1840

Application No. 40738

Exhibit No. 3

Date

Return: P G & E LAW DEPT. - PUC PROCEEDINGS

FILE NO.

PACIFIC GAS AND ELECTRIC COMPANY

CALIFORNIA SECTION

OF THE

ALBERTA-CALIFORNIA PROJECT

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

1 Introduction

CHAPTER 1

INTRODUCTION

This exhibit presents pertinent data with respect to the construction, operation and maintenance of the California section of the Alberta-California project for which Pacific Gas and Electric Company (P. G. and E.) has requested from the California Public Utilities Commission a certificate of public convenience and necessity.

Beginning in 1961, P. G. and E.'s firm market requirements for natural gas are expected to exceed the quantity of gas which it now has under contract from sources within California and which has been certificated by the Federal Power Commission from out-of-state sources within the United States. Furthermore, P. G. and E.'s average daily market requirements are estimated to increase by over 460 M^2cf during the five years ending in 1965. This increase arises primarily from a growing population and a continued rise in the average use of gas per customer.

To meet this ever growing need for gas, P. G. and E. finds it must bring gas from sources outside of California, and it believes it is now in the public interest that its out-of-state supplies of natural gas come from more than one such source of supply.

Accordingly, P. G. and E. has initiated a project to bring gas directly to California from Alberta, Canada.

In cooperation with several other companies, P. G. and E. proposes to build and operate a 36-inch pipeline for this purpose.

As a part of this Alberta-California project, P. G. and E. has organized Alberta and Southern Gas Co. Ltd., a wholly owned Canadian subsidiary, to purchase gas from producers in Alberta. This subsidiary will have the gas it buys transported by others to the Canadian-United States boundary where Alberta and Southern Gas Co. Ltd. will sell the gas to Pacific Gas Transmission Company (PGT). By a cost-of-service type contract, PGT has agreed to sell the gas (less unavoidable losses and deliveries en route) to P. G. and E. at the California-Oregon boundary. To accept delivery of the gas from PGT, the California section, which is the subject of P. G. and E.'s Application No. 40738, will be built by P. G. and E.

2 Description of Project

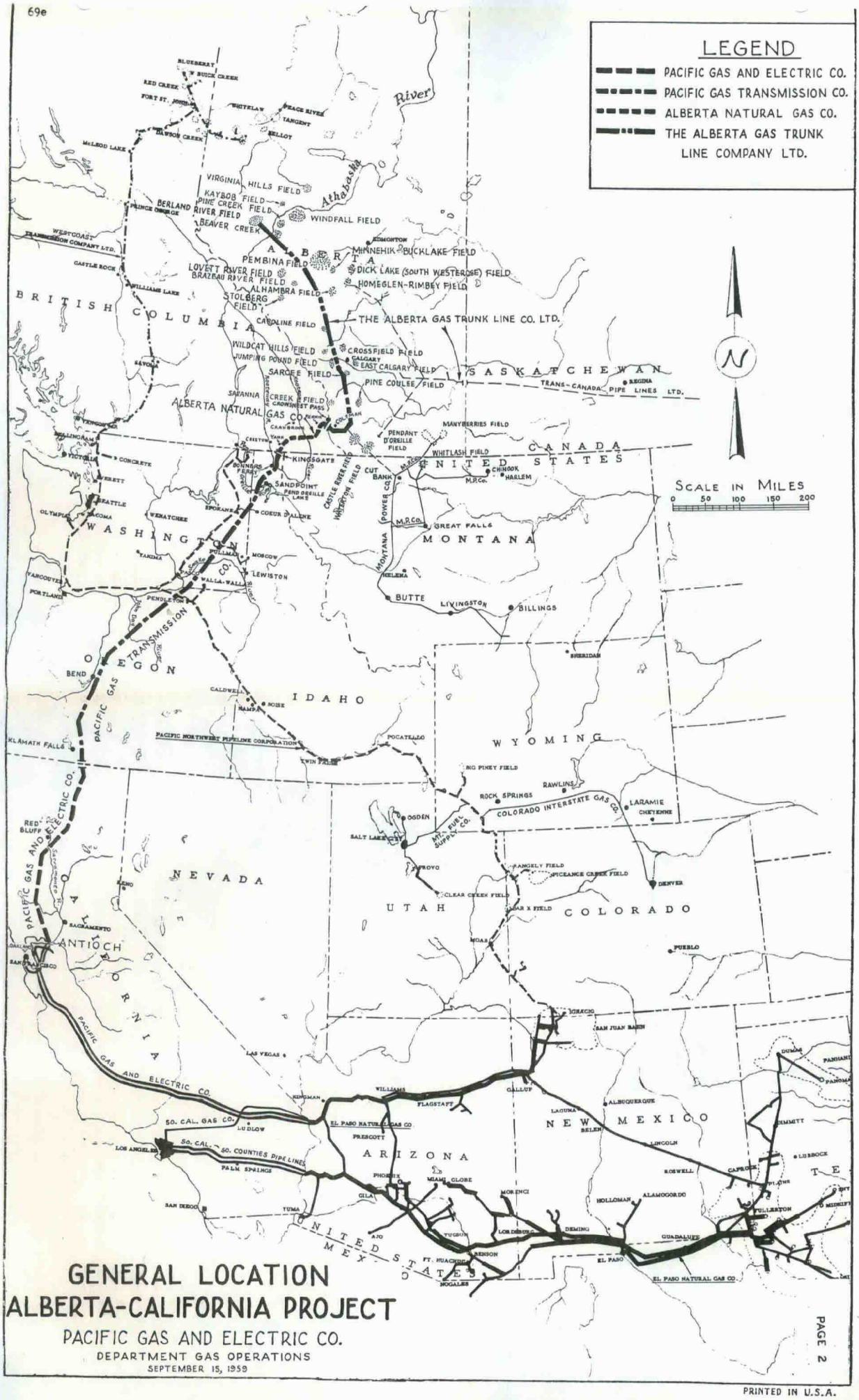
CHAPTER 2

DESCRIPTION OF PROJECT

I. Physical facilities.

The 36-inch gas transmission main which P.G.and E. proposes to build and operate will extend from the California-Oregon boundary some 296 miles to Antioch, California. The route of the main, which is shown on the map entitled "General Location California Section of Alberta-California Project" at page 3, passes through the counties of Shasta, Siskiyou, Modoc, Tehama, Glenn, Colusa, Yolo, Sacramento, Solano and Contra Costa. Generally, it runs southward from the boundary near the Oregon town of Malin bearing westward to cross the Sacramento river just south of the city of Red Bluff. It continues southward just west of U. S. highway routes 99 and 99W to cross the Sacramento and San Joaquin Rivers just north of Antioch. This 296-mile gas transmission main will form the California section of the Alberta-California project by which Alberta gas will be transported to California.

The Alberta-California project consists of a large diameter main pipeline about 1300 miles long from west central Alberta to Antioch, California, together with certain compressor facilities and a number of lateral gathering lines from the principal gas producing areas in Alberta. The route of the main is shown on the map entitled "General Location Alberta-California Project" at page 2.



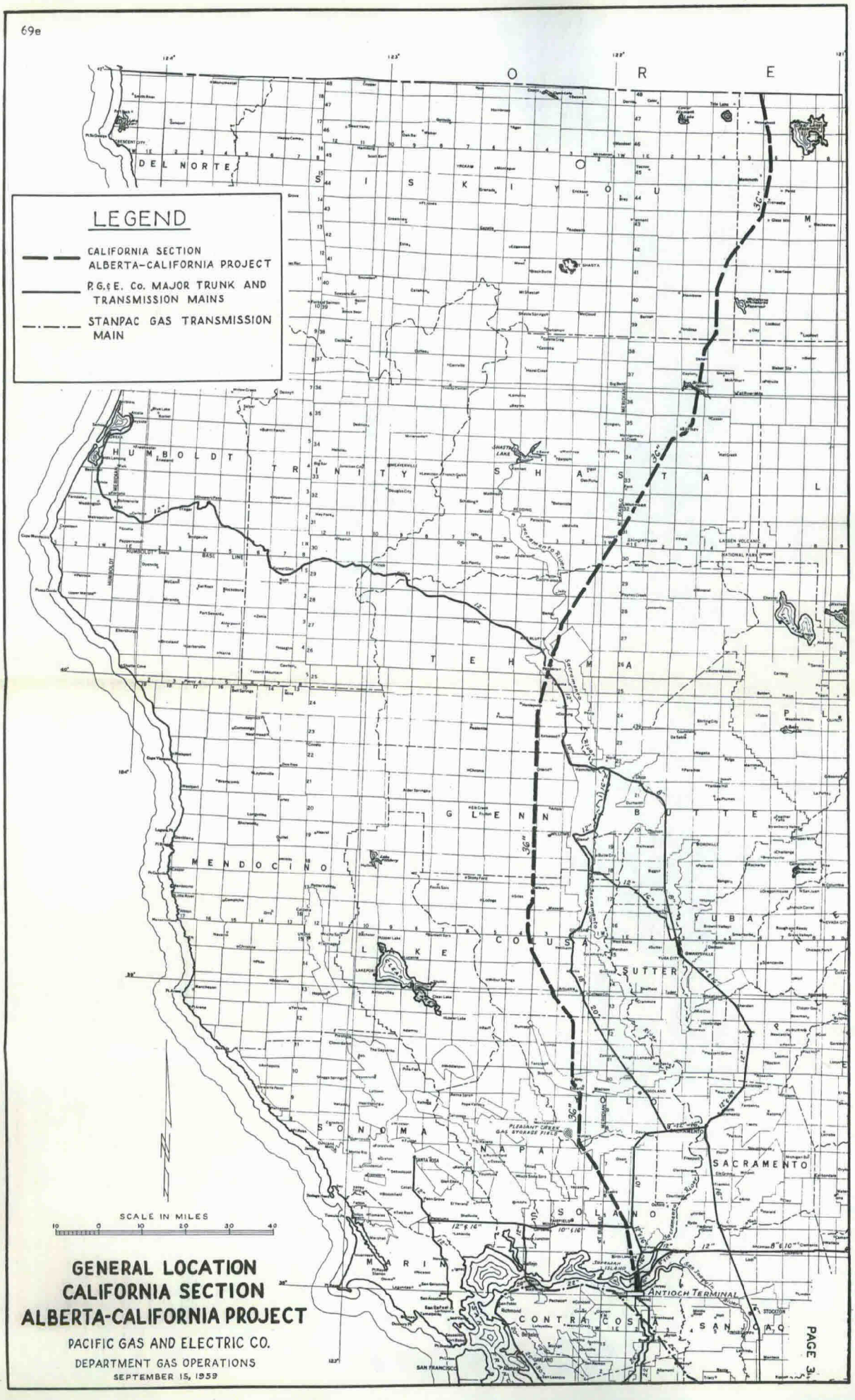
GENERAL LOCATION
ALBERTA-CALIFORNIA PROJECT

PACIFIC GAS AND ELECTRIC CO.
DEPARTMENT GAS OPERATIONS
SEPTEMBER 15, 1959

PAGE 2

PRINTED IN U.S.A.

69e



GENERAL LOCATION
CALIFORNIA SECTION
ALBERTA-CALIFORNIA PROJECT

PACIFIC GAS AND ELECTRIC CO.
DEPARTMENT GAS OPERATIONS
SEPTEMBER 15, 1959

PAGE 3

II. Operation and ownership.

a. California Section.

The Project, when completed will enable P.G. and E to obtain an average of 415 M^2cf of gas per day from P.G.T. for delivery into the California section at the California-Oregon boundary. The California section pipeline, which will be owned and operated by P.G. and E., will carry the gas into P.G. and E.'s gas distribution system for delivery to its customers. In addition P.G. and E. expects, subject to the necessary authorizations by the California Public Utilities Commission, to supply natural gas service from the pipeline in accordance with its established extension policies. In the case of communities not now receiving gas service, the usual studies of expected revenues, operating costs, investment and rate of return would be made to find out whether service would be economically justified. In the case of a single applicant or a limited number of applicants that could be supplied by means of a tap on the pipeline, service would be supplied in accordance with the provisions of Rule 15 - Gas Main Extensions. The cost of installing the necessary transmission tap, primary regulation, and odorizer would be translated into an equivalent distribution main extension length by dividing that cost by the unit cost per foot of distribution main extension contained

in Rule 15 (currently $1.81). To the equivalent length so determined would be added the length of the distribution main required to serve the applicants. If this total length exceeds the free length which P.G. and E. would construct in accordance with Rule 15, the applicants would be required to advance the cost of the excess length. This procedure is the same as that already in use for supplying service from P.G. and E.'s 34" high pressure Topock-Milpitas mains.

b. Balance of Project.

A wholly owned subsidiary of P.G. and E., Alberta and Southern Gas Co. Ltd. (Alberta and Southern), will purchase gas directly from the Alberta producers and deliver it at points of purchase to the system of The Alberta Gas Trunk Line Company Limited (Trunk Line) for transport to the Alberta-British Columbia boundary. Trunk Line, which is a Canadian company having no affiliation with P.G. and E. or any other company participating in the project, owns and operates, as a contract carrier, the existing Alberta system which transports gas to the Alberta-Saskatchewan boundary for Trans-Canada Pipelines Limited. It will perform the same type of service for Alberta and Southern and Westcoast Transmission Company Limited (Westcoast). Trunk Line will deliver Alberta and Southern's gas near the Alberta-British Columbia boundary to Alberta Natural Gas Company (Alberta Natural). Alberta Natural will own and operate a pipeline

from the Alberta side of the Alberta-British Columbia boundary to the international boundary at a point near Kingsgate, British Columbia. This company, which will be owned 1/3 by Pacific Gas Transmission Company (PGT), 1/3 by Westcoast and 1/3 by the Canadian public, will transport gas exclusively for Alberta and Southern and Westcoast. At the international boundary Alberta and Southern will sell its gas to PGT, 50% of the voting securities of which will be owned by P.G. and E. In addition to this gas, Alberta Natural will also deliver to PGT gas sold at the international boundary by Westcoast to Pacific Northwest Pipeline Corporation (Pacific Northwest). Pacific Gas Transmission Company will transport this Pacific Northwest gas to such points on the pipeline within the States of Idaho, Washington and Oregon as Pacific Northwest may designate. Pacific Gas Transmission Company will transport its own gas (except for loss, use, and possible off line sales) to the California-Oregon boundary, at which point it will be sold to P.G. and E., and delivered into the California section of the pipeline.

c. Pricing of gas.

P. G. and E. will buy gas from PGT at the California-Oregon border under rate Schedule PL-1 contained in a PGT Gas Tariff to be authorized by the Federal Power Commission. The proposed initial rate is a cost of service charge which

includes maintenance and operating expenses, depreciation and amortization, taxes, and return at an annual rate of 6-1/2% on the depreciated actual legitimate original investment plus a working capital allowance. The associated service agreement, which has not yet been signed, provides for a daily contract quantity of 415 million cubic feet and a maximum daily demand of 454 million cubic feet, an annual purchase obligation of 90% of the daily contract quantity, a monthly obligation of 80% of the daily contract quantity, and a daily obligation of 75% of the daily contract quantity.

Pacific Gas Transmission Company will purchase the gas it will sell to P.G. and E. from Alberta and Southern at the international boundaryin the vicinity of Kingsgate, British Columbia, under the terms of a contract dated December 15, 1958, which are similar to those in the PGT Gas Tariff just described, but covers a daily quantity of 418 million cubic feet and a maximum daily quantity of 456 million cubic feet. The charge for this gas will be the field cost of gas plus Alberta and Southern's costs including return and the transport charges paid by it to The Alberta Gas Trunk Line Company and Alberta Natural Gas Company.

The cost of service charges in the PGT--P.G. and E. sale and the Alberta and Southern-PGT sale reflect specified credits. In the case of PGT, the credit is equal to the charges made to Pacific Northwest for the transportation

of its gas. In the case of Alberta and Southern, the credit is equal to the revenue received from the sale of gas in Alberta to Canadian-Montana Pipe Line Company. The extent of these operations are described in the transportation agreement between Pacific Gas Transmission Company and Pacific Northwest Pipeline Corporation and the gas sale contract between Alberta and Southern and Canadian-Montana Pipe Line Company.

III. Authorizations for Project.

Administrative authorizations have been and are being obtained by the cooperating companies for various phases of the entire project.

Alberta and Southern has received a permit (No. AS 59-1, dated April 7, 1959) from the Oil and Gas Conservation Board of the Province of Alberta for the export from the Province of 2.3 trillion cubic feet of gas. There is now pending before the Board an amended application in which Alberta and Southern is asking that this quantity be increased to 4.2 trillion cubic feet.

Alberta Natural Gas Company on December 29, 1958 filed an application with the Board of Transport Commissioners for Canada, pursuant to the provisions of the Pipe Lines Act (of Canada), for an order granting leave to construct a pipeline extending from a point in Alberta near the Alberta-British

Columbia boundary to the international boundary between Canada and the United States. On the same date, Alberta and Southern filed an application with the Minister of Trade and Commerce of Canada, pursuant to the provisions of the Exportation of Power and Fluids and Importation of Gas Act (of Canada), for a license to export natural gas to the United States. Jurisdiction over these two applications will be transferred to the National Energy Board by the recent National Energy Board Act (of Canada). This Act by its terms will come into force on a date to be fixed by proclamation and at that time will repeal the Pipe Lines Act (of Canada) and the Exportation of Power and Fluids and Importation of Gas Act (of Canada). It is expected that such a proclamation will be issued shortly and that the National Energy Board will deal with the transferred applications in the near future.

The Alberta Gas Trunk Line Limited on September 29, 1959 will have a hearing on its application to the Minister of Mines and Minerals for the Province of Alberta, pursuant to The Pipe Line Act, 1958 (of Alberta), for permission to construct the necessary pipeline facilities for the Alberta-California project within Alberta. The requisite permits are expected to be granted within the next few weeks.

Pacific Gas Transmission Company, on December 29, 1958, filed applications with the Federal Power Commission

(1) for a certificate of public convenience and necessity under Section 7 of the Natural Gas Act; (2) for authorization to import natural gas under Section 3 of the Natural Gas Act; and (3) for a Presidential Permit under Executive Order No. 10485. Hearings on these applications, which are identified as Docket Nos. G-17350, G-17351 and G-17352 respectively, are scheduled to commence on October 15, 1959, in Washington, D.C.

3 Flow Diagram

CHAPTER 3

FLOW DIAGRAM

The engineering design data for the construction of the Alberta-California project, including the California section, are predicated on an initial delivery capacity of 414 MMcfd and an optimum delivery capacity of 800 MMcfd to the Antioch Terminal.

Two major factors influencing the selection of 800 MMcfd for the optimum are (1) The largest diameter pipe commercially available and considered to be feasible for a project of this magnitude, and (2) the relationship of the capacity of a single-main project to the total firm demand requirements on the P. G. and E. system.

The design data were obtained by applying these assumptions to the classic flow equation adjusted for differences in elevation of the pipeline, the formula used for calculating the compressor horsepower requirements, and other design criteria. These formulas, which are set forth in the supplement hereto, are the same as those previously used by P. G. and E. in the design of other large diameter pipelines. The design and construction of the Project adhere to the American Standard Code for Gas Transmission and Distribution Piping Systems, ASA B-31.8-1958, which has superseded the American Standard Code for Gas

Transmission and Distribution Piping Systems, ASA B-31.1.8-1955.

Since the California section is being planned and to be built as an integral part of the entire Project, the flow diagrams for the Project entitled, "Design Flow Diagram Showing 414 MMcfd Net to Antioch" and "Maximum Capability Flow Diagram for 414 MMcfd Design Showing 452 MMcfd Net to Antioch" establish the basic design requirements for the California section. The California section will not initially require compression facilities.

The selection of the compressor units shown on the flow diagrams results from the consideration of various projects ranging in capacity from 414 MMcfd to 800 MMcfd. These units allow for incremental increases in capacity by additions consistent with optimum selections for an 800 MMcfd design.

For the California section of the Project the maximum design pressure in the pipeline for delivery of 800 MMcfd to the Antioch Terminal will be about 911 psig at the California-Oregon boundary and at the discharge of future compressor stations numbers 15 and 16. Future compressor station number 17 at the upstream end of the pipeline section designed for storage of gas above the design throughput will have a maximum discharge pressure of approximately

1040 psig. These pressures dictated the selection of pipe and other materials for the construction proposed in this application.

Initially the storage capabilities of the California section will be about 70 MMcf when the system is operated at the pressures shown on the design flow diagram showing 414 MMcfd net to Antioch (page 4). This amount will vary as the capacity of the Project is increased and will be 80 MMcf when the optimum of 800 MMcfd is reached. It will then be contained in the section south of compressor station number 16 (page 4). This storage capacity is essential to maintain a relatively uniform delivery by PGT to P. G. and E. at the California-Oregon boundary, to provide for emergencies, and at the same time to meet the daily variations in demand in the P. G. and E. system. Storage proposed by this method is far less costly than other types of facilities, such as low pressure holders and high pressure pipe-type holders, for meeting daily variations in load.

The flow diagrams and other data shown in the supplement to Chapter 3, which follows page 5, were prepared as of December 19, 1958. They form the basis upon which the up-dated flow diagrams on pages 4 and 5 were prepared. They are the source of the design data on which the 1958 estimate of capital costs was based (referred to in Chapter 6).