replacement access or right of way has been provided.

Finding 1. The Coastal Commission finds that Conditional is necessary to ensure compliance with Public Resources Codes (PRC) section: 30212, which requires that new development shall not interfere with existing public access, including the use of dry sand and rocky coastal beaches, and PRC sections 30220 and 30221, which require protection of coastal areas suitable for recreation. Although the applicant has stated that a terminal at any site will not interfere with the public right of access to the sea and along the coast, construction of the terminal and placement of the cryogenic pipeline could destroy a beach area or otherwise block access. In addition, security measures which might interfere with public access may be imposed by federal or state agencies.

<u>Condition 2--Nearshore Recreation Access</u>. Terminal operations shall not commence until the Coastal Commission expresses in writing its satisfaction that operations do not unreasonably interfere with nearshore recreational activities such as boating, surfing, or skindiving. Should federal or state law or regulation or the unavoidable results of LNG marine operations interfere with nearshore recreation, terminal operations shall not take place until the Coastal Commission expresses in writing its satisfaction that adequate equivalent recreational opportunities or access have been provided in a nearby location.

Finding 2. The Coastal Commission finds that Condition 2 is necessary to ensure compliance with PRC sections 30220 and 30224, which protect water oriented recreation and encourage recreational boating. Although the applicant has indicated access would be restricted only in the immediate tanker berthing area, regulations of the Coast Guard or other requirements of federal or state agencies or placement of the trestle or other structures could substantially interfere with nearshore recreation and access. The coast of the coast of the coast of the structures could substantially interfere with nearshore

Condition 3--Marine Resources: Construction. Prior to initiation of construction of the trestle, berthing facilities, or the seawater intake system, if applicable, the applicant or its successor shall contract for an independent study (not done by in-house staff) which includes the following:



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- (1) A survey of the marine biota within a one-mile circumference of the seawardmost part of the proposed trestle.
- promit sit grafettisis eresittiye olast ete tes Aea (2) A survey of the marine biota and existing condition of the intertidal area within one mile in each direction of the pro-
- (3) A survey and modelling of the existing sediment transport system.

Alanda kunakut mpiru mpiru kypy9 (3) Based upon these studies, which shall be submitted to the Commission, the applicant or its successor shall submit to the Coastal Commission, the California Department of Fish and Game, and the State Lands Commission an offshore facilities construction plan and schedule which shall require:

- (1) That the trestle, berthing facilities, and seawater intake system, if applicable, shall be located so that their aplacement, function, and associated marine operations will cause the least possible biological damage and will interfere a to the minimum extent feasible with natural sand transport. Consideration must be given to use of only one construction corridor for these facilities. facilities: A second second second
- (2) That the construction and placement of the trestle, berthing facilities, and seawater intake system, if applicable, take place at the time of year which will cause the least-biological damage, if consistent with safe offshore engineering practice. a 10 al * e ng that the structure states a fast sofers
- (3) That the methods of offshore construction to be used are the least environmentally damaging feasible methods. If blasting is involved, techniques such as drilling, tamping, and sequencing of charges which limit fish Kills must be

Construction of in-sea facilities shall not begin until the Coastal Commission, after consultation with the Department of Fish and Game and the State Lands Commission, has stated in writing that such offshore construction plan and schedule complies with this condition. .

Finding 3. The Coastal Commission finds, that this condition is necessary to ensure compliance with PRC sections 30230, 30231, and 30260, which require protection of the marine environment, maintenance of biological productivity, minimization of entrainment, and mitigation of adverse environmental effects. The construction and placement of the berth. trestie, and seawater system would have significant adverse effects on the marine environment. While some studies of the offshore biology and the impacts of a terminal have taken place, further site specific studies are needed to determine final facility location; construction methods, and scheduling in order to minimize adverse impacts on marine resources. 2 7 1 No Oran Color Color (Alexandre يريد جاريح المريح

<u>Condition 4--Marine Resources: Seawater Intake and Discharge System</u>. If a seawater intake system is to be used at a site, the applicant or its successor must submit to the Coastal Commission and the California Department of Fish and Game the plan for the design and operation of the system to be used, which includes: A second and the construction of the second seco

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 $\sum_{i=1}^{n} \left(\frac{1}{2} + \frac{1}{2} +$ (1) Use of the best available technology to prevent entrainment (1) Tofe fishe the weather she has a built the constraint of the between the second state of the base of the second state o

- (2) Use of alternatives to chlorinization Such Mashmechanical, biological, or thermal antifouling, unless shown to be Constant of the second of the infeasible
- (3) Provisions for maximum dispersion of the cold water plumes.
- (4) Use of any other methods to prevent biological damage caused by the operation of the seawater system.
- (5) Testing, if possible, of all aspects of the proposed system.

The planshall besprepared in consultation with the California Department of Fish and Game: Construction of the seawater intake system shall not begin until the Coastal Commission, after consultation with the California Department of Fish and Game, has stated in writing that the submitted plan complies with this condition and incorporates the best available technology for minimizing adverse effects on marine resources: The seawater system shall be constructed and operated in conformance with the approved plan.

Finding 4. The Coastal Commission finds that Condition 4-is necessary to ensure compliance with PRC sections 30230, 30231, and 30260, which require protection of marine resources and water quality, maintenance of biological productivity, and minimization of entrainment and mitigation of adverse environmental effects. The operation of the seawater intake system will have substantial adverse effects on marine resources. including marine mammals, fish, larvae, and plankton, through impingement, entrainment, damage from anti-fouling chemicals, and water, temperature changes:

Condition 5--Marine Resources: Operation and Impact Monitoring. If the applicant or its successors uses a seawater intake system, it shall contract for an independent (not using in-house staff) five-year ongoing marine monitoring system to examine the effect of the seawater intake system to determine:

- والمجتمع والمحارك المتح مستعار والمح (1) The effect of the cold water discharge on marine biota
 - (2) The approximate number of invertebrates and larger fish The approximate number of invertebrates and surger in the second second
 - (3) The approximate number of eggs and larvae of fish and commercial invertebrate species lost due to mortality and the second seconwithin the seawater system.
 - Superior Advis (4) Rate of detention time and survival for each regularly and the entrained larger fish and invertebrate species.
 - (5) The distribution of species which are entrained and returned to the ocean.
 - (6) The relationship between species entrainment in the initial. years of operation and entrainment in subsequent years, as indication of depletion of local species due to entrainment.

The applicant shall also implement a five-year marine monitoring program, regardless of whether a seawater system is used which shall accomplish the following:

(1) Detection of the extent and frequency of occurence of water quality impacts due to changed conditions per stated as

- (2) Determination of the effects of ENG terminal operations, including movement of tankers, bunker fue Drivessels; tugs, line boats, and other small craft on the presources is a second second
- (3) A Determination of changes in Sediment transport and resulting the changes in marine biota. I more that are broad to be a sed to be a

A program to conduct these monitoring systems and to-select an independent consultant shall be devised with the concurrence of the California Department of Fish and Game and the State Water Resources Control Board. Terminal operations shall not commence until the Coastal Commission has stated in writing that the monitoring program(s) comply with this condition and provide for publishing of results at reasonable intervals.

Upon completion of the five-year program(s), the Coastal Commission shall then determine the degree of monitoring that shall follow.

At any time, the Coastal Commission, after consultations with the State Water Resources Control Board and the Department of Fish and Game, based upon the results of the monitoring, may require changes in the seawater system or other aspects of the LNG terminal operation to protect the marine resources of the area. The applicant shall implement all such changes, unless the California Public Utilities Commission determines, after opportunity for public comment, that such changes are infeasible.

Finding 5. The Coastal Commission finds that Condition 5 isonecessary to ensure Compliance with PRC sections 30230 and 30231, which require maintaining and protecting marine resources and water quality and PRC section 30268, which requires mitigation of adverse environmental effects. An LNG terminal authorized under the LNG Terminal Act would be the first of its kind in California. The magnitude and implications of the adverse impacts of operation of the seawater system and of the marine operations at a terminalizat any site are not yet known. An ongoing monitoring system would provide information which would allow for minimization and mitigation of adverse effects of terminal operation on the marine environment.

<u>Condition 6--Marine Resources: Bunkering Operations</u>. Terminal operations shall not begin until the Coastal Commission, after consultation with the California Department for Fish and Game, the State Lands Commission, and the U.S. Coast Guard, has approved an oil spill prevention and contingency plan. The plan shall provide for, at a minimum:

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- (1) So The most environmentally protective method of soil refueling and see storage. The solution of soil refueling and see so a solution of soil refueling and solution of solution of
- (2) A program for an effective on-site spill containment and cleanup system capable of handling the maximum possible oil spill associated with bunkering operations.

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(3) A demonstration that the plan complies with all regulations of the U.S. Coast Guard, E.P.A., or other responsible federal agencies.

Finding 6. The Coastal Commission finds that Condition 6 is necessary to ensure compliance with PRC section 30232, which requires protection against spillage of crude oil or other hazardous substances, as well as section 30260, which requires mitigation of adverse environmental effects. The LNG terminal application indicates bunkering operations will take place in the berthing area. Even small-scale oil spills resulting from this operation could result in substantial damage to the marine environment at these remote locations. Although the U.S. Coast Guard and the California Department of Fish and Game have primary responsibilities for oil spill prevention and clean-up, the Commission finds its review necessary to ensure the overall methods used for transporting the fuel oil minimize probabilities of oil spills.

<u>Condition 7--Land Resources:</u> <u>Construction</u>. Prior to construction, the applicant or its successor shall contract for an independent study (not conducted by in-house staff) to be reviewed by the California Department of Fish and Game, of the flora and fauna in the vicinity of the site, access road, and utility corridors. The study shall include, at a minimum:

- (1) The location of rare or endangered plants or animals or potential supporting habitat.
- (2) Mapping vegetative habitats or other critical biotic features such as riparian corridors, springs, known nesting sites, and significant watershed vegetation.

Based on the results of this study, the applicant or its successor shall submit a construction plan to the Coastal Commission. This plan shall provide for:

- (1) Maximum protection afforded by federal law for endangered plant and animal species.
- (2) A noise and dust monitoring program and requirement that construction noise and dust be kept at a minimum.
 - (3) Maximum feasible protection of riparian vegetation and habitat. This shall include a prohibition of all filling and other alteration of stream beds, as well as paving or other construction within 50 feet of stream beds, or the limit of riparian vegetation, whichever is greater, unless there is no other feasible alternative. Any ground water pumping shall not be permitted to diminish or harm existing water flows or riparian vegetation.
 - (4) A landscaping element arrived at in cooperation with the affected county, which requires insofar as feasible a balanced cut and fill, preservation and reuse of topsoil, minimum feasible disturbance of natural vegetation and landforms, replanting with natural vegetation, and disposal of fill, if any, in the least environmentally damaging manner.

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(5) A construction schedule which will minimize damage to seasonally affected flora and fauna.

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- (6) A plan for solid waste disposal, to include disposal during operation, arrived at in consultation with the State Solid Waste Management Board. unde bevenges

Construction may not commence until the Coastal Commission, after consultation with the California_Department of Fish and Game, states in writing that the construction plan complies with this condition and provides the minimum feasible disturbance to flora and fauna in the vicinity of the site, access roads, or utility corridors. All construction shall be in conformance with the certified plan.

Finding 7. The Coastal Commission finds that Condition 7 is necessary to ensure compliance with PRC section 30240, which requires protection of environmentally sensitive habitats and compatibility of development in such areas, PRC section 30231, which requires protection of streams and prevention of depletion of ground water supplies, PRC section 30251, which requires minimal alteration of land forms, and PRC section 30260, which requires mitigation of adverse environmental effects. All difference potential LNG terminal sites are in remote locations that are relatively undisturbed and part of environmentally sensitive habitat areas. Construction of an LNG terminal and associated facilities will exten-sively alter existing land forms and destroy wildlife habitats, while the noise and industrial activity will disturb wildlife populations. Ground water withdrawals could lower the water table and decrease stream flows and riparian vegetation to the detriment of fish and wildlife resources. While some inventories of flora and fauna at possible sites have been made, some added site specific inventories are needed to determine the exact location for construction activities to minimize adverse impacts on terrestrial coastal resources.

Condition 8--Land Resources: Gas Pipeline Route. The gas pipeline route from the terminal site to the gas transmission system shall be the least environmentally damaging feasible route and shall be be the least environmentally damaging red with the Coastal Commission constructed in accordance with a plan approved by the Coastal Commission fich and Game. The plan after consultation with the Department of Fish and Game. The plan shall provide that:

- (1) The route shall parallel existing road or pipeline rights of way wherever feasible. arroution , or out of the structure and arroution of the structure arrow are arrowed and arrowed arrow
- (2) The route shall be surveyed by the California Department . of Fish and Games We should get who ye beneath of set state bee
- (3) Pump stations should be located near existing roads.
- Rindon (0, 1750) Öqmalari och sand stad stad som (0, 10 in 10) (4) Ground equipments should not be operated offorthe mightomuzed of of way when avoidables ອາດ ແລະ ກະຫະຈັດ ກວາວ ກອງຊອດ ອີກວິດອີດລອດດາດ ພາກອິດລະເພາ້ອນໄດ້ເອລະພິເປັນກາວສອດກາງເດຍ ໃນ ກອງຊອດຊາດ ຈາກ ກາງ
- (5) Rightsoof wayshould be revegetated, with native plant species. (c) Anglessor(ways) model be recessed to an angleschology (c) point (c) p

 - (7) Maintenance of access should be minimized in areas of valuable. wildlife habitat, such as areas within the range of the California condor.

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- uk norra Afuzeriag Nardoueguegg Ar (11) (8) Public access to maintenance roads should be controlled
- to prevent abuse by off-road vehicles.

All gas pipeline construction shall be in accordance with the approved plan.

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Finding 8. The Coastal Commission finds Condition 8 is necessary to ensure compliance with PRC section 30260, which requires mitigation of adverse environmental effects. The construction, operation, and maintenance of the gas pipeline from any of the sites to the gas transmission system could result in a major disturbance to plants and animals and loss of habitat (see Staff Notes). The gas pipeline, which could be more that 100 miles long, is part of the LNG terminal under Section 5562 of the LNG Terminal Act. Prudent selection of pipeline routes and proper construction and maintenance procedures could minimize environmental damage.

<u>Condition 9--Termination of Operations</u>. Prior to commencement of operations, the applicant shall submit a bond or other assurance to the PUC. This bond or assurance shall be adequate to provide for the removal of all in-sea or onshore components of the LNG terminal after cessation of operation. The removal shall take place in accordance with plans approved by the Coastal Commission after consultation with the State Lands Commission. The plan shall require removal of each terminal component unless Coastal Act policies would allow or encourage retention of that component.

Finding 9. The Commission finds Condition 9 necessary to ensure compliance with PRC sections 30211, 30212, 30224, 30230, 30231, 30232, 30240 and 30260, which protect access, land and water recreation, fish and wildlife, and require mitigation of adverse environmental impacts. Since all sites are in remote areas with high value for recreation and fish and wildlife habitat, all major structures associated with an LNG terminal should be removed, when no longer needed, to restore the natural character of ులు సంఘటన్లు కార్రెడ్డికు పూరారి సంఘటన్లు. రాహారాజ్యా స్ట్రెడ్డి సంఘటన్లు అందిన సినిమార్డు కారియ the area:

Condition 10--Replacement of Lost Habitat. The applicant shall ware provide terrestrial and marine habitat equivalent in value to that lost, damaged or adversely affected as a result of terminal . construction and operation, including construction of utility corridors, roads and pipelines. The habitat acquired or protected, shall be approved by the Commission prior to terminal operation and shall be maintained by the applicant for the life of the project.

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Condition 11--Air and Water Quality. Terminal construction and sector of operation shall comply with the requirements of the Air Resources of the Air Resources of the sector of the sec Board, the Air Pollution Control District, the State Water water Resources Control Board and Regional Water Quality Control Board to the extent required by federal law and regulations.

Finding 11. The Commission finds Condition 11 necessary to mensure and a Compliance with PRC sections 30231 and 30253 which protect air and water quality. While the LNG Terminal Act exempts the first California LNG terminal from all state agency permits except that issued by the PUC, it does not exempt it from state permits required by federal law.

Condition 12--Archaeological and Cultural Resources. Prior to construction the applicant shall contract for an independent survey (not conducted by in-house staff) of archaeological and cultural resources at the approved LNG terminal site and pipeline route. This survey shall be submitted to the State Office of Historical Preservation, the Native American Heritage Commission, and the Coastal Commission. If any of these agencies determine that such resources have been or are likely to be found at the site, construction shall not commence until the Commission, after consultation with the State Historic Preservation Officer and the Native American Heritage Commission, has approved a plan for the protection of these resources. Such plan shall include:

- (I) Construction methods and facility configuration that do not disturb sites of historic, archaeological, religious, or paleontological
- (2) If avoidance of such sites is infeasible, the use of techniques which would best preserve the sites and objects found in them for future study, evaluation, or religious use.
- (3) Access, consistent with security and resource protection, for Native Americans to sites of religious significance.
 - (4) A procedure for halting construction when artifacts of cultural or religious significance are uncovered and for consultation with the State Office of Historic Preservation and local Native American groups, and implementation of feasible mitigation measures.

rouen bisblose con je spara up tistate Finding 12. The Commission finds that condition 12 is necessary to ensure compliance with PRC section 30244 which requires mitigation of adverse impacts on archaeological resources. LNG terminal construction would affect archaeological resources at three of the ranked sites. ed Asites. గ్రమామ్ సంగారంగా ఉద్దర్ఘ సంగారంగా సంగారంగా సందర్ఘ చిత్ర సంగారంగా కరణ సాహాయాలో సంగారంగా స్థారంగ్రామ్ సంగారంగా సాగారంగా సంగారంగా సందర్ఘ సంగారాగాలు - వర్శాహా విరోద్ధల్లో స్థారంగా సంగారంగా సంగారంగా సర్యాణంగా సంగారంగా సం

Condition 13--Construction and Operations Monitor. The applicant shall fund a construction monitor to be jointly selected by the PUC and the Coastal Commission. The monitor shall ensure compliance with the terms and conditions of the LNG terminal permit and of the certified or approved plans submitted pursuant to permit conditions. The monitor may issue a stop order to the applicant if a permit condition vislation is occurring or is likely to occur: The applicant may appeal any such stop order to the PUC. The applicant shalloal Tow access to the site

and related facilities by the monitor and any public agency employees who may assist the monitor, including representatives of the State Historic Preservation Office, Department of Fish and Game, PUC, and the Coastal Commission. The PUC and Coastal Commission may jointly agree to replace the monitor.

Finding 13. The Commission finds that Condition 13 is necessary to ensure compliance with these permit conditions and to ensure that terminal construction proceeds in compliance with Coastal Act policies.

Condition 14--Geologic Hazards. The applicant shall fund the operation of two independent terminal design and construction review panels to assure that the geological hazards at any PUC licensed site be thoroughly quantified, that the construction drawings and calculations be thoroughly reviewed, and that construction be inspected. The Geological Hazards Panel shall be comprised of seven experts. including two selsmologists, two engineering geologists, two geotechnical engineers and a structural engineer. The Structural Panel shall be comprised of seven experts, including two structural engineers, one geotechnical engineer, one engineering geologist, one mechanical engineer, one electrical engineer, and one engineer expert in fire protection and safety engineering. The members of each panel would be appointed as follows: "two each by the PUC, Coastal Commission, and Division of Mines and Geology, and one by the Seismic Safety Commission. The applicant shall provide these panels with all data and information used to determine the geological hazards at a site approved by the PUC and the final design and construction methods for a terminal at that site as soon as the data and informatig are available. The Geological Hazards Panel shall provide the applicant, the PUC and the Structural Panel with its best judgment on the character of the geotechnical hazards that might affect the terminal. The Structural Panel shall make recommendations to the applicant and the PUC on any modifications to the applicant's proposed terminal design. configuration, and construction and operation methods that the panel feels, in its best judgment, would minimize risks to life and property from geologic hazards. These judgments shall be pro-vided in writing to all interested parties. Following a public hearing, the PUC shall implement or impose such recommendations on the applicant unless the PUC rejects any panel recommendation pursuant to Condition 15.

Finding 14. The Commission finds that Condition 14 is necessary to ensure compliance with PRC section 30253 which requires minimum risks to life and property in areas of high geologic hazard. The coastal areas of California are criss-crossed with major and minor earthquake faults which present hazards to a possible LNG terminal. The Commission finds that two panels are needed because determining the geotechnical hazards and determining what to do about them are two distinct and difficult tasks. Seven members are required for each panel because the Commission has learned in evaluating 82 potential terminal sites that experts in a field can have different approaches and opinions on how to estimate and deal with seismic risks. Therefore, each panel should have a variety of opinions represented. This complicated two-panel review system is required because of the controversy that has followed this subject subject, because the seismic problem for critical facilities in California is extremely complicated, and becuase the proposed LNG termian1 would both present potential hazards to people and property nearby as well as providing a large portion of the State's energy supply The Commission's structural consultant, H. J. Degenkolb, has made extensive review and recommendations on the seismic safety of LNG terminals which should be considered by the applicant, the PUC and the panels.

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opinions represented. This complicated two-panel review system is required because of the controversy that has followed this subject, because the seismic problem for critical facilities in California is extremely complicated, and because the proposed LNG terminal would both present potential hazards to people and property nearby as well as providing a large portion of the State's energy supply. The Commission's structural consultant, H_J. Degenkolb, has made extensive review and recommendations on the seismic safety of LNG terminals which should be considered by the applicant, the PUC, and the panel's.

Condition 15--Public Utilities Commission Denial of Conditions 200 In approving any plan or other action required under these conditions, the Coastal Commission shall either issue written approval within sixty days of receipt of such plan. or shall deny such approval and specify in-writing to the applicant what further terms must be included in the plan or other action and what steps must be taken to obtain approval. A failure to do either within sixty days will result in automatic waiver of approval requirements. The Coastal Commission Shall consider the feasibility, as defined by PRC section 30108. of the proposed plan or other action.

The applicant may appeal any such written denial to the PUC. The PUC may overrule any denial if, after notice and opportunity for public comment, it finds that the further terms required for approval:

- (1) would cause delays in terminal operations that will result and com in significant curtailment of high priority gas requirements and that deletion or modification of the term wills avoid or 2000 in significantly reduce such curtailment prore at toms the westers and the westers of the westers and the westers of the second terms and we because
- (2) will adversely affect public health or safety: orn cas constant

(3) mare. instrupported by substantial trevidence. and under more backfoord & ເອັດແມ່ນ ເປັນ 2000 ເປັນ ເປັນ 2000 ເປັນເປັນເປັນ ແລະ ແລະ 2000 ເປັນ 2000 ເປັນ 2000 ເປັນ 1000 ເຮັດເປັນ 1000 ເປັນ 2000 ເປັນ 2000 ແລະ 2000 ເປັນ 2000 ເປັນ 2000 ເປັນ 2000 ເປັນ 2000 ເປັນ 1000 ເປັນ 2000 ເປັນເປັນ 2000 ເປັນ 2000 ເປັນເປັນ 2000 ເປັນ 2000 ເປັນ 2000 ເປັນ 2000 ເປັນ 2000 ເປັນ

Finding 15: The Commission finds that Condition 15 will facilitate the to construction and operation of the terminal in accordance with the mandate of the LNG Terminal Act of 1977 which provides for a single permit issued by the PUC, and requires conditions set by the Coastal Commission to ensure compliance

Condition 16 -- Fire Protection. Prior to commencement of operations the applicant or its successor shall prepare a fire protection plan for the affected area. Term-inal operations may not commence until the Coastal Commission_Tafter consultation with the affected County fire department; the California Department of Forestry. and the State Fire Marshall, has stated in writing that the applicant's plan adequately minimizes risks to life and property from fire originating at either the terminal or the nearby area.

Finding 16. The Commission finds that Condition 16 is necessary to ensure to compliance with PRC section 30253 (1) which requires minimization of risks to life and property in areas of high fire hazard. All sites are in remote areas which are very susceptible to fires if there were an ignition of LNG vapors. In addition, the terminal itself could be endangered by encroaching fires.

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C. Site Specific Terms and Conditions

Condition 17 -- Horno Canyon on Camp Pendleton: Use of the San Onofre Nuclear Power-Plant Heated Water. Waste heated water from the San-Onofre Nuclear Facility shall be utilized in place of ambient seawater for all baseload LNG vaporization heat exchange operations in the facility in accordance with plans approved by the Commission. The plan shall ensure that the adverse effects to bluffs, beaches, and marine life are minimized during the construction and operation of the system. Should the California Public Utilities Commission determine, after public hearing, that such a system is infeasible. an intake structure for ambient seawater may be utilized in accordance with plans approved by the Coastal Commission and designed to minimize adverse environmental effects, in accordance with the standards set in General Condition 4. the second s

Finding17. The Coastal Commission finds Condition 17 necessary to ensure compliance with PRC sections 30230 and 30260, which require protection of marine resources and mitigation of adverse environmental effects. A seawater intake system at Horno Canyon would have adverse environmental effects which would be similar to, although not nearly as far reaching as, those at Little Cojo (see Little Cojo Finding 23). The San Onofre Nuclear Power Plant, which is currently in operation, is located approximately 4½ miles from the Horno Canyon LNG terminal site. A heated water discharge which has a deleterious effect on the marine biology of the area is currently being emitted from this facility. Planned expansion of the facility will increase the volume of this discharge and resultant biological damage.

A pipeline from the San Onofre Nuclear Facility to the Horno Canyon 🗇 LNG facility, allowing the latter to use waste heated water to vaporize the liquefied natural gas, would eliminate the most damaging effects of the LNG terminal's seawater system, as well as the effects of the nuclear facility's heated water discharge, and could possibly improve the efficiency of the system. The applicant has proposed just such a system for its Oxnard LNG site, which was .8 miles from a fossil fuel power plant. The cost of such a sharing of waste heated water appears to be reasonable (\$20,000,000 according to the Public ... Utilities Commission's Alternative Siting Report, Coastal Commission record entry number 01230). A state state state state of a

Condition 18 -- Horno Canyon on Camp Pendleton: Public Access. Prior to commencement of operations, the beaches and bicycle path shall be returned to their pre-construction condition and no restrictions or 2000 limitations on public access shall interfere with public access or use during the life of the project, provided, however, that should federal law, regulation, or needed security procedures interfere with lateral foot or bicycle travel, alternative access of a substantially equivalent nature and approved by the Coastal Commission shall be provided. Operations shall not commence until the Executive Director has stated in writing that the condition has been satisfied.

Finding 18. The Coastal Commission finds Condition 18 necessary to ensure the compliance with PRC sections 30211 and 30212, which require protection and provision of public access to and along dry sand and

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rocky coastal beaches. The Horno Canyon area of Camp Pendleton is situated on a coastal terrace adjacent to the well-traveled Interstate Highway 5. This area is situated nearly equidistant from the expanding urban areas of greater San Diego and Orange County. There is a sandy beach in front of the proposed LNG facility, and a bicycle path utilizing the old highway 101 right-of-way. It is essential that existing public access and travel along the beach and coastal areas be maintained in this specific area, particularly in view of growing population and recreation needs of the closeby urban areas.

Condition 19--Horno Canyon on Camp Pendleton: Inground LNG Storage Tanks. The LNG storage tanks shall be set partially in the ground and built upon bedrock and shall not protrude above ground level by more than 50 feet. in accordance with plans approved by the Executive Director. The plans shall provide for ingrounding the storage tanks and landscaping the dikes surrounding the tanks to incorporate the best feasible means of preserving the public views. protecting possible future recreation, and making the LNG facility compatible with the open space nature of this part of the coast. All construction shall take place in accordance with the approved plans, and operations shall not commence until the Executive Director of the Coastal Commission has stated in writing that the construction and landscaping has been completed.

Finding 19. The Coastal Commission finds Condition 19 necessary to ensure compliance with PRC section 30251, which requires minimization of land form alterations and protection of coastal views and PRC section 30253, which requires minimization of risk to life and property. The Camp Pendleton site is located on an open stretch of the coast, adjacent to the well-traveled Interstate Highway 5. The area presently affords broad ocean vistas of a ten-mile stretch of open, undeveloped coast seen by over 60,000 motorists a day and is easily accessible to residents of the expanding urban areas of San Diego and Orange Counties. An LNG facility would be located between the highway and the coast. Its three 130-foot high storage tanks with an outside diameter of nearly 240 feet will intrude upon the coastal views of passing motorists and lower the quality of possible future recreation use. The Commission's structural engineering consultant, H. J. Degenkolb and Associates, has recommended that the tanks be placed partially inground. Landscaping the dikes surrounding the inground tanks would greatly reduce visual intrustion. Partially underground tanks would also be better protected from flying objects and earthquake motions." Preliminary indications from the Commission consultant are that the costs of ingrounding storage tanks at Camp Pendleton are not unreasonable (\$6,500.000 per tank). ు సంగార్థించింది. వ్యాసంత్రి సంగార్థి సంగార్థి సంగార్థి సంగార్థి సంగార్థి సంగార్థి సంగార్థి సాగ్యాహించి సంగార్థి సంగార్థి సంగార్థి సంగార్థి సంగార్థి సాధానికి సంగార్థి సాగ్యాహించి సంగార్థి సహారాజు సంగార్థి సంగార్థి ప్రతిస్తున్న కార్యాణ సంగార్థి సంగార్థి సాధానికి సాధానికి సాధికి

<u>Condition: 20--Rattlesnake: Canyon: Breakwater Design.</u> The design of the submotive of for a breakwater at the Rattlesnake Canyon site shall be of the submotive general design recommended by the Commission's maritime consultants for John J. McMullen Associates, in exhibit 1218 in the Commission's public for public comment, such general design is either infeasible or would be redesigned and constructed in accordance with a plan approved model to the submotive of the breakwater shall be redesigned and constructed in accordance with a plan approved model to the submotive of the submotive of the submotive of the breakwater shall be redesigned and constructed in accordance with a plan approved model to the submotive of the submotiv

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by the Coastal Commission. The Commission's approval shall be based on minimizing adverse effects to the marine environment within the limitations on feasibility and safety determined by the PUC. A state of the sta

Finding 20. The Commission finds that condition 20 is necessary to ensure compliance with PRC section 30235, which requires that breakwaters minimize advance in the section 30235. breakwaters minimize adverse impacts on sand supply, and PRC section 30260. which requires mitigation of adverse environmental impacts. The Commission finds that the John J. McMullen Associates breakwater as designed would have the least adverse impacts on the marine environment because it would minimize offshore blasting and rock removal. The cost for construction of this breakwater is currently estimated at \$175 million.

Condition 21 -- Rattlesnake Canyon: Use of Power Plant Heated Water: The applicant shall use heated water from the Diablo Canyon nuclear power plant in place of seawater for all baseload LNG vaporization operations in the terminal in accordance with a plan approved by the Commission. This plan shall ensure that the adverse impacts to bluffs, beaches and marine life are minimized during the construction and operation of the system. If the PUC determines that such a system is infeasible, a seawater exchange system may be used in accordance with Condition 4 and other applicable conditions herein. 71 - 15<u>10</u> - 15 - 6

Finding 21. The Commission finds that Condition 21 is necessary to ensure compliance with PRC section 30230, which requires protection of the marine environment, and PRC section 30260, which requires mitigation of adverse environmental effects. A seawater exchange system at Rattlesnake Canyon would have adverse impacts on marine resources, and such impacts would be minimized using already heated water from a power plant in place of seawater. The cost of such a sharing of waste heated water at Rattlesnake Canyon appears reasonable at about \$7 million, according to the Public Utilities Commission Alternative Siting Report, Coastal Commission record number 01230.

Condition 22--Rattlesnake Canyon: Public Access. Prior to operation of the terminal, the applicant shall acquire an interest in land over the PG&E access road up to the LNG terminal site sufficient to allow for public access to the coastal areas in the immediate vicinity of the site. Prior to operation, the applicant shall submit to the Coastal Commission its plan for providing limited public access for picnics and viewing the area in the vicinity of the terminal site. Such access shall be consistent with protection of coastal resources, adequate terminal security, and shall be provided for the life of the project. Terminal operations shall not commence until the Commission has approved the access plan and a as being in compliance with this condition. This access requirement

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may be waived if the PUC determines that federal law or regulations and on necessary security precautions at either the LNG terminal or the add nuclear power plant make public access at Rattlesnake Canyon of the add of impossible.

Finding 22. The Commission finds that Condition 22 is necessary to ensure compliance with PRC section 30212, which requires that public access be provided in new development: The terminal area is one of great natural beauty, but the PG&E security gate prevents public access to the coastal terrace there. The applicant, a joint venture of the Pacific Lighting Corporation with PG&E, has the power of eminent domain for access for operation of the LNG terminal under Section 5590 of the LNG Terminal Act and could use such powers, if necessary to provide access required as a condition of terminal operation.

Condition 23 -- Little Cojo: Seawater Exchange System and Transmission

Lines. A seawater exchange system for vaporizing LNG shall not be installed or used at Little Cojo, and all electricity used at the site shall be generated on site. If for any reason the on site generation of electricity is not permitted, all transmission lines to the site in the coastal zone shall either be placed underground or shall use existing wooden transmission poles.

Finding 23. The Commission finds that Condition 23 is required to ensure compliance with PRC sections 30230, 30240, 30242 and 30260 which protect marine resources, coastal views and land forms, and require mitigation of adverse environmental effects. The nearshore environment at Little Cojo is the most diverse, productive and unique of the sites being ranked. The seawater exchange system proposed by the applicant to regasify LNG would have a serious impact on marine resources, including fish, fish eqgs, and invertebrate larvae, through impingement, entrainment, and damage from antifouling chemicals. The construction of the conduits would also temporarily damage marine resources. Elimination of the seawater exchange system would eliminate these adverse impacts on the marine resources of the Little Cojo area. The Cove Point, Maryland, LNG terminal uses gas fired vaporizers instead of a seawater system.

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Electricity would be needed at a Little Cojo site as it would at any terminal site to run pumps and other equipment. Elimination of the seawater exchange system would eliminate a major power use at the terminal. If the electricity were brought to the terminal by new, above-ground transmission lines, the lines would traverse about 40 miles over the coastal area between Little Cojo and Goleta, adversely affecting views and wildlife habitat. On site electricity generation seems feasible and would eliminate these adverse impacts of the transmission lines. Indications are that the Cove Point, Maryland LNG terminal uses about two-percent of the LNG throughput there to generate electricity and regasify the LNG.

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Condition 24 -- Little Cojo: Construction Period Transportation Plan. All transportation of workers, materials, and equipment for construction activities shall be in accordance with a transportation. plan approved by the Commission prior to commencement of construction. The plan shall be prepared in consultation with the PUC, Caltrans, the County of Santa Barbara and the Departments of Fish and Game 2004 and of Parks and Recreation. as appropriate, and shall include:

- (1) Maximum feasible use of barges and the railroad for transport of workers, materials, and equipment. response
- (2) Reconstructing the Hollister Ranch access road to minimize adverse environmental simpacts, with methods to bridge 2000 canyon and stream crossings, avoiding fill in canyons and streams, and avoiding valuable wildlife habitats and the second second
- (3) Minimum rebuilding and realignment of the Holl:Ster Mailton Ranch access road consistent with feasibility and safety.
- (S read the second (4) Minimizing adverse noise, traffic, and construction impacts on Gaviota Beach State Park.

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Children and Finding 24. The Commission finds Condition 24 is necessary to ensure compliance with PRC sections 30230, 30231, and 30240, which protect land and water resources and section 30260 which requires mitigation of adverse environmental effects. The construction and use of the access road, unless properly conditioned, could have a significant adverse effect on the terrestrial resources of the area. The draft environmental impact report indicates that improvement of the Hollister Ranch road would have the least adverse environmental impacts. The Commission further wishes to ensure that imporvement will be consistent with maximum resource protection. The Little Cojo site, according to the applicant's brief, allows for maximum use of the railroad and barges for transporting equipment; the Commission desires to make certain this will be the case and that, in addition, use of the railroad to transport workers to the site will be considered. Finally, use of the Gaviota area as a staging site for workers, as currently proposed by the applicant, could greatly interfere with public access to and enjoyment of the park. This situation should be avoided if there are other alternatives.

Condition 25--Little Cojo: Public Access. Prior to operation of the terminal, the applicant shall acquire an interest in land over the Hollister Ranch road and if necessary, Bixby Ranch Road sufficient to allow for limited and controlled public access to Little Cojo Bay. Prior to terminal operation the applicant shall submit to the Coastal Commission its plan for providing limited and controlled public access to the beach and bluff top area of Little Cojo Bay. The plan shall be consistent with the protection of fish and wildlife and vegetation resources and scenic quality of the area and shall ensure that private property rights and security are maintained. Terminal operations shall not commence until the Commission has approved the access plan. Terminal operations shall be implemented in accordance with the approved plan.

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If the Commission determines that security precautions or federal law or regulations or other actions make a public access program via the ranch road(s) impossible or infeasible, the applicant shall. institute and operate a program to bring limited numbers of the public to Little Cojo Bay by water.

Finding 25. The Commission finds Condition 25 necessary to ensure compliance with PRC section 30212, which requires that public access be provided in new coastal development. The Little Cojo Bay area possesses unique opportunities for limited recreation use, especially surfing. The onshore area, including a sandy beach. provides opportunities for bird and marine life watching and other forms of outdoor recreation. Unlimited public access might damage the natural resources of the Point Conception.area, but at present the locked gate policies of Hollister and Bixby Ranchesprevent any onshore public access to the area. The limited public access condition is a condition of terminal operation, and the applicant has powers of eminent domain for access roads and other facilities necessary for operation of the terminal under section 5590 of the LNG Terminal Act of 1977.

Condition 26 --Little Cojo: Partial Ingrounding of Storage Tanks. The LNG storage tanks shall be set inground and built upon bedrock and shall not protrude above ground level by more than 50 feet. Prior to construction, the applicant shall obtain approval of the Commission of a plan for ingrounding the tanks and landscaping the dikes surrounding the tanks to incorporate the best feasible means for making the terminal visually compatible with the open space character of the area. Construction shall take place only in accordance with the approved plan.

Finding 26. The Commission finds that Condition 26 is necessary to ensure compliance with PRC section 30251, which requires new development to be visually compatible with the character of the area. and minimization of land form alterations and protection of coastal views, and PRC section 30253, which requires minimization of risks to life and property. Locating the 130-foot high storage tanks completely above ground would present a major bulky intrusion onto the Little Cojo coastal terrace which would substantially change the open space character of the area. Partial ingrounding would decrease this adverse visual impact and better protect the tanks from airborne objects and earthquake motions. Preliminary reports by the Commission's consultants indicate the cost of ingrounding appears feasible at about \$7.5 million per tank.

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<u>Condition 27--Little Cojo:</u> <u>Surfing Breaks</u>. The applicant shall ensure that terminal construction and operation interferes with or restricts surfing at the surfing breaks in Little Cojo Bay to the minimum extent feasible. If the Commission or the monitor provided in Condition 13 determines that terminal construction or operation is or is likely to interfere with surfing opportunities in Little Cojo Bay, the applicant shall develop a plan to provide equivalent surfing opportunities through construction of an artificial surfing reef break or provision of access to a surfing area(s) not presently accessible by the public. Commission approval of the plan is a condition for operation of the terminal four months after the determination is made, as provided above, that surfing would be adversely affected by the terminal.

Finding 27. The Commission finds that Condition 27 is necessary to ensure compliance with PRC section 30220, which protects coastal areas suited for water-oriented recreation and with section 30260, which requires mitigation of adverse environmental impacts to the maximum extent feasible. The surfing breaks in Little Cojo Bay are highly valued remote surfing breaks currently unaffected by industrial development. Trestle construction or tanker berthing activities or safety restrictions could prevent or interfere with surfing at these breaks.

<u>Condition 28--Little Cojo: Kelp Harvesting</u>. Applicant shall minimize interference with kelp harvesting from Bed #32 to the extent feasible. If the studies implemented under general conditions 3, 4, and 5 indicate that terminal construction or operation would decrease the amount of kelp that can be harvested under the Department of Fish and Game lease, a committee composed of one representative from the PUC, Coastal Commission, and Department of Fish and Game shall develop a program to minimize such decreases in harvestable kelp resources and to mitigate any losses suffered by the Bed #32 lessor or lessee. The applicant shall implement this program after it is approved by the Coastal Commission.

Finding 28. The Commission finds that Condition 28 is necessary to ensure compliance with PRC section 30230, which requires maintaining the biological productivity of coastal waters for long-term commercial purposes. Kelp Bed #32, which extends off Little Cojo Bay and eastward offshore the Hollister Ranch, is the most productive kelp bed off California and accounts for about ten percent of the State's annual kelp harvest. The trestle and berth may prevent kelp harvesting boats from harvesting kelp in their vicinity, and vessel operating restrictions may interfere with kelp harvesting. Condition 28 will ensure that such adverse impacts are minimized or mitigated, if unavoidable. <u>Condition 29--Deer Canyon: Water Quality</u>. The construction and operation of a Seawater exchange system shall conform to the regulations and requirements of the State and Regional Water Quality Control Boards. The operation of the terminal shall not result in any waste discharge from any point source into the Point Mugu Lagoon to Latigo Point Area of Special Biological Significance. Any discharge beyond the ASBS shall not harm the integrity of the ASBS, as determined by the State Water Resources Control Board. Best practicable technology shall be used in construction, site preparation, and in drainage controls to minimize adverse water quality impacts in accordance with a plan approved by the State Water Resources Control Board.

<u>Finding 29</u>. The Commission finds Condition 29 necessary to ensure compliance with PRC section 30231, which requires maintaining water quality in coastal waters, and PRC section 30230, which requires special protection for areas of special biological significance. The offshore area off Deer Canyon is part of an area designated as an ASBS by the State Water Resources Control Board. The regulatory procedures of the Board generally preclude waste discharges into an ASBS from a point source such as a seawater exchange system. The seaward boundary of the ASBS is the 100 foot isobath, off Deer Canyon, about 6,000 feet from shore. Even discharges at this depth could affect the integrity of the ASBS.

<u>Condition 30--Deer Canyon: Balancing Cut and Fill</u>. Prior to construction the applicant shall obtain Commission approval of a site preparation plan. The plan shall provide for a sufficient elevation of the storage tanks and for other designs that balance required cut and fill to minimize or eliminate the need for off site fill disposal and shall provide for maximum feasible soil stability in the Canyon.

<u>Finding 30.</u> The Commission finds Condition 30 necessary to ensure compliance with PRC section 30210 and 30211, which protect public access because, under one site plan, more than a million dump truck trips would be needed to remove excess cut material from the Canyon. Such traffic would seriously interfere with travel on the scenic Pacific Coast Highway and with park access and enjoyment nearby. Building the terminal at higher elevations would eliminate the need for excavation while also eliminating off site fill disposal requirements and reducing landslide potential.

<u>Condition 31 --Deer Canyon: Recreation and Public Access</u>. Prior to terminal operation the applicant shall provide additional public access and recreational opportunities in accordance with a plan approved by the Commission. The plan shall include dedication of access ways in the site area and, if feasible, parking and fishermen's access facilities in the vicinity of the terminal.

Finding 31. The Commission finds Condition 31 necessary to ensure compliance with PRC section 30212, which requires provision of access in new development.

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SANIA BARBARA COUNTY BOARD OF SUPERVISORS Recommended Terms and Conditions Western ING, Point Conception and the second of Meeting of April 10, 1978 and the second state of the second state of the second second second a na mana da arteria serie a serienze dinas a naverante danas a denar serie الله و معمون الله روحان الله ومريحات الله المعرف المنابع والمركز الله و المركز المركز المركز المركز المركز الم المركز مستقد المركز المركز المحمد منه المركز المحمد المركز المركز المحمد المركز المركز المركز المركز المركز الم -Planning Department 1. Prior to issuing any permit under Pub. U.C., Section 5580 of the ING Terminal - Act of 1977, the CPUC shall explicitly designate which State and/or local agency will have responsibility for implementing and enforcing each and every condition of adopted as part of the permit. يبتاد المتعادين وتداجي المشابق المتساريني وتتابيه 2. Unless construction of the ING terminal is commenced within 18 months of issuance of this permit, this permit will be deened null and void and of no further effect or force. This 18-month period shall be extended to the length of time necessary to equal the period the applicant is prohibited from proceeding by Court order? CPUC may grant an extension of time for good cause shown. The second second off 3. County of Santa Barbara shall be sent an annual status report on all baseline and bo monitoring conditions and mitigating measures. Information produced under the additional monitoring program shall be made available to the County of Santa Barbara mon County الله المالية المراجعة المراجع المعالية المراجعة المالية المالية المراجعة المسينة ليونية المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة request.

Petroleum Administrator 4. The CPUC shall be responsible for independent review of quality control in the second design, engineering, construction, or operation of the LNG facilities.

5. The quality control inspectors shall have the power, authority, and duty to stop_____ any work or activity not in strict compliance with the approved plans and speci-_____ fications. The quality control inspectors shall log any incident of non-______ compliance and the date and manner of correction.

6. The quality control group shall maintain a complete set of permanent records of all quality control activities, tests, inspections, x-ray films, material tests, and origins. Records shall include date, name of inspector, method of test, observations, results, location of test, or item testod, and any other information which may prove useful. X-ray films shall be kept for not less than three years after startup of the facility.

7. Deviations from approved plans and specifications may be made only with a valid and approved change order. Prior to the start of construction, the procedure and persons qualified and authorized to make change orders shall be designated. Changes involving any reduction in safety factor or reliability shall be probibited without full CPUC review. A.57626 et al. /km APPENDIX E-Page 2 of- 31

- 8. All safety, protective, or warning devices shall be tested at least once every six months. CPUC inspectors shall witness the tests at least annually. م هم کې از دوله ده در ایم را د المقی می مدی از معطول و میرا اماری از در داده می ایم از در ایم در ۲۰ می مربع الاریک مطالبه د معرف ایم ده محک مقصوف میکند. در در دوله در مطبق Permanent test records will be maintained.
- ا مېلې کې د د مېلې کې د د مېلې د د د مېلې د د د مېلې د د مېلې د د مېلې د د د د د د د د د د د د مېلې د کې د کې د مېلې کې د د مېلې د د د د مېلې د د د مېلې د د د د مېلې د د د د مېلې د د د د د د د د د د د د د مېلې د د د د مېل 9. The applicant shall develop and maintain a records and reporting system which, as a minimum:

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- a) logs all safety device failures, malfunctions, or false alarms, and the and the second secon reasons, if known.
- b) Logs the loss of availability of any safety, protective, warning, or shutdown device, and the reason for loss of availability. The set of the set of the set
- c) Logs all hydrocarbon leaks including origin and cause. The second of the second we
- d) Copies of such reports shall be sent to the CPUC and into a long with Large of
- 10. The testing and acceptance of all systems shall be completed prior to the arrival of the first ING ship. Any testing requiring cold or a vaporizing action shall wood at be done with an inert, non-flammable material. An initial cooldown of systems except the tanks shall be made using an inert, non-flannable material prior to the introduction of any LNG.
- 11. Any values or other safety devices shall move to the shutdown position upon loss of power or a malfunction. Block valves must be fail-closed and shall not re-موجوعها الدينية المحمد المراجع المحمد ال المحمد الذي المحمد ال quire a remote energy source for operation to the closed position.
- 12. In addition to any other safety devices, each pump or compressor handling hydrocarbons shall have a local stop station located not less than 50 feet nor more 104 C. than 75 feet from the pump or compressor which may be used to shut down the a de arresto de la companya de la co Antes de la companya d device. a selat coste de sectors des acta arte ante estátione
- 13. Prior to startup, the applicant shall submit all operating procedures, safety procedures, emergency shutdown procedures, employee training programs, and any other relevant procedures to the CPUC, and shall obtain approval for all before the startup.

entre en la caracter de la conse la relation de la conserve de la conserve de la conserve de la conserve de la Procedures shall clearly define the step-by-step process needed to safely execute all normal operating sequences, emergency shutdown sequences, and maintenance of and the sequences of a sequence o critical or major components. Information shall include chain of command, safety precautions, duty of each person involved, and effect of activity on terminal reliability and shutdown carability.

The duties, responsibilities, and limitations of each person involved in adminisx tration, operation, or maintenance shall be clearly defined. No person shall be permitted to work a job for which they are not trained and qualified.

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- 14. The latest edition of the appropriate codes in effect prior to construction of the the facilities shall be used as a minimum. Suggestion of the second states where
- 15. Design, construction, and operation of the gas transmission pipeline into the facility shall, as a minimum, conform to Part 192, Title 49, of the Oode of Federal Regulations, "Transportation of Natural and Other Gas by Pipelines: Minimum Federal Safety Standards," and the American Society of Mechanical Engineers "Guide for Gas Transmission and Distribution Piping Systems." The latest editions in effect prior to start of construction or up to the date of operation shall be used. In a start of construction or up to the date of operation shall be used. In a start of construction or up to the date of operation shall be used. In a start of construction or up to the date of operation shall be used. In a start of construction or up to the date of operation shall be used.

16. Class locations selected for determining piping stresses and safety factors shall be based on the maximum population densities and distributions existing during the life of the pipeline or at the year 2000, whichever is more restrictive.

17. Minimum burial depth shall be 36" to the top of the pipe. In areas now under cultivation or with a high probability of being under cultivation during the life of the pipeline, the minimum burial depth shall be 48". Deeper burial may be necessary, depending on particular cultivating practices. On slopes, the depth of burial shall be measured perpendicular to the surface slope.

- 18. The line location shall be indicated with surface markers: a) At every public road and highway crossing.
 - b) At every railroad crossing.
 - c) At every crossing of an oil or gas shipping line (excluding well flow lines).
 - d) At least every 1/2 mile in Class 1 and 2 areas.

e) At least every 1/5-mile while in the Cat Canyon, Cuyam, and other oilfields. Markers shall contain the name and phone number of the gas line operator and a Swaming about excavating and of the second line operator and a

19. A checkivalvesshall beslocated just outside the LIG site limit to prevent back-. No flow in the event of problems at the LIG site. a sub- cur is addressed and the back of a control of the state of the light protocol of the state of the state and share and share

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- 20. The inlet to any gas piping not designed for the minimum ING temperature shall be equipped with a temperature recorder, two independent low temperature shutdown devices, and a fail-closed low temperature block value to prevent cold gas for unvaporized LNG from entering. The second a second back and a fail-
- 21. Additional sectionalizing block valves shall be installed within one mile of each side of active and potentially active fault zones. All block valves shall be power operated and capable of remote operation by the pipeline dispatcher.
- 22. An automatic leak detection and shutdown system, in compliance with all existing a rules and regulations of appropriate authorities, shall be included in the facility. All pipelines shall be constructed and maintained in accordance with all existing codes and regulations. Said system shall be designed and operated in accordance with the best engineering practices available.

Flood Control:

- 23. Bydrologic studies shall be made of the watershed area tributary to the terminal. Tributary areas are based on natural contour or an accepted master drainage plan. Drainage quantities shall be derived from considerations of expected future development of the watershed, soil types, historical scorm data, gradient of terrain, etc. These considerations must receive approval by the Santa Barbara County Flood Control Engineer. For most major channels, flow quantities will be supplied by the Santa Barbara County Flood Control Engineer.
- 24. Bydraulic data shall be included on engineering plans for all drainage channels, pipes, etc., in conformance with standards of the Santa Barbara County Flood Control Department.
- 25. Open channels shall have adequate capacity and have erosion protection through use of reverment, non-erosive velocitics, and proper gradients. The engineering design must be approved by the Santa Barbara County Flood Control Engineer. Closed drains shall be reinforced concrete pipe, unless otherwise approved.
- 26. Energy and hydraulic grade lines shall be show on all plans and profiles for underground storm drains and open channels.
- 27. All hydraulic calculation sheets shall be signed by the engineer who signs the improvement plans.
- 28. Drainage inlets and pipes shall be designed for a minimum of a 25-year storm flow.
- 29. Finished floor levels of equipment buildings, residences, etc. shall have a subminimum elevation of two feet above adjacent 100-year storm flow surface eleva-
- tion, or more where deemed necessary by the Santa Barbara County Flood Control Engineer.

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- 30. All drainage improvement design shall comply with standards of the Santa Barbara. County Flood Control Department and shall be approved by the Santa Barbara-County Flood Control Engineer.
- 31. The original and two copies of approved drainage plans and specifications shall be furnished to the Santa Barbara County Flood Control Engineer before construction begins, or when the above is furnished to the County of Santa Barbara, Department of Transportation, one set of sepia reproductions of the approved plans and specifications shall be furnished to the Santa Barbara County Flood Control Engineer.
- 32. The Santa Barbara County Flood Control Engineer shall receive notice in writing at least 24 hours before the start of construction of drainage facilities.
- Fire Department: computed and Clause to activation and antication of the second sectors of the list of the second se
- 33. The owner/operator shall fund one additional fire protection specialist position full-time in the Santa Barbara County Fire-Department to monitor, review, and evaluate the famility and systems during design, construction, activation, and operational phones of the fact only through the six (6) month period after startup.
- 34. The owner/Operator shall submit fire protection systers plans to the Santa Barbara County Fire Department for approval. These systems shall include, but not be limited to, an integration of subsystems of detection, prevention, suppression, and loss mitigation.
- 35. The Santa Barbara County Fire Department shall plan check and review the proposed fire protection systems using the Uniform Fire Code, Standards of the National Fire Protection Association, the Insurance Service Office, and other nationally recognized fire safety standards. The latest of all applicable codes shall be used. The owner/operator shall allow the Santa Barbara County Fire Department to constantly review the facility during construction and operation and make reasonable requirements resulting from changed conditions or state of the art advances.
- 36. There shall be at least one employee of the owner/operator on duty at the facility at all times after activation, whose primary responsibility shall be fire safety inspection, prevention, and suppression.
- 37. The Santa Barbara County Fire Department shall be a member of the ING Risk Management Group of the CPUC during this project.
- 38. The Santa Barbara County Planning Commission recommends that the CPUC, or its designated agent, use the Mission Research Corporation General Conditions, dated

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Page 6 of 51 Condition \$38, continued; March 16, 1978, as a reference document; and that the Santa Barbara County Fire Department be designated the CPUC's agent. Environmental Realth:

in a state that the state of the second state of the second state of the second state of the second state of the 41. a) A sound level monitoring program shall be established and supervised by a qualified acoustical consultant.

b) All sound level monitoring expenses both for baseline data acquisition as well as subsequent monitoring shall be borne by the applicant: while a well as

c) Prior to construction, sound level monitoring shall be established on the perimeter of the Southern California Edison Company property by a qualified acoustical consultant, approved by the State or Santa Barbara County Health Department, to determine baseline ambient sound levels. The scope and timing of said study shall be submitted to and approved by the State or Santa Barbara County Health Department.

d) All equipment during construction activities shall be designed, constructed, operated, and maintained so that sound levelsinherently and recurrently generated. by or resulting from any use operated on the property when measured at the perimeter of the Southern California Edison Company property shall not exceed the following exceedance levels set forth in the California Office of Noise Control -Model Noise Ordinance.

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e) During operation, all equipment shall be operated and maintained so that sound levels inherently and recurrently generated by or resulting from any use operated on the property when measured at the boundary of the Southern California Edison Company property shall not exceed pre-project ambient sound levels as determined by initial baseline monitoring.

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f) The scope of all sound level surveys will be submitted to the State or the Santa Berbers County Health Department for approval and shall be approved prior to implementation.

- 36. ಹಿಸಿದರು ಮಾಡಿದಿ ಹಿಂಬರಿ ಮೊಂದು ಕಾನ್ ಬ್ರಾಂಪಿಕ್ರಾಯ ೧೯ ಹೆಜ್ ಕಾನಾರ್ಪ್ ಕ್ರೋಟ್ ಕ್ರಾಂಟ್ ಮಾಡ್ ತೆಡಿದ್ದು ಕಾನ್ ಹಿ se clade goblickeragior receired socke cassistera reche conje clas or roblica notopongue and contracted contracted to be out
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"L₅₀ is the sound level which shall not be exceeded more than 50 percent of the sample time period (i.e., 30 minutes out of each hour.)

*I, is the maximum allowable sound level and shall never be exceeded.

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Condition \$41, continued:

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g) Prior to construction, quarterly sound level surveys shall be performed at the Southern California Edison property boundary at locations reviewed and approved by State or by the Santa Barbara County Health Department. h) During operation, quarterly sound level surveys shall be performed at the Southern California Edison Company property boundary at locations reviewed and approved by the State or Santa Barbara County Health Department.

i) Additional sound level investigation shall be performed as required by the State or the Santa Barbara County Health Department and said agency shall conduct such sound monitoring investigations as it deems appropriate.

j) The quarterly sound level nonitoring program may be changed to an annual one with the approval of the State or the Santa Barbara County Health Department after said agency has evaluated sufficient information that is representative of the actual project noise conditions.

k) All monitoring activities shall be subject to inspection and all records of monitoring activities shall be available for inspection by the California Public Dtilities Commission upon request, and developers shall submit the result of such monitoring activities quarterly to the California Public Utilities Commission. and the State or the Santa Barbara County Health Department.

42. a) A potable water supply shall be developed on the property to serve the project with demestic water and a demestic water supply permit shall be obtained by the owner/operator pursuant to California Health and Safety Code, Section 4011. A well drilling permit shall be obtained from the County of Santa Barbara pursuant to local ordinances. To minute to is the second standard of moint

- (1) Demestic water shall be available on the site during the construction phase as well as after the project is completed and in operation.
- (2) Demestic water well (s) construction shall be in accordance with standards set forth by the Department of Water Resources Bullctin No. 74, "Water Well
- (3) Donestic water well development and test pumping to determine capacity of water source(s) shall be performed by a California Registered Civil Engineer, Registered Geologist, Registered Engineering Geologist, or licensed well drilling contractor. He shall also certify that the results of this testing show the supply to be adequate to serve the proposed development.
- (4) Domestic water well system facilities shall be designed by a licensed engineer in accordance with "California Safe Drinking Water Act" (Health and Safety Code, Section 4010, et. seq.), relating to Domestic Water Supply, and all administrative regulations adopted pursuant to this act.

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Condition 42, continued:

- (5) Detailed engineering plans and specifications shall address the adequacy and appropriateness of the source(s), system capacity, storage treatment, distribution, and cross connections protection. The system plans and specifications shall be reviewed and approved by Santa Barbura County Public Works and Lealth Department officials then appropriate.
- (6) Installation of the system per approved plans shall be under the design supervision of a licensed engineer.
- (7) Chemical and bacteriological testing shall be done by a State approved domestic water testing laboratory to insure that the water supply developed is suitable for drinking purposes.
- (8) If water is to be hauled in for demestic use during construction, procedures and equipment shall be reviewed and approved by Santa Barbara County health officials.
- (9) Prior to construction, a complete hydrological evaluation of domestic groundwater availability shall be made by an independent consultant, and submitted to the California Public Utility Commission and the County of Santa Barbara. Investigation shall include evaluation of impacts upon surrounding consting groundwater usage and the effect upon this supply with continual pumping for this project.
- (10) Prior to construction, a long-term pump test in excess of two to three months shall be conducted by a registered civil engineer or licensed well drilling contractor to determine long-term availability of groundwater to the proposed project.
- (1) Prior to construction, a detailed analysis of project water denends both for construction and operation shall be completed. Analysis shall itemize specific types of water use proposed for the donestic supply throughout the plant. (Current preliminary evaluation of potable water usage is felt to be seriously inaccurate.)
- 43. Food handling facilities construction, operation, and Maintenance, Noth during plant construction as well as after the facility is in operation, shall comply with all applicable provisions of the "California Restaurant Act" (Mealth and Safety Code, Section 28520 et. seq.).
 - a) All plans and specifications for food service shall be reviewed and approved by the Santa Barbara County Realth Department.
 - b) Food service facilities shall be routinely inspected for compliance with all provisions of "California Restaurant Act" by the Santa Barbara County Health Department.

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- 41. Sewage and wastewater shall be disposed of in a sanitary manner which neither and endangers the public health, degrades in any way the groundwater supply, or the creates a public nuisance condition.
 - a) Sanitary facilities during construction of the plant shall provide for the confinement of all new sewage and wastewater underground, either by conventional subsurface effluent disposal or by portable chemical toilet facilties which are pumped daily and the waste is subsequently delivered to a permitted durping site:
 - b) For the permanent sewage plant facility, all wastewater discharge shall be in compliance with discharge requirements to be issued by the State Water Resources Control Board pursuant to the California Water Code
- 45. Solid waste collection and disposal, both during construction of the plant as well as during its operation, shall be in a safe sanitary manner. 10 1042 000000
 - a) Solid waste shall be removed to an approved disposal site issued a permit pursuant to Government Code; Suction 66700; et seq., Solid-Thate Solid That Management and Resource Recovery, and California Administrative Code,
 - . . Spotion : 17041,7 etc. seq. , 2000 is stored as a calcalle as a constructed with red as the point
 - b) Solid waste disposal shall be accomplished on site subject to all rules and regulations set forth under the above mentioned statutes and regulations, and a solid waste disposal permit shall be obtained from the local jurisdiction.
- 46. An on site disaster plan shall include provision for prevention and correction of environmental health hazards resulting from disasters and shall address water supply, sewage disposal, food service, shelter, vector control, and refuse disposal, and shall be reviewed and approved by the Santa Barbara County Health Department officials.
- 47. Santa Earbara County Health Department officials shall routinely inspect and evaluate fool operations, demestic water system, noise monitoring program, and solid waste disposal facilities, and shall report findings to the permitting agency.

¹ The Second Restance Optimity Scaled of Septementation was unconverted to a second of position that transportantion to the RNS after secondate and employees to the Southers Realise radiation from the the Despon Vallay spare. This was will be an estimation of Collars Seconderation of a most and will halp to makeder the memory as and as colletted to the secondary of the second and will halp to makeder the memory as and the second the secondary of the second and will halp to make the second as and a second the secondary of the second and will halp to make the second as and a second to the secondary of the second and and the second as a second

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Board of Supervisors, Tanks - Contractor to the complete of Minister and the second and a particular the

48. The CPUC shall require that the ING storage tanks be emplaced below the ground level of the facility so as to have the upper portion of each and every tank? protruding from the GROUND level of the facility not more than fifty feet. This fifty-foot portion of the storage vessel shall be surrounded by a gently sloping, softly contoured structure (natural soil) so as to round off; and otherwise blend as much as possible, the tank lines with the natural land forms.

The purpose of this condition is to mitigate the visual impact, incorporating Section 30251 of Coastal Resource and Management Properties: The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting."

This configuration of recessed tank and a berned backfill shall not compromise the safety of the facility. The intent is to provide for spill safety and minimize sabotage. The color set is to be a set of a start of the set of a start of the set

Board of Supervisors, ING Site Access

49. The Southern Pacific Company shall provide railroad passenger and freight service to WilNG on their present line. There is adequate siding capacity at the Ionpoc Valley spur.

There is no acceptable road access that does not have major negative environmental impacts, either to coastal resources or to the Jalama Valley. Any improved road will become a major inducement for increased industrial and other urban growth throughout the Point Conception area.

The Santa Barbara County Board of Supervisors has unanimously taken the position that transportation to the ING site for materials and employees be by Southern Pacific railroad from the Lompoc Valley spur. This will save millions of dollars from construction of a road and will help to maintain the remoteness

APPENDIX E Page 11 of 31

The start to the second

of the site after construction is completed. We ask the Coastal Commission to join with us in requesting the POC to request and/or require the railroad to provide passenger service to this site, at least during the construction stat

The applicant has proposed to improve the Hollister Ranch road and but their construction workers to Gaviota where a parking lot will be provided. This route will have a disastrous effect on Southern Santa Barbara County where the rental vacancy factor is minimal and much of the area is under a building moratorium. The applicant has made no arrangements for housing the workers (1,650 workers at peak construction) during the 44-month construction period. Approval of the railroad access will put the major burden on Lompoc and other North County areas, where the housing situation is less acute.

The proposed improved Hollister Road also will severely impact Gaviota-State Park and cause a hazardous situation at the on-road crossing at Highway 101.

Longon is easily serviced by road and rail. It can accomposite these we retrivities. Johns-Manville and VAFB have not experienced supply access diffiby dive apply of the assimption of a self of the metallic destance of the second of the second of the second provedition of the contractor and fails with receiver to be a first second of the second provedition of the second of the second of the second of the second of the contract of the second second the second of the second of the second of the second of the second the second of the second the second of the second the second the second of the second the second the second of the second the second the second of the second of the second the the second of the second of the second the second the second of the second the the second of the second of the second the second the second of the second th

13., IN the spat apparent rows in the state any period of William Terms (Downsey), which will not the state the state apparent of the state apparent of the state apparent of the state of the state apparent of the state of the

a) The egoliceum shall such makes investor the petition of Willer Cold an one of the transformation of a state of the second state of the secon

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E CONSTRUCTION APPENDIX E Page 12 of 31

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- 51. Obtain an Incroachment Permit from the Santa Barbara County Transportation Department for installation of the pipeline at all locations within Santa Darbara County road rights-of-way. The permits will show location of pipe and depth of cover, as well as identify detours where necessary. ساريد اليودريون الداهياتية والعم العالي در العالية المحمد (تدارية المارية ال
- 52. If the road access route is via the Hollister Ranch, and Gaviota, the following conditions shall apply:

a) The applicant shall either improve Gaviota Beach Road (County) between U. S. 101 and a point south of the concrete summer crossing to all weather conditions and a safe width, or shall enter into an agreement with Santa Barbarz County to maintain and assume all liability and responsibility for the road and any personal injury and property damage occurring thereon or in the connection therewith, until the ING plant is in operation. ی ہے۔ مسیر کی دیکھی کے ا

b) The applicant shall satisfy the California Department of Transportation regarding providing a safe entrance and safe exit between U. S. 101 and Gaviota Beach Road during the construction period of the ING plant. Conditions may require closure of the center divider, thus requiring traffic from the south to use the U. S. 101-State Highway 1 Interchange, construction of an interchange, relocation of the connection of Gaviota Beach Road, or some other improvement.

53. If the road access route is via any portion of Jalama Road (County), the following condition shall apply:

a) The applicant shall either improve the portion of Jalama Road to be a part of the access route to a safe standard of grade and alignment, as well as adequate geometric and structural standards to the approval of the Santa Barbara County Department of Transportation prior to use as the access route, or shall enter into an agreement with Santa Barbara County to maintain and assume all liability and responsibility for the road, and any personal injury and property damage occurring thereon or in connection therewith, until the ING plant is in operation.

54. The owner/operator shall develop a "Staging Area and Parking Plan" for the various staying areas.

Public Works:

55. The LNG facilities shall be designed to withstand, without interruption of service, a design maximum earthquake of Richter Magnitude 7.5 using a bedrock acceleration-time history with a muximum peak acceleration of at least 0.69, and occurring on a fault three miles from the site, or a greater distance if
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Condition \$55, continued:

the causative fault is found to be located at a greater distance.

- 56. Owner/operator shall submit to the Santa Barbara County Department of Public Norks a grading plan and complete surface drainage plan of all roads and build. areas; said grading plan to show method and degree of compaction and proposed method of stabilization of exposed slopes; owner/operator to plant and maintain all cut and fill slopes, said maintenance to be continued until the project is completed.
- 57. All grading shall comply with all applicable provisions of the Santa Barbara County Grading Ordinance \$1795.
- 50. A complete geological report of the area prepared by a qualified engineering geologist will be required prior to construction. Said report shall include a complete description of the geology of the site and conclusions and recommendations regarding the effect of the geological conditions on the proposed development. Said report shall be filed with the Santa Barbara County Department of Public Works.
- Public Works. 59. A preliminary soils report of the area, prepared by a civil engineer experienced in soil mechanics and slope stability and registered by the State, will be required prior to construction. Said report shall invlude data regarding the distribution, stability, and expansive nature of existing soils and conclusions and recommendations for grading procedures and design criteria for corrective measures. Said report shall be filed with the Santa Barbara County Department of Public Works.
- 60. The project soils engineer shall certify to the Santa Barbara County Department of Public Works that all underground utility trench backfill has been sufficiently compacted to prevent settlement and encoion prior to project completion.
- 61. Supervision The engineer responsible for the design shall exercise supervisory control during the grading and construction operation to insure compliance with suproved plans.
- 62. Approved crossion preventative devices shall be installed prior to November 1st, and shall be maintained on the site through April 15th of the following year.
- 63. During the actual grading process, a registered engineering geologist and registered soils engineer shall provide sufficient inspection to determine that conditions of their pre-grading reports are followed, and if unusual conditions are encountered during grading they shall submit grading recommendations for change of plans to the project engineer and to the Santa Barbara County Department of Public Works.

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- 64. Out slopes shall not be steeper than 1-1/2:1 nor fill slopes steeper than 2:1 unless certified to their stability by the project soils engineer and engineering goologist. Whenever possible, the top and toe of slopes shall be rounded to produce a contoured transition with the natural ground, and all slopes shall be sprayed with hydro-mulch to provide fast growth and reduce erosion.
- 65. The materials for road construction shall meet the requirements of the California Department of Transportation Standard Specifications and Standard[®] Plans of current date.
- 66. The main access road shall be designed to conform with the California Department of Transportation Highway Design Manual of current date and shall consist of two 12' wide travel lanes. Interior roads shall have a minimum pavement width for two 12' travel lanes for 2-way traffic and one 15' travel lane for 1-way roads.
- 67. Design of all road improvements to be constructed as part of this development shall be performed by a Civil Engineer registered in the State of California:
- 68. A registered civil engineer or licensed land surveyor shall certify, in writing, that all curbs, cut and fill slopes, drainage facilities, and other related road work have been staked in the field in accordance with the approved plan and profile drawings and that they are built according to the approved plan standards.
- 69. Bydrologic studies indicating drainage flows to be anticipated from the entire watershed within the project shall be submitted to the Santa Barbara County Department of Public Works for review and approval. Detailed hydraulic studies of storm water runoff to be carried in each readway shall be submitted by the engineer for approval. The amount of storm water runoff to be carried in a read section shall be computed on a basis of a ten-year frequency storm. Special drainage facilities shall be required when the capacity of the read section has been reached. The drainage facility designs shall be submitted to the Santa Barbara County Department of Public Works for review and approval.
- 70. The final design plans for the proposed ING terminal, pipeline system, utility facilities, and access roads shall be submitted to the Santa Barbara County Department of Public Works for review and approval prior to construction.
- 71. The pipeline right-of-way and construction access roads should be located a reasonable distance from known landslides, and consideration should be given to the possibility of stabilizing existing slide areas which cannot be avoided and which could pose a significant threat to the pipeline.
- 72. The owner/operator shall contact the U.S. Soil Conservation Service (SCS) to determine the proper means to control erosion and revegetate the proposed rightof-ways for the pipeline system, temporary construction areas, utility facilities, and access roads. If periodic inspections of the completed right-of-way reveal

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\$72, continued:

that revegetation and/or erosion control measures have not been successful are seeding and other measures recommended by such agencies should be accomplished.

Air Pollution Control District: 73. Conditions for control of furthing disc because and and any for any for the state of t a) The scheduled watering of grading areas dependent on weather and working.

worditions. b) Scheduled oiling of access roads and work areas, dependent on weather and working conditions. These conditions can reduce dust emission levels roughly 30-70 percent. Provisions for this measure will be included in the gradingOpermit. c) Conditions for control of vehicle emissions to and from work areas should consider options such as require transport buses. This would eliminate some 25,000 vehicle miles traveled each work day:

The applicant shall submit to the CPUC a plan for transporting workers from varion sites in the County in the LNG site. This will eliminate 25,000 vehicle miles travelet each day Witcout this condition, NO emissions will be produced on the order of 17.5 Lbs/hr., seven days a week. 74. Ships in Port (Leaving and Entering): Conditions for control of transport emissions distate that ships must use 015 percent sulfur content fuel or less, to avoid violations of the California State

ambient air quality standards and district rules for land-based sources. Ships using 3 percent, 2 percent, or 1 percent sulfur fuel would be in violation. Applicable under Coastal Act, Public Resources Code, Sections, 30253(3) candida 30263(b).) 30263 (Б).)

75. Heating Process to Gasify the ING: Conditions for control of gas turbine emissions must utilize a Water Injection System" (EPA-North Carolina) for NO reduction. This system constitutes the (= best available control technology. It will assist in the attainment of the State one hour NO, emission standard of .23 ppm. Two of the three 35 megawatt turbines will be in constant operation for plant power. As designed, the turbines will cause violations 133 hours per year. Emission reduction which may be expected with water injection are on the order of 70 percent and, even with this reduction, air quality impact analysis must be performed. Requirements for gas-fired 3 vaporizer and trim heaters shall be conditioned to use "Selection Catalytic" Reduction System" (Southern California Edison-Environmental Department) for best available control technology. This system is presently used in Japan for natural gas burning apparatus, and is regarded to reduce $\mathtt{NO}_{\mathbf{x}}$ emissions by approximately

APPENDIX E Page 16% of 31 71 J. C. A. F.

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Condition \$75, continued:

90 percent. If the gas-fired vaporizer and trim heaters are not conditioned for NO, control, they will produce on the order of 9.24 lbs/hr and 8.47 lbs/hr, respectively. These emissions are in violation of the 5 lbs/hr limit passed by the New Source Review requirements, and these emissions would also require air 🛫 quality impact analysis data submissions. (Applicable under Coastal Act, Public ... Resources Code Sections 30253 (3) and 30263 (b) .)

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76. Air Sonitoring System:

Conditions include the implementation and operation of an ambient air monitoring program. Monitoring at two locations will begin one year prior to commencing. plant operation and continue indefinitely. Pollutants measured for SO, NO, NO, ND, TSP, SO,, and ozone, meteorological parameters will include wind speed and direction and atmospheric stability (Delta temperature). Collection of ambient air quality data will document any significant deterioration of the atmosphere and insure the maintenance of ambient air quality standards.

a) The monitoring program shall consist of the monitoring locations, operation and equipment maintenance program, and reduction of data. One site shall be located approximately 2-1/2 miles downwind within the isopleth of the maximum impact area. The second site will be located near the Gaviota store for further Commind analysis. Final site determinations shall be subject to Air Pollution ాని 25 చెమ در میار جاریش از دیشت ایران مدیر ایما ایران ایسان با Control District's approval. ಕ್ಷೇತ್ರ ಕನ್ನ ಪ್ರಿಲೆಕ್ಷಿ ಶ್ರೇವಿ**ಕಿದರು** ಜುಗಿಮಿಂ ತಿಗುಣ್ಣಾ**ರಿದ್ದ**

b) The following lists the parameters measured at each site: lst site (2-1/2 miles from source): SO₂ SO₄, NO, NO₂, NO₂, TSP, Wind Speed and Direction Direction the stand of the South Stand a la companya adaptinga

2nd site (near Gaviota store): SO2, SO4, NO, NO2, NO2, TSP, Ozone, Wind Speed and Direction, Atmospheric Stability (Delta Temperature) and the second secon

c) All monitoring equipment must be housed in temperature controlled structures (3.0c) in contractions out that denote the end of a reason of the second s ್ ಸ್ಟ್ ಮಿಂದ್ ಎಂದಿ ಮಾಡು ಸೇವರಿ ಸೇವರಿ ಮಾಡಿದ್ದರೆ. ಬಿಂದ ಮಾಡಿದ್ದರೆ ಸಂಗ್ರೆಯಿಂದ ಮಾಡಿದ್ದರೆ ಸಂಗ್ರೆಯಿಂದ ಮಾಡುವುದು ಸೇವರಿ ಮಾಡ

d) All air quality, neteorological, and data reduction systems must use instrumentation approved by the Santa Barbara County Air Pollution Control District before installation. we are a manage inter the same

e) Data shall be recorded continuously on both strip chart recorders and magnetic tape data acquisition system compatible for play buck on Santa Barbara County Air Pollution Control District's data reduction equipment.

f) Reduced data also will be supplied to Senta Barbara County Air Pollution. Control District and the California Air Resources Board (CARB) on standard CAFB. monthly data form, TSD-1 (4/77), no later than 14 days after the end of each Newsara and as a the state of the state of the state of د میں کا در دور میں مرکز ا

APPENDIX E Page 17 of 31

Condition No. 76, continued:

nonth of monitoring for all gaseous parameters. Particulate and sulfate datas shall? be delivered no later than six weeks after each month of monitoring on CNRS 2.2 Form TSD-3 (4/77) accordence or issue or encloses with the lock of the particular of the se

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g) Magnetic tape cassette recordings of all pollutant and meterological data : be delivered to the Santa Barbara County Air Pollution Control District no late than 14 days after the end of each nonth of monitoring for transcription of data and on the Air Pollution Control District's playback equipment. Strip chart recordings will also be delivered to the APCD at the same time. The pollution exclosion h) All data collected will be considered public data and available for public inspection or deplication. Second control public data and available for public.

i) Operation and maintenance of the monitoring program shall be conducted by an professional individuals or contracting firms with a minimum of three years dood direct field experience in the use of air guality and meteorological monitoring instrumentation. A resume of vork experience shall be supplied to the Santable Barbara County Air Pollution Control District upon request for any individual the directly involved in the monitoring program. Severy of sold to action include

j) A documented quality assurance plan must be submitted to the APCD for approval 30 days prior to the beginning of ambient air monitoring. The quality assurance plan shall conform to the requirements of the SEAPCD, California Air Resources board (CARB), and the United States Invironmental Protection Agency for the operation and maintenan-e of an ambient air monitoring program.
k) Calibration of equipment shall be conducted on all sensors and data reduction equipment in a manner and at intervals specified by the SEAPCD, Records of all dynamic calibrations shall be supplied to SEAFCD no later than seven days after each calibration.

1) The SEAFCD and CARB staff shall have immediate access to both monitoring locations for either inspections or auditing the air monitoring program. m) To insure that all data collected is reliable and valid, the ambient air monitoring program must follow the g ality assurance plan approved by SEAPCD and CARB. This plan must include submission of site criteria to CARB and designation of ARB site numbers for each monitoring location to allow data to be filed in the ARB data bank.

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Air Pollution Control District (Cont.)

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77. Applicant will meet all requirements of New Source Review as required in Rules 9.1 of the Santa Barbara County APCD and all other rules and regulations will apply to the project, including equipment used during construction. Including equipment used during construction.

Board of Supervisors, Supply of Electrical Energy Needs

78. All electric power utilized by the facility shall be produced onsite provided that offsite electrical power may be permitted when the facility reaches an operative capacity of 0.9 BCF/D if applicant conclusively demonstrates at that time or no sconer than two years prior to that time both of the following:

a) Depansion of the gas turbine generating capacity is impractical or will be unavoidably result in unacceptable levels of air pollution under then-current best available control technology and standards, and or including without limitation of power systems and solar and wind power generation) is feasible at the following time such capacity is reached.

Transmission of offsite power to the site, if permitted under the above, shall be by means of underground lines at all places visible from within the incoastal zone as defined in Section 30103 of the California Public Resource Code.

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Planning Department, Environmental Monitoring Conditions States (1996) March States

- 80. The applicant shall compensate for losses to maxime resources, preferably in as meanly a location as possible. Compensation measures may be worked out with the Department of Fish and Game. The extent of the program shall relate to the level of impacts and may vary from year to year. The program shall continue throughout the life of the project, including construction, operation, and decommissioning of terminal and facilities (P.R.C.S 30230, 30231).
- 81. As part of the environmental monitoring program, and in conjunction with replanting of graded areas, native species shall be used which are viable, given existing site characteristics. Replanting and reseeding shall be part of a total landscaping program designed to mitigate the impacts of the facility on coastal visual resources (P.R.C. § 30240, 30243, 30251).

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Lanning Dept., Env. Monitoring Conditions, cont.

- 82. To the maximum extent feasible, construction material shall be transported to the site by rail, from terminal pickup points in major collecting areas at distant Tailheads.
- 83. No permanent or temporary dwellings shall be built or installed on the site for residential use other than those needed for construction-related activity, such as those for former, supervisors, or vatchment at an including solution of it
- 84. If a need arises for terporary housing of construction workers, or local recreational vehicle comprounds become adversely impacted through use by con-20 struction workers for temporary residences, the applicant shall obtain County. approval for developing locations for temporary trailers or RV facilities.
- 85. The applicant shall provide the Santa Earbara County Planning Department with (information on the origin and temporary and/or permanent location of employees, both construction and a generation. This information shall be transmitted scrie 135 annually during constitution. The contribute molester was and there dies
- lanning Department, Construction and Operation
- ೆ ಗೊಡಿಸಿದ್ದ ಎಂದು ಸಿನ್ನಿಂದಿ ಬರಿಸಿದರು. ನಜ್ಞದೆ ವಿಶ್ವ ರಾಜರಾಗಿ 6. Surface water which accumulates or flows onto the area of proposed development. shall be intercepted in non-erodable devices and channeled either to the ocean or Canada del Cojo. No drainage shall be allowed to spill over natural or graded slopes, or coastal bluffs (PiRiC. S. 30253 (2)). - State of the state
- 87. Equipment for the cleanup of petroleum and other hazardous products, togethere with equipment for deployment, shall be placed in appropriate locations to him: handle bunker oil, diesel fuel, and other hazardous substances spilled during construction and operation of the facility. Disposal of oil vastes shall be in accordance with the existing County Petroleum Ordinance (No. 2795, \$ 30232, P.R.C.)
- 88. Upon obsolescence or termination of optration, the terminal shall be decomp missioned, all equipment and materials removed, including trestle, pipelines 19 19 19 within the site, and electrical transmission towers on-site and off-site, and the site restored to prior condition. The public utilities to receive gas from the terminal shall agree with the CPUC to guarantee performance of this condition. The set of Will year of the sectors we read a from the solutional sector added at
- 9. Prior to operation of the facility, developer shall remove or cause to be removed all shove ground, man-made junk and debuis located on the property of the
- 90. The width of the pipeline right-of-way shall be subject to the following con-ditions:

Planning Dept., Construction & Operation, continued:

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CONTRACTOR DE DECTRAM

\$90, continued:

- a) If production capacity is not expected to exceed 900 MILTO within five years, one 34" pipeline shall be installed. The width of the right-of-way shall not exceed 100 feet during construction and 50 feet during operation.
- b) If production capacity is expected to exceed 900 ingro within five years, the proposed parallel 34" pipeline shall be installed during the initial construction period. The state active set of a state and and and interesting
- c) If the parallel pipeline is installed, either initially or at some later ---75 feet during operation. The of second a second classer group with the large of
- 91. a) During construction of the pipeline, use of ground equipment and material storage shall be restricted to the prescribed right-of-way. "" is a set in the prescribed right-of-way.""
 - b) Sidecasting of soil shall be restricted by the removal of excess soil to any it
 - c) The use of herbicides shall be prohibited. The states of the states of main and main and the
- 92. Any subsequent repair operations shall be subject to the same operational, soil treatment, and revegetation conditions originally applied. There a construct a construct of the second s

Board of Supervisors, Visual, Lighting, and General Liability control data

- 93. With storage tanks partially undergrounded, as herein specified, all other and above-ground structures and equipment shall be completely screened from a literation direct observation from any point on the ground surface within ten miles of the facility by suitable maintained dense landscaping and shall be painted accur to achieve the maximum campuflage possible during the period prior to full maturity of the screen planting. الم الما المالي المراجع من وحال معلمهم والمعد المراجع معالي المراجع من المراجع والكرام من المراجع . المحاصر المراجع المالية المالية المراجع من المحاصر المحاصر المراجع المراجع المحاصر المراجع .
- 94. No been of exterior lighting originating in the facility, including the marine facilities, shall be directed toward adjacent areas without intermediate obstruction. Night lighting of any kind shall be restricted to that required for 1) construction activities, and 2) essential safety lighting during operations.
- 95. The owner and the operator of the facility, including the individual purtners of Western ING Associates, shall be jointly and severally liable without regard to fault for all legally compensable damages or injuries suffered by any proparty or person located outside the exterior boundaries of the property included in this application that result from or arise out of any UNG gas or water and spillage, fire, explosion, odor, or air pollution, within the said facility. For the purpose of this condition, the "facility" shall be deened to include the marine facilities, the gas handling facility, all pipeline and transmission fatisties to and from the property, and all vessels, regardless of ownership

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Condition 95, continued:

or control, transporting or designed to transport or otherwise used in connection with the marine operations, while located or operating within three miles of the shoreline. Mis condition shall not inure to the benefit of any of the owner: of the Western LNG facility. This condition simply imposes or preserves stuic liability for ultrahezardous activities, defines the facility and activities t which it is applicable, and defines the entities that are participants or beneficiaries in the ultralazerdous activity, and otherwise, the extent of this activity and strict liability and the limitations upon it shall be governed by the applicable and law of California on strict liability.

Department of Environmental Resources - INS Ship Safety and bails out of gradeness of

- 96. Collision Avoidance System (CAS) The ship shall be equipped with a modernation Collision Avoidance System to provide rapid indication of potential collisionthreats and free the bridge crew from the time-consuming task of radar plotting.
- 97. Anereneter The ship shall be equipped with an anereneter to provide wind "" speed and direction information to the bridge. This information will be necessary for docking and to ensure that docking is not attempted under conditions outside the specified operational envelope. الار ما الروم المحمد الم المعلم المحمد ال المحمد المحمد
- 98. Rate of Turn Indicator The ship shall be equipped with a rate of turn indicator to read out at the steering stand for use by the helman and at a second appropriate place on the bridge for use by the Master/Pilot. This indicator will assist in maneuvering and docking the LNG ship. أواركت شرور المشار
- 99. Docking Velocineter If it is not provided on the pier; the ship shall be ---equipped with a direct reading bridge glossometer or similar instruments that displays the velocity of the how and stern (separately) to and the pier. This will assist in preventing too high a lateral velocity of the ship into the pier 200

- 100. Range Markers The terminal shall be emigred with a set of range markers dofining the initial approach to the pier. One marker at the end of the trestle - and a second on the mainland, properly aligned. Second on reactor which our
- ا مربعه این الم معرفی الا معرفی میکند. از معرف این از میکند در این از معام در این از مربعه این از مربعه این از مسافله این الم معام معالی میکند میکن المولید این از این این این این این این از معام در این از ماند میکند و این 101. Bubys - A buby shall mark the location of the reported rock (hazard to navigation) at longitude 1190 20.5' latitude 340 24.4'. This reported rock is at a depth of four fathons and must be avoided by ING ships. At least the buoys shall mark the southern-and western-rost extremes of the field of subwarged well-heads in the vicinity of the offshore oil platform (Herran). These wellheads are at a depth of 6% fathous and shall be avoided by ING ships. No other buoys marking the approach to the dock are recommended, since they could became a hazzrd rather than merido assistance.

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DER LIG Ship Safety, continued:

102. Lighting of the Pier - The entire trestle and pier head shall have shielded. lights not directly visible from the land side. These lights shall be in operation at night and under all conditions of reduced visibility. Decept for actual search purposes, spotlights or floodlights pointing seaward shall be avoided. An occulting, distinctive-colored light on top of the control tower is recommended to serve as a navigation aid for ships not yet in the docking approach. Jourse

- 103. Weather Instrumentation The control tower on the pier shall be provided with an anenometer for direct onsite reading of wind speed and direction to assist in determining if the wind conditions at the pier are inside or outside the specified operational envelope. Solidate quant and - Salar restrict secalized and all
- ್ರವಾ ಕಾರ್ಯವರ್ಷ ಅವರಿ ವರ್ಷದ ಮಾಡಿದಿಂದ 104. Visibility Measurement - The control tower shall be provided with equipment and a procedure for determining if the visibility conditions at the pier are inside or outside the specified operational envelope. Tarking a series of distances along the trestle to be visible from the control tower would be adequate.
- 105. Swell/Nave Measurement The pier shall be equipped so that wave and swell beight, direction, and period can be measured to determine if the ocean water conditions are inside or outside the specified operational envelope. This may be accomplished by visually observing the wave and swell action against a marked piling. I a state and the second set of the state of the second second second states and
- 106. Radar The control tower shall be equipped with a surface search radar with a 15-to 20-mile range. This radar shall be operated when an ING ship is in transit as soon as it is within range water would be bare or door more it . How warding

Procedure mitigating necoures involving the approach route, communications, and the docking operational envelopes of solar the approach route, communications, and the

- 107. During its approach to the vicinity of the trestle, the ING ship shall attempt to communicate with all other vessels within (or potentially within) its path and inform them of its intentions. It is recommended that the control tower on the pier attempt to communicate with vessels with which the ING ship may interact and inform them of the ship's intentions.
- 103. The ING ship and the site shall mutually confirm, by use of their radars and communications, all vessel traffic with which the LNG ship may interact. This procedure, particularly under conditions of limited visibility, will, in effect, be a vessel traffic service for all UNG ships during their approach and departure.
- 109. The site control tower shall also advise the ship of mosting and forecasted weather conditions and, in general, evert a positive role over whether and under

APPENDIX E Page 23 of 31

- Condition \$109, continued: what specific conditions the ship should proceed to the trestle or wait for favorable weather, sea, or ship traffic conditions. In order for the onshore facility to be able to assume these functions and effectively carry them out, the town shall have sufficient meteorological, navigation, and communications input and/or equipment, including possible linkage with Vandenberg AFB.
- 110. Before operation of the facility, the CPUC shall determine specific criteria for ING ship approach to the pier, for remaining at the doci, and for leaving the berth, and, these shall include visibility, wind speed, and wave beight considerations. These conditions shall be enforced until such criteria are applied to the facility by the United States Coast Guard. in the second
- 111. ING ships using the import facility shall have aboard during each transit from the source to the terminal a person qualified and certified to repair and service all ships' navigation and communications instruments; and have available all supply of replacement parts sufficient to ensure the reliability of such instrurents-and, systems. A latitude france alle le appreisent alle de latitude al silation. Crassi

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- 112. The CPUC shall contract with the State Department of Fish and Game and the State Water Quality Control Board to determine the feasibility of Using a different - Cal seawater exchange and vaporization system from the one proposed and/or less biological impacting procedures in the seawater system. If the use of less chlorine eg. (.01 ppm) or a design using copper-nickel alloy throughout the system (needing no anti-folding chemicals) is found to be environmentally preferable, then the CPUC shall implement such systems and/or procedures by conditioning the permit accordingly (P.R.C. \$ 30231). The provide the second state
- 113. The marine facilities should be designed to minimize interference with longshore sodiment transport (P.R.C. § 30235). n na seren er en seren en ser En ser en seren en ser en seren en seren en ser en seren en
- 114. Applicant shall provide written notif cation to the compercial fishing industry, kelp harvesters, local marinas, and wat launch facilities of the proposed offshore work, including but not limited to the location (s), dates, duration, and type of construction to be performed (P.R.C. \$ 30230).
- 115. The applicant shall develop and implement a public information program to educate the public, particularly the frequent users of the ING offshore project area, of the potential hazards resulting from an ING spill (P.R.C. & 30253) ೆ ನಿಲ್ಲಾನಕ್ಷೇತ್ರದಲ್ಲಿ ಹಿಂದು ಸಿನ್ನೆಯ ಸಾಧಾಯ ಜಾರ್ಯನ್ ಬಿನಿಧರಿ ಎಂದಿ ಇಂದೆ ಹಿಂದರಿದ್ದರು. ಶೆಂದ ಶೆಂದ ತೆಂದೆ ತೆಂದೆ ತೆಂದೆ ಸಿ

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D.E.R., Environmental Monitoring

- 116. Prior to operations, a baseline study will be performed which will encompass all agricultural and native vegetation communities adjacent to the facilities, as measured from the center of the onshore LNS plant at the mean high tide line, up to two miles to the west, two miles to the north, and three miles to the case (statute miles). These communities will be documented in terms of their present distribution, areal extent, and condition by competent scientists approved by the CPUC in consultation with the State Department of Fish and Came. This baseline study shall include the acquisition of color infra-red aerial photography (transparencies) imaged semi-annually during the wet and dry seasons. The area (2623 miles, as above) shall be flown to obtain this photography at a scale of 1:6,000, providing this does not delay the normal time for beginning of construction.
- 117. Prior to full-scale operation, any work that would affect the marine blota in the area, to a distance to be determined by a qualified scientist approved by the State Department of Fish and Game and/or the State Water Quality Control Board, shall be studied. The length of the study period shall be determined by a qualified marine biologist; and shall not delay the correncement of construction
- 112. Prior to operation, the beach area above the mean high tide line and one statute wile to the east and vest of the trestle shall be monitored by competent scientist approved by the California Public Utilities Commission in consultation with the State Department of Fish and Came. This baseline file shall include a permanent photographic record of existing features and conditions associated with the exceed and the beach areas. The intent is not to delay commencement of construction.

119. During startup and subsequent operation of the LNG facility, observations of agricultural and native onshore vegetation shall be made nonthly or seasonably as appropriate, and shall include semi-annual infra-red film, aerial photography at the scale of 1:6,000 taken for a set of areas representative of those plant communities sensitive or as indicators of pollution. The sample shall also be randomized over the baseline study area. This program, as well as appropriate beach and ocean blots monitoring systems, shall continue for at least a threeyear period and thereafter until such time that it is spparent that no serious, recurring problems relating to pollution of the air, water, or land exist. The ongoing marine monitoring program shall include a quarterly sampling and observation by a competent scientific team, of the blots potentially affected by, but not restricted to, the cold water discharge and the sea water intake systems and the LNS tanker and tug and line boat operations, bunker fuel handling and

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- t119, continued:
 - delivery, and the sediment transport caused by the facilities and operations. This monitoring program shall continue for a period of three years and may be reduced to yearly observations only through the decision of the State Department of Fish and Game and the CFUC. In the event that evidence of serious pollution damage is observed which is attributable to the operation of the onshore and/or marine facilities, and due to the nature of the facilities, it can be reasonably espected that the serious pollution could recur, design modifications and/or other appropriate action will be taken to avoid future impacts and eliminate unacceptable impacts. Such actions shall be initiated by owner and operator upon receipt of official notification by the CFUC and a schedule of compliance shall be filed.
- During construction, including grading operations at the onshore site and construction of the marine facilities, qualified soil, animal, and plant scientists shall monitor for evidence of near-site damage to agricultural and native on-shore and marine vegetation and biological communities to determine near-site impacts of heavy construction activities including dust, erosion, turbidity, siltation, and the effects of mitigation measures and conditions required by this permit.
- 121. Prior to construction, the proposed pipeline and power transmission routes shall, be surveyed by qualified scientists approved by the State Department of Fish and Game during the appropriate seasons in order to document sensitive vogetation and wildlife varieties. Pare and endangered species shall be protected from the results of the facility's preparation, installation, and operation by the following: 1) When the proposed route passes through areas of rare or endangered species, the pipeline and/or power transmission route shall be realigned to avoid sensitive species or areas; 2) Both routes shall be reestablished with appropriate mative vegetation; and 3) The latest and most effective means of soil restoration and/or engineering prictice shall be applied to prevent and control erosion and siltation of area. including marshes, streams, and rivers, and other sensitive areas from primary land-altering activities and their secondary results. The pipeline, as well as the power transmission line routes, and adjacent areas up to 250 feet each side of the conterline of such routes where rare or endangered species are known or suspected to exist or use, as well as sensitive areas such as all marshlands, stream, and/or river crossings, are to be appropriately documented by compotent scientists approved by the State Department of Fish and Game. This documentation will be in terms of sensitive species distribution, areal extent, and condition. This baseline study shall include

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1121, continued:

the acquisition of color infra-red photography (transparencies) imaged semiannually at times appropriate to determine the baseline conditions of such areas and species, and which can act as a benchmark against which the future impacts can be judged. This imagery shall be flown to obtain photography at a scale of the 1:6,000. After construction, these areas shall be photographed (as above) yearly, for two years, and ground truth scientific documentation shall be obtained simultaneously with the aerial photo program, to characterize the inpacts of construction. Where impacts can be attributed to the pipeline and/orpower transmission line projects, and where the impacts resulting on biotz and from erosion or siltation can be shown to be feasibly subject to mitigation, date such mitigation will be ordered by the CPUC and a schedule of compliance will be issued to the operator ... A recvaluation of the pipeline and power transmission routes shall be performed yearly, using aerial infra-red photography and ground truth scientific evaluative techniques to determine the kind and degree of environmental impacts for a period of two years. Thereafter, further yearly implementation of the conitoring evaluative program will be applied to these portions of the routes which are suspected to continue to experience adverse environmental impact or where enduring tests of mitigation measures are needed.

122. All monitoring activities shall be subject to inspection and all records of monitoring activities shall be available for inspection by the California Public Dtilities Commission and the Santa Barbara County Department of Environmental Resources upon request, and applicant shall submit the result of such monitoring activities quarterly to the California Public Utilities Commission, and the State Department of Fish and Game.

123. Applicant shall integrate the above monitoring activity into any nonitoring and reporting amangement that may be developed cooperatively by appropriate federal, state, and county governmental authorities.

D.E.R., Cultural Resources

124. The California Public Utilities Commission shall retain the services of a cultural resources manager hereinafter referred to as Manager. This person shall be retained as soon as possible after approval of the INS project, and be held during the entire construction period of both phase 1 and phase 2 of the project and up until one year after the construction and operation of the facility. The Manager shall also act as a liaison with those Federal, State and/or-local

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124, continued:

jurisdictions and Indian people, including representatives and local Chumash and Yokit communities actively involved in the preservation of Heritage sites in the Santa Barbara and Bakersfield areas, and archaeological groups involved in the preservation of antiquity sites potentially affected by the project.

125. The proposed onshore ING facility, including onshore elements of the seawater system, shall be moved from the presently proposed location approximately 2,50% feet to the east or less, but no less than 1,500 feet, if it can be proven that no significant site or site component will be encountered, to avoid disturbing the soil near the ercheological sites near Canada del Cojo, including Site SBa 1502. This determination shall be made prior to the approval of the final siting of the facility.

- 126. Any location of any aspect of the onshore or offshore facilities, including but not limited to the access and pipeline routes, electrical power alignment, storage and metering station locations, etc., which has not been surveyed for antiquities and current cultural resources, shall be so surveyed before a specific and final location for such a post of the project is approved by the C
- 27. Alternative routes of factifics locations shall be adopted by the GOC for sure aspects when cultural desources will be significantly impacted by the proposed locations unless avoidance of sites is determined not to be feasible by the CFUC. When feasible, the CFUC shall bypass cultural resources which will be significant impacted by routes or facilities. The Manager will determine the conditions under which a judgment of "potential significant impact" can be made after the Manager consults with the State Historic Preservation Officer (ShPO), the Native American Heritage (NRHC), and other local Indian and archaeological advisory persons or bodies.
- 123. The Manager shall implement a program for the adequate subsurface ancheological testing for areas of known or suspected cultural resource sites in order to determine proper mitigation only when avoidance of the site is determined not to be feasible.
- 129. The Manager shall consult with and largely, if not fully, follow the recommendations of the local Native American Indians, archaeologists, NASC, and SHOZ, all approval of the final disposition of Native American Indian artifacts on burials, or other types of mitigation in the event that antiquities are discovered during construction activities shall be by members of the Chumash, Yokuts, and other local Native American tribes and groups, and 2) determining those sites or places to be fenced and otherwise protected during construction of the project.

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D.E.R., Cultural Resources, continued:

- 130. The Manager, after consultation with local Indians, archaeologists, SHOP, and the MARC, will develop or cause to be developed a data salvage program, including complete scope of work, materials disposition, information publication and costs, etc., in the salvage of cultural resources and information from the historic village of Shisbolop.
- 131. The CPUC will require that the salvage of Shisholop, under provisions of Condition No. 130 above, will be funded by the applicant and be accomplished within a period of three years after the project has been permitted regardless, of the imposition of Condition No. 125 above, providing that any imposition has been made on the village of Shisholop.
- 132. The Manager will prepare directly or through the assistance of competent consultants, the latter funded by the applicant and approved by the Manager, all salvage mitigation research programs. These programs are to incorporate a sample size which is agreeable in extent by those local area representatives of the scientific and Indian communities, and by the SHOP and NANC. The Manager shall: (1) follow all of the latest scientific procedures for the excivation; analysis, storage, protection, research documentation, and publication of the information and material cultural remains from each salvage site, and (2) shall follow the determination by the members of the Chumash, Yokuts, and other local Native American Tribes and Groups concerning the final disposition of native American Indian artifacts or burials, including other types of mitigation in the event that antiquities are discovered during construction activities.
- 133. Salvage of cultural sites shall be fully funded by the applicant and shall be allowed exclusive of the provisions of Condition No. 125 above; only after all avoidance procedures and other mitigation approaches, such as fencing, and salvage are deemed infeasible by the CPUC.
- 134. The CPUC is requested to require the applicant to grant access to the site to local Native American Indians for cultural and religious reasons with the terms and conditions to be negotilated after permit approval, providing accepted safety practices will not be compromised.

Planning Commission, Pipelines 135. The conditions adopted relate to the pipeline as outlined in the DELR and, if that route is proposed to be changed, Santa Barbara County seeks the opportunity to present additional conditions to the CPVC.

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Public Works

- 136. If there is to be a main access road, the structural road-section shall consist and of the following: "0.33 feet minimum thickness asphaltic concrete. Base and subbase shall be specified in response to the traffic index (T.I.) designated by a registered civil engineer with experience in roadway design.
- 137. If there is to be a main access road from Gaviota State Park or Jalama State Park or any other alternate roadway from existing public highways to the proposed construction area, it shall be designed to not exceed a safe 25 mile per hour travel speed. Reductions in the above standard may be made for good cause when approved by the Santa Barbara County Public Works Department.

Board of Supervisors, Development Rights and Inverse Condemnation

139. Applicant shall purchase, or acquire through eminent domain, development rights for residential uses within a four-mile radius of the exterior perimeter of the plant site to prevent the exceeding of the residential densities permitted under the Public Utilities Code, § 5582. Such rights to include compensation for any dumunition or modification of rights or values presently held or enjoyed by owners of property within such area resulting from the installation or oper-ation of such facility or from governmental restrictions imposed on such properties as a consequence of the existence of operation of this facility.

Board of Supervisors, Inspection and Enforcement Procedures, Fees and Reimbursement

140. a) That Santa Barbara County be granted the responsibility and authority to conduct all inspections and enforcement procedures normally permitted for any other project; and that the County of Santa Barbara be paid normal fees as for any other project.

b) That special studies and overseeing of conditions being conducted by the County of Santa Barbara be reimbursed by the State of California or the applicant as designated by the CPUC.

Board of Supervisors, Contractual Agreement

141. The CPUC has asked the County of Santa Barbara to submit conditions that would normally be submitted. In doing so, the Board of Supervisors has inserted the County of Santa Barbara as though it were the permitting agency. Having met with CPUC staff and recognizing the differences that still exist between the County staff and the CPUC staff, the Board of Supervisors recommends that there shall be a formal contractural agreement between the CPUC and the County of Santa Barbara after any permit has been granted.

APPENDIX E Page 30 of 31 اسی این بیسی المحمد می از العلی از ا ام این بیسی المحمد المحمد الما الم

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Board of Supervisors, General and the former of the second second at the second bit will 142. When there is a conflict between two regulations or conditions, the more stringent or restrictive of the two shall apply.

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Saure Samateore, Contenant Solanes

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ADDENDUI of May 8, 1978

to

SANTA BARBARA COUNTY BOARD OF SUPERVISORS Recommended Terms and Conditions Western LNG, Point Conception Meeting of April 10, 1973

Condition No. 48, page 10, add at end:

The CFUC shall evaluate various tank designs and materials, including concrete.

Condition No. 49, pages 10 and 10a, add to end:

If the CPUC fails to accept Condition No. 49 and if any improvements need to be made for land access, some form of northerly access route shall be considered as a secondary recommendation, based on the availability of housing in the Lompoc area.

Condition No. 13, page 2, add at end:

Purthermore, prior to construction, the applicant shall conduct a cumulative feasibility and risk assessment report relating to the prospective lifetime of the proposed ING facility using continuously gathered, current data for the Little Cojo site. Of specific statistical relevance is the impact of wind, wave, and currents upon the required berthing operations. A. 57626 et al. IM

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This appendix lists the environmental impact mitigation measures proposed in the EIR process. Alongside each measure is noted a volume and page reference where the measure is discussed in the EIR documents; whether the measure is required by this decision; and if required, the number of the condition it is required by.

References to EIR documents are made with the following abbreviations:

TR		Technical Report	
D	2 2	Draft EIR	
F.1	R	Final EIR Volume	I
F.2	E	Final EIR Volume	II

The titles corresponding to the referenced technical report numbers can be found in Appendix 1 of the Draft EIR.

Note that the abbreviation RWQCB in this appendix refers to the Regional Water Quality Control Board.



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REFERENCE		NITIGATION MEASURES	COMMENT AND DISPOSITION	
VOLUKE	FAGE			
TR L	33, 39, 34, 42, 41, 43, 84	Erosion control and drainage control measures to mitigate effects at graded areas, gullies, and the shore area.	Required by Conditions 11, 33.	
F.1 TR 1	6-1 66, 87	Additional soils study to determine the best foundation design.	Required by Condition 39.	
TR 1	л 28	Install seavater lines beneath the sea floor to mitigate sand drift and deposition.	Applicant's proposed design incorporates this feature.	
TR 4	153	Obey local regulations regarding grading and other construction practices.	Required by Conditions 1, 2, 4, 5.	
TR 4	154	Water and gravel cover for temporary construc- tion roads to reduce dust.	Selective use of vater and/or gravel cover will be required by Condition 7, where deemed appropriate.	
TR 4	154	Seed exposed slopes and temporary stockpiles of earth.	Required by Condition 3).	
TR 4	154	Minimize open burning of cleared vegetation.	Required by Condition 3).	
TR 4	154	Develop a plan for transporting workers and materials, which minimizes air pollution to the extent feasible.	Required by Condition 16.	
F.2	32	A comprehensive package of air quality mitiga- tion measures has been suggested by the Air Resources Board.	Further consideration of these measures is required by Condition 34.	
F.1 TR 26	6-3 79	Replace proposed seawater intake system with a "calsson" system, subject to a feasibility study.	Required by Condition 4.	
F.1 TR 26 TR 5A	6-5 27, 77 170	Study options for reducing the level of chlorination needed for the seawater system, including non-fouling coatings and scheduled maintenance.	Required by Condition 4.	

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PEFERENCE		NITICATION MEASUPES	COMENT AND DISPOSITION
VOLUME	PAGE		
TR 26	37	Monitor the system's impact on water quality with reference to organic chloring compounds, living organisas, and metal ions.	Required by Condition 5.
TR 26	30	Study the cold vater plune to determine the exposure of passively entrained organisms and the aerial extent of affected sea bottom.	Required by Conditions 4, 5.
F.1 TR 52	6-8 174	Prepare an oil spill contingency plan.	Required by Condition 6.
TR SA	174	Minimize interference with conmercial kelp harvest.	Required by Condition 19.
TR 58	20, \$5, 23	Acquire, dedicate, and revegetate with appro- priate native plants land of equivalent ecological value to the habitat lost due to project construction. The upstream portion of the Cañada del Cojo should be considered for this purpose.	Required by Condition 10.
TR SB	22	Avoid fill of Cañada del Cojo riparian corridor. Dispose of excess fill offsite.	Required by Condition 7.
TR SB	22	Protect the Cañada del Cojo with a fence and buffer zone during construction.	Condition 7 requires protection of riparian habitat, including Cañada del Cojo. Fencing or other measures will be used as recessary.
TR 55	23	Avoid fill of coastal ravines and stabilization of bluffs.	These measures will be required to the extent feasible. Exceptions will be permitted with the approval of the CPVC construction monitor (Condition 13).
TR SB	23	Firebreak within 400 feet of each tank.	Decision on this measure will be deferred until the POC safety standards are developed.
TR SB	75	Survey and align pipeline route to avoid habitats of rare or enlangered species.	Required by Condition 8.
TR SB	19	Pipeline should parallel existing roads or other rights-of-way.	This measure is not feasible.
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REFERENCE		NUTICATION REASURES	CORRENT AND DISPOSITION	
VOLUME	PAGE			
TR SB	79	Revegetate route with appropriate native species.	Required by Conditions 7, 8.	
TR SB	87	Keep ground equipment within pipeline corridor during construction.	Required by Condition 1.	
TR SB	87	Avoid sidecasting of excess soil. Replace topsoil lost during construction. Revegetate pipeline route following construction.	Required by Conditions 7, 9.	
TR 5B	43	Phased pipeline construction. Build only single 36-inch line for development to 0.9 BCFD. Loop later only as needed.	This is consistent with the public application (A-57792).	
5R 5B +	11	Minimize pipeline operations corridor width to the extent feasible.	Required by Condition 8.	
TR 58	89	Control access to maintained pipeline, corridor, and pipeline service roads.	Required by Condition 8.	
TR 25	67-75	Align access road along existing Hollister Ranch road with minimal improvements.	Required by Condition 16.	
£.1	6-9	Conserve top soil during access road construc- tion. Respread and revegetate cut slopes with grassland/shrubland mixture.	Required by Condition 7.	
F.1	6-9	Minimize clearing for construction of powerline towers. Save and respread topsoil (top 12")	Condition 15 requires that transmission by wood pole and unlerground transmission lines be used instead of metal towers, to the extent feasible. Condition 1 requires conservation of top soll during construction.	
TR 6	17, 21	timitation of major construction activities to the daytine hours.	This measure shall be given consideration as part of Condition 7.	
TR 6	20, 21 24	Limitation of noise generated during operation from the gas turbine generators.	Electrical power will be generated offsite (Condition 15). Condition 34 will require that appropriate noise reduction measures be applied to the standby generators.	

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AFFENDIX F

Condition 21 will require the applicant to provide such information to Santa Barbara County. the CRUC construction monitor shall consider the effect on housing before approving an accelera-tion of the project schedule. Condition 24 will require MLWS to provide its employment information to Santa Barbara County. Conditions 16 and 28 concerns transportation and housing. The applicant should consider other forms of encouragement as will. condition 28 prohibits developing housing at the site for most workers. CONNENT AND DISPOSITION Required by Condition 13, 14. Required by Condition 31. Repuired by Condition 7. Encourage weekday in-algrants to use housing in the north county where present occupancy rates are least, thus reducing effect on transfeat accommodations in the Santa Barbara area. This encouragement could include provision of informa-tion concerning accommodations and special the Santa Barbara community should be made fully avare that the construction activity will be short-lived and no replacement activity of consider avoiding substantial acceleration of the total project (e.g., attempting to construct a 0.9 ECD facility within a period of 30 months), if it is confirmed that this would substantially increase the number of employees at peak and lengthen the duration of that Feak. A responsible public agency should monitor the number of transient and germanent housing units occupied by construction workers. Additional hazard of vild fire resulting from this project has serious implications but can be controlled by locreased prevention and protection measures by the applicant in all areas of work (terminal, access road, pipeline, etc.) Monitor the plans of the OCS and Vandenberg programs to determine if exployment schedules coincident with this LWS project are increased in such a manner as to increase in-migration of jubor and resulting effects on transient Bousing impacts could be mitigated by the development of additional temporary housing either at the site or in the Locpos area. Establish a noise monitoring program during construction. Page 5 of 12 NITIGATION MEASURES equal size is likely to occur. and permanent housing. transportation. PAGE 11-9 11-9 120 6-3 2 1 1 2 REFERENCE A.57626 et al. VOLUME r.1 12.) TR 7 1R 7 TR 7 TR 7 **TR 7** 1.1 £.1

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REFERENCE		NITIGATION MEASURES	CONVENT AND DISPOSITION	
VOLUME	PAGE			
TR 7	120	The exact extent of impact resulting from the access road, power transmission line and pipe- line is dependent upon specific locational and design decisions unavailable at present. Our analysis indicates that potential impacts can be significantly reduced by appropriate routing and design, discussed in Technical Reports 7 and 23. Of particular importance is requiring the alignment engineers to diligently survey the corridor and use route selection criteria that place high priority on avoidance of poten- tial adverse land-use impacts	Required by Conditions 7, 8, 12, 13, 15, 16, 27.	
TR 7	120	Beach area impacts would be reduced by setting the seawater sump into the face of the bluff and the electric substation on the bluff above.	The applicant has revised his plant layout to comply with this reasure.	
1R 7	120	Beach and water use impacts would be further reduced by design of the trestle to span the beach areas and present as little bulk and obstruction as possible throughout its length.	This measure should be implemented to the extent feasible and is required by Conditions 18 ()) and 33.	
1R 7	121	Avold an exclusion zone around the marine facilities to minimize beach and vater use impacts.	Condition 2 requires that nearshore access not be unreasonably restricted. FUC safety stan- dards and United States Coast Guard regulations will determine the size exclusion zone required.	
5R 7	121	Strict adherence to and enforcement of current land use policies and regulations of the County and Coastal Commission will constrain undesir- able land use changes surrounding the project. Revision of the current County "100-AL" roning to limit density to one owner-occupied unit per 100-acce parcel would prevent any of the project's tendency to increase the number of units per parcel in the area.	The ENG Terminal Act limits the nature and quantity of future development within 4 miles of the terminal. It does not, however, pre- empt the California Coastal Commission and County authority to set more stringent limits on development.	
TR 7	156	The visual harshness of the access road could be reduced by following contour where possible, shaping road cuts and embankments to blend into the surrounding earth forms, minimizing removal of eristing vegetation, and making extensive but carefully chosen use of new landscaping. Substantial mitigation would require substantial reduction in the extent of road reconstruction, however.	Required by Condition 16.	



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REFERENCE		NITICATION NEASURES	CONIENT AND DISPOSITION	
VOLUNE	PAGE		Condition 15 will require the preparation of a	
TR 7	156	Route the power transmission line inland, out of sight of the coastal terrace, rather than along the coastal terrace.	study to determine which route will have the least adverse impact.	
F.)	6 -10	Visual impacts of powerline can substantially mitigated by using an existing wood pole line and undergrounding through the Gaviota State Park.	The extent to which this reasure can be implemented will be determined as required by Condition 15.	
TR 7	156	Choose a pipeline alignment that is as protected from public view as possible and where minimum change will result for vegetation.	Required by Condition 8.	
TR 7	166	Provide free bus transportation for construc- tion employees between residential centers and the construction site.	This option will be studied as part of the transportation plan required by Condition 16.	
TR 7	189	Require road crossings by the pipeline to minimize extent and time of traffic impact, with specific conditions conforming to state and local agency construction controls.	This measure shall be given consideration as part of Condition 27.	
TR 7	190	Minimize construction traffic on the Bollister Road prior to its improvement.	this measure shall be given consideration as part of Condition 16.	
F.1	6-10	The visual impact of LWG storage tanks could be mitigated by partial undergrounding.	Required by Condition 18.	
5R 7	121	The LNG Terminal Act requirement on density within one mile of the terminal results in down-toning density in that area. Impact on local property owners could be mitigated by purchase of some of the residential develop- ment rights involved.	This measure (also suggested in Santa Barbara Condition 139) is rejected as redundant. Landowners have existing avenues of redress through the courts.	
tr 7	190	Continue restricted access policy through Hollister Ranch.	This is required by Condition 16 but has been modified by Condition 17 to allow limited recreational access.	

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REFERENCE			CORPLENT AND DISPOSITION	
WULLARE	PAGE	NITIGATION MEASURES		
TR J	162	Availability of a helicopter to provide quick emergency response is suggested during both construction and operation phases of the project.	This proposal will be considered in the formula- tion of an onsite disaster plan for the opera- tional phase (Condition 26) and will be required by Condition 33 during the construction phase.	
tr 7	163	Facilitate involvement of local government agencies in review and guidance of project development in a manner that maximizes their understanding of event and decisions, their feeling of participation, and that-minimizes their expenditures.	The FUC staff is directed to adopt this approach in their relations with the local government agencies.	
TR 7	155	Nitigate visual impacts by attention to design of the facility. Reduce the massive, recti- linear forms of the terminal facility if feasible. Partial burial of the tanks and use of earth berms and vegetative screens would reduce visual impact somewhat, particularly for persons located on the marine terrace. Color and paint patterns could be used to break up the perceived forms of the terminal facility to a limited extent.	Required by Condition 18. Screening of the facility by the use of offsite landscaping should be considered in the applicant's plan, subject to the approval of the property owner.	
	.	Plantings of trees in carefully chosen spots on the surrounding hills could also be used to block off the sight lines from houses to the terminal.		
TR 7	190	Minimize the level of access road improvements, using buses for labor and the railroad for materials and equipment transportation. Improve the Gaviota intersection appropriate to the construction traffic demand, determined in consultation with appropriate state and local transportation agencies. Minimize truck traffic on the access road by utilizing rail transport to the greatest extent possible.	Consideration of these measures should be given in the transportation study required by Condition 16.	

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REFERENCE		NITIGATION REASURES	CORNENT AND DISPOSITION	
NOURS	PAGE			
tr‡ D	91, 95 6-8	Project redesign to avoid impacting significant cultural resources. - Novement of proposed Point Conception facility avay from the most significant cultural resources.	Required by Condition 12 and is recognized by the applicant's proposed moving of the facility approximately 1,440 feet east.	
		 Use of Alternate pipeline alignments to avoid cultural resources. 	· · · · · · · · · · · · · · · · · · ·	
TR 8	99	Major data salvage program if avoidance of cultural resources is not possible. Salvage of data to be lost due to residual impacts.	Required by Condition 12.	
TR 8	98, 95, 97, 98, 99	Studies of sensitive areas to assess impacts and plan avoidance or salvage programs. Pages 94, 95, 97, 98 (bullet 2), 99 (bullet 4).	Required by Condition 12.	
TR 8 D	97, 98 6-8	Monitoring of construction work to minimize vandalism and other damage.	Required by Condition 13.	
1R 8	97	Fencing of cultural resources located near construction areas.	This measure will be used where necessary to implement Condition 12.	
TR B	53	Avoidance of future land disturbing activities in areas where cultural resources are located.	No further expansion of the facility has a for templated. Further development of the area for other uses is controlled by the California Coast al Commission and the County planning commission	
TR 8 D	55 4-8	Construction of a seavall to protect SBA-516 south. Page 98 (or salvage, see DEIR page 6-8).	This measure is not considered necessary since the site of the terminal will be moved east to avoid this area.	
TR 4	97	Nomination of eligible sites to the National Register of Historic Places.	The staff cultural resources manager on the monitoring program is directed to initiate this measure.	
TR 8 D	95, 98 6-7	Cultural resource manager at PUC to oversee mitigation programs.	this measure will be considered as part of the monitoring program required by Condition 13.	
D	6-1	Approval of mitigation programs by the State Bistoric Preservation Officer, the Native American Meritage Commission, and locally concerned Native Americans and archaeologists.	Condition 12 requires consultation with these entities.	

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PEFE	RENCE	WITICATION REASURES	COMMENT AND DISPOSITON
VOLUME	PAGE		
TR 9	7-1	Ship Anepometer	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.
TR 9	7-2	Ship Rate of Turn Indicator	Required by Condition 15 to the extent permitted by U.S. Cosst Guard regulations.
tr 9	7-2	Docking Velocimeter	Required by Condition 15 to the extent permitted by U.S. Coast Guard regulations.
TR 9	7-3	Ship Collision Avoidance System	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.
TR 9	7-4	Range Markers at Facility	Required by Condition 35 to the extent permitte by U.S. Coast Guard regulations.
TR 9	7-1	Harking Buoys	Required by Condition 35 to the extent permitte by U.S. Coast Guard regulations.
TR 9	7-5	Lighting of Pier, Berth, and Control Tover	Required by Condition 35 to the extent permitte by U.S. Coast Guard regulations.
TR 9	7-6	Facility Weather Instrumentation	Required by Condition 35 to the extent permitte by U.S. Coast Guard regulations.
TR 9	7-6	Facility Visibility Measuring Equipment	Required by Condition 35 to the extent permitte by U.S. Coast Guard regulations.
TR 9	2-7	Site Mave/Swell Measuring Equipment	Required by Condition 35 to the extent permitter by U.S. Coast Guard regulations.
TR 9	7-7	Site Radar •	Required by Condition 35 to the extent permitte by U.S. Coast Guard regulations.
TR 9	- 7-9 -	Approach Route	Required by Condition 35 to the extent permitte by U.S. Coast Guard regulations.
TR 9	1-10	Facility/Ship Communications Procedures	Required by Condition 35 to the extent permitte by U.S. Coast Guard regulations.

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EFER	ENCE	ALTIGATION MEASURES	CONCENT AND DISPOSITION
ω	7-10	bocking Operational Envelope	Reguired by Condition 35 to the extent permitted by U.S. Cozst Guard regulations.
	-12	Available Open-Sea Towing Capability Via Tugboat	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.
	21-1	Available Firefighting Capability Abourd Turboats	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.
	21-1	Available Follution Control Via Vessel	Required by Condition 35 to the extent germitted by U.S. Coast Guard regulations.
	(I- <i>l</i>	Available gerson(nel) Trained in Open-Sea Tow Mikeup	Required by Condition 35 to the extent permitted by U.S. Coast Guard regulations.
_	51	use of twy boiloff from the tankers during maneuvering and docking and while it is moored at the dock instead of using Bunker C fuel oil at the dock instead of using Bunker C fuel oil the use significantly reduce the caissions from the UNS tanker operation.	LNG boiloff should be used to the extent feasible. However, the ship's engines require use of oil for pilot burrers. Therefore, LNG use of oil for pilot burrers. Therefore, LNG boiloff cannot be used in place of oil during low speed maneuvering.
-	7 °C	Set aside 25 acres for future cryo uses. Fuel- free pover generation studies. Freere desalination studies.	Condition 31 will reguire further study of fuel- free pover generation and freeze desalination. This study should recommend an appropriate site for these uses. Consideration should be given for these uses. Consideration should be given in designing the facility to features which facilitate the future development of cryo uses.
	611	Coordination vith Vandenberg Air Force Buse on fature missile launch activities	Condition 3) will require that the applicant provide the Air Force with such ahip scheduling and safety information as may be needed for coordination of launch activities.
ų	202a	Consideration of planned ignition as a miligat- ing measure in developing contingency plans.	this mitigation measure will be considered in the PUC safety standards being dereloped in 011-1.
•	503	Implementation of a Risk Municaent Plan to allow CRUC to verify that final design, con- struction, and operation meets or exceeds the sifety levels assured in the EIR analysis.	A safety ronitoring program is required by the LWS Terminal Act of 1917. The staff proposed program is included in the Appendix to the Final Eit. The Correlation vill adopt a program in its decision on OII-1.

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PEFERENCE			CONTREE AND DISPOSITION
VOLUME	PAGE	NITIGATION MEASURES	
TR 17 5.	7-1	Cover LNG pipes and tanks with energy absorbing material to protect them from penetration due to missile fragments.	This measure is rejected since the event is judged too improbable to justify the expense. The proposed safety standards contain provisions which would protect the public even should such an event occur.
TR IS	-	Technical Report 18 contains mitigation measures relating to seismic design of the facility. With the exception of those measures specificially listed below, this subject will be the subject of further hearings in OII-1.	
TR 18	44, 46, 47, 61	A conservative approach to consideration of near-site faulting should be adopted and further study made of seismic harards to the site.	Required by Conditions 36, 37, 38, 39, 40, 41.
TR 25	23	Reduction of impacts to cultural resources by doing fewer improvements to the Bollister Ranch road.	Study of the measure will be required by Condition 16.
TR 25	41	Nitigation through avoidance more possible along - the Jalama road alternative.	Study of the measure will be required by Condition 16.
TR 25	38	Careful planning in consultation with Native Americans necessary to protect integrity of religious values intrinsic to Point Conception if Jalama access alternative is adopted.	Required by Condition 12.
TR 25	136	Nitigation of power line impacts through avoidance. A survey program to identify impacts in the corridor is first necessary. Salvage of information should be done when necessary.	Required by Conditions 12 and 15.
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APPENDIX G

NOTICE OF DETERMINATION

IO: Secretary for ResourcesFROM: California Public1416 Nintu Street, Room 1312Utilities CommissionSacramento, California 95814350 McAllister StreetSan Francisco, Calif. 94102

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

A-57626 ING Terminal ETR

Project Title

State Clearinghouse Number (If submitted to State Clearinghouse)

Steven W. Miller (415) 557-2374

Contact Person

Telephone Number

Point Conception, Santa Barbara County

78030684

Project Location

Marine terminal for receiving ING and ancillery facilities

Project Description

The pages of the Commission's decision specifying required mitigation measures are attached.

This is to advise that the California Public Utilities Commission as lead agency has made the following determination regarding the above described project:

1. The project has been Approved by the Lead Agency.

<u>disapproved</u>

2. The project <u>xx</u> will have a significant effect on the environment.

7 will not

- 3. XXX An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
 - A Negative Declaration was prepared for this project pursuant to the provisions of CEQA. A copy of the Negative Declaration is attached.

July 31, 1978 Date Received for Filing

Executive Director

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Date _____

Attachment