BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Investigation on the Commission's Own Motion into the Operations and Practices of Pacific Gas and Electric Company with Respect to Facilities Records for its Natural Gas Transmission System Pipelines.	I.11-02-016 (Filed February 24, 2011)

PACIFIC GAS AND ELECTRIC COMPANY'S RESPONSE

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June 20, 2011

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(Filed June 20, 2011)

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June 20, 2011

TAB 1

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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PACIFIC GAS AND ELECTRIC COMPANY'S RESPONSE

Pursuant to Ordering Paragraph 2(b) of the March 24, 2011 Assigned Commissioner and Administrative Law Judge's Ruling Extending Deadlines for Production of Documents and Setting Prehearing Conference (AC/ALJ Ruling),[1] Pacific Gas and Electric Company (PG&E) provides its Response to the directives in the Order Instituting Investigation (OII). Appendix A reproduces the five chapters that were part of PG&E's Initial Response filed on April 18, 2011, which are included without alteration, and adds new Chapters 1A, 2A, 2B, 3A, 6, 6A-D, 7 and 8.

In addition to the testimony in Appendix A, PG&E is filing over 16,000 documents responsive to the Commission's directives in Appendix B. Appendix B includes 27 DVDs and 11 indices (some of which include subindices[2]) that list the documents according to the chapter to which they correspond. In addition, it includes Attachment 2A that supports Chapter 2A. As indicated on the indices, some of the documents were produced previously through the rolling production process, and some are being produced with this submission. Also, with the exception of Chapter 2, the attachments that were filed on April 18, 2011, are not provided again with this Response. The attachments to Chapter 2 are being produced in conjunction with Chapter 2A.

[1] As the June 18, 2011 due date set by the AC/ALJ Ruling fell on a Saturday, PG&E files this Response on June 20, 2011. *See also* PG&E's Initial Response at 2 n.2.

[2] The subindices are contained in the DVDs and external hard drives that contain the documents.

We indicate the date of production for those documents that have already been filed or served on parties through the rolling production process. In addition to the 27 DVDs and indices in Appendix B, Appendix C includes six external drives containing the responsive documents.[3] External drives containing these documents will be served on all parties through overnight mail.

I. INTRODUCTION

PG&E's Initial Response filed on April 18, 2011, consisted of five chapters and supporting documents addressing the Commission's directives in paragraphs 1, 2, 5, and 6 of the OII, as well as a history of gas safety recordkeeping regulations from 1955 to the present. In addition to reproducing those chapters, this Response includes ten new chapters or subchapters addressing the Commission's directives in paragraphs 1-4, 7, and 8 of the OII. As PG&E discussed in its Initial Response, there are several overarching considerations the Commission should bear in mind in reviewing PG&E's submission.

First, the OII's recordkeeping directives seek explanations and documents relating to pipeline record maintenance procedures and practices that span more than 55 years. During that time, the pipeline safety regulatory framework has changed dramatically at the state and federal level. For example, the first comprehensive federal pipeline safety law did not take effect until 1970—by which time approximately two-thirds of PG&E's current gas transmission pipelines already had been installed. Neither that law nor GO 112, effective July 1961, applied record-keeping requirements retroactively to the design, installation and initial testing of pipeline already in the ground. The Commission should evaluate PG&E's recordkeeping against the backdrop of the changing regulatory requirements adopted by the Commission and the federal pipeline safety regulators during the time period covered by the OII.

Second, the changing regulatory framework is mirrored by the significant technological changes occurring since 1955 in terms of maintaining and retrieving records. As discussed in the

[3] PG&E has redacted from the documents the names and identifying information of PG&E employees, pursuant to the Assigned ALJ's e-mail dated April 21, 2011.

attached chapters, based on sound engineering practices at the time, PG&E sought to maintain the records and take the other actions it believed necessary to operate its gas transmission system safely. It would be inappropriate to evaluate PG&E's recordkeeping practices in the earlier years through the prism of today's wide array of electronic recordkeeping options or current industry practices. Similarly, any perceived recordkeeping gaps or errors need to be assessed in light of the regulatory history, the age of the records sought, changing recordkeeping and retention practices, and, not least, the large time period covered by this OII, to which no one individual can attest in its entirety.

Third, as the American Gas Association recently observed, "[t]he natural gas industry is no different from other industries that face a challenge in maintaining its records of assets that are over 40 years old."[4] Furthermore, as Southern California Gas Company and San Diego Gas & Electric Company recently stated, the task of reconstructing all pipeline records is "very difficult, if not infeasible."[5] PG&E's transmission pipelines, like those of many other utilities, were built (or acquired through acquisition or merger) over a long period of time and under varying circumstances. PG&E supports efforts to develop new recordkeeping requirements that will raise the public safety standards for the industry. PG&E recognizes that it and the industry need to adopt better records management and retrieval processes. For this reason, PG&E has recommended that R.11-02-019 consider the adoption of uniform recordkeeping and retrieval standards for California's gas utilities. At the same time, PG&E also recognizes that some of its present-day recordkeeping challenges are of its own making. Among other things, PG&E is evaluating the Independent Review Panel's June 8, 2011 report, including those parts of the report that address PG&E's recordkeeping practices.

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[4] American Gas Association, *AGA White Paper on Verification of MAOPs for Existing Steel Transmission Pipelines*, p. 2 (April 2011).

[5] Report of Southern California Gas Co. and San Diego Gas & Electric Co. on Actions Taken in Response to the National Transportation Safety Board Recommendations, R. 11-02-019, April 14, 2011, at 9.

PG&E's response to the OII consists of 16 chapters. It also includes the production of over 16,000 documents totaling over 250,000 pages.

II. SUMMARY OF RESPONSE

A. Chapters 1 and 1A—Regulatory History and Overview of PG&E's Gas Transmission System

Chapters 1 and 1A provide important context for any assessment of PG&E's recordkeeping policies and practices relating to its gas transmission system. Chapter 1, which was part of PG&E's Initial Response, reviews the history of state and federal gas transmission pipeline regulations relating to recordkeeping, the partial exemption of existing pipeline facilities from safety regulation, and record retention and disposal rules over the more than 55 years covered by the OII. Understanding the evolution of state and federal recordkeeping regulations is essential to evaluating PG&E's compliance with those rules. This is a particularly important foundation given that many relevant recordkeeping regulations were meant to apply flexibly and prospectively, making it difficult to define recordkeeping standards.

Chapter 1A, which describes the development of PG&E's gas transmission system, provides further context and helps inform the decisions PG&E made in maintaining gas transmission system records. PG&E's transmission system of nearly 6,000 miles incorporates diverse characteristics—different pipeline ages, materials, specifications, diameter, pressure. PG&E installed a significant portion of its transmission system in an era of infrastructure expansion and development before modern pipeline safety rules took effect.

B. Chapters 2, 2A and 2B—Records Maintenance

Chapters 2 and 2A respond to Directive 2 of the OII requiring PG&E to provide information about its policies and practices from 1955 to August 2010 for maintaining and retaining documents and data concerning a broad array of topics, including technical documents, records of operations, leak records, and information about tests and inspections. Chapter 2A also addresses a subsequent request from the CPUC's Legal Division to explain PG&E's organization of the gas transmission documents prior to September 2010. PG&E provided copies of its

current record retention policies with Chapter 2 in its Initial Response. Chapter 2A and related attachments provide the remainder of the information and documents responsive to Directive 2. Chapter 2A also provides an extensive description of how PG&E organizes its records, and why.

Directive 2 of the OII is broad. PG&E is providing 52 responsive policies and practices as well as explanations for the changes to those policies and practices that occurred over time. Given that Directive 2 is focused on PG&E's policies and practices for maintaining gas transmission documents over a long period of time, it is particularly critical that the regulations applicable over that same time frame be understood and considered in evaluating PG&E's recordkeeping practices.

Chapter 2B sets forth the report of Edward J. Ondak, a pipeline safety expert with many years of experience as a pipeline safety regulator and gas industry professional. Mr. Ondak's report describes the recordkeeping challenges the gas pipeline industry faces, the absence of industry-wide recordkeeping standards or regulatory guidance, and the unique recordkeeping challenges that the industry faces when implementing integrity management rules.

C. Chapters 3 and 3A—Discussion of NTSB's Factual Contentions and Conclusions

Chapter 3 responds to Directive 1 to file a report listing "each factual contention stated, and conclusion reached, by the NTSB reports that PG&E contends is incorrect, and provide support for PG&E's position."[6] Chapter 3A supplements Chapter 3, which was included in PG&E's Initial Response. The NTSB's continuing investigation into the causes of the San Bruno accident and the safety recommendations it has made to date have contributed substantially to the ongoing efforts to improve pipeline safety, both in California and nationally. PG&E has been and continues to be supportive of the NTSB's work, which PG&E regards as an essential element of our collective response to the San Bruno accident. However, until the NTSB issues its final report or reports later this year, PG&E's ability to provide a comprehensive discussion of NTSB's factual contentions and conclusions is necessarily limited.

[6] OII at 17, paragraph 1.

D. Chapter 4—Relationship of the Segment 180 Record Discrepancy to the San Bruno Pipeline Rupture

Chapter 4, which was provided as part of PG&E's Initial Response, responds to Directive 5 of the OII: "Does PG&E contend that the September 9, 2010 San Bruno pipeline rupture was unpreventable by the exercise of prudent utility safety care?"[7] As discussed in Chapter 4, the absence of the record discrepancy identified by the NTSB would not have affected PG&E's integrity management treatment of Segment 180 or Line 132 generally, and thus would not have led to the discovery of the longitudinal seam defect identified by the NTSB.

E. Chapter 5—Discussion of How the Seam Versus Seamless Mistake Occurred

Chapter 5, which was provided in PG&E's Initial Response, responds to the Commission's Directive 6 that PG&E provide documents and information about PG&E's communication of the incorrect "seamless" information regarding Segment 180 to the NTSB, the recognition of the error, and how the mistaken designation came to be contained in GIS.

F. Chapter 6 (including Chapters 6A-D)—Actions to Promote Safety

Chapter 6 responds to the Commission's Directive 3 that PG&E provide a summary of the "actions PG&E took between 1955 and September 8, 2010 to promote safety with respect to its natural gas transmission pipelines in general and San Bruno's line 132 in particular."[8] The directive further specifies that, for the time period identified, PG&E should summarize, with dates, the actions it took or procedures it developed (subparts A and B); explain how its actions were designed to promote safety (subpart C); provide all written safety risk assessments that PG&E conducted on Line 132 (subpart D); and provide written safety risk assessments on all other transmission lines (subpart E). Chapter 6 also responds to the Commission's Directive 4 that PG&E identify and describe the types of documents it used between 1990 and 2010 to assess whether to replace a portion of its transmission lines.

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[7] OII at 19, paragraph 5.

[8] OII at 18, paragraph 3.

PG&E's "actions . . . to promote safety" could be interpreted to encompass almost every aspect of its gas transmission engineering and operations. As a general rule, the goal of maintaining a safe and reliable system underlies all of PG&E's practices, policies, and procedures. In responding to the Commission's directive, PG&E focuses on its principal actions to promote safety over the past 55 years in the design, construction, and testing of its transmission pipelines (Chapter 6A) and in its gas transmission operations and maintenance (Chapter 6B); the most important written safety risk assessments and the types of documents on which PG&E relies in deciding whether to replace portions of a pipeline (Chapter 6C); and its actions taken to promote the safety of Line 132 in particular (Chapter 6D). As discussed in these chapters, PG&E has engaged in a wide array of actions—grounded in sound engineering practices—designed to ensure the safe operation of its gas transmission system.

G. Chapter 7—Weld Failures and Defects

Chapter 7 responds to the Commission's Directive 7 to provide information about PG&E's records of transmission pipe weld failures and defects, before and after installation of the pipe, and to "identify the date and circumstances of the failures or defects, and provide all documents and data that pertain to such failures or defects."[9] As PG&E explained in its May 31, 2011 Motion to Extend the Deadline to Complete Response ("Motion"), PG&E has maintained a wide variety of records containing pre- and post-service pipe weld defects and failures. The primary records of pre-service weld defects and failures are PG&E's documentation of x-ray inspections and pressure tests. Weld defects or failures in connection with pipes already in service are typically identified when PG&E repairs a pipe leak. The principal record of PG&E's leak repairs are the "A-Forms" (and an electronic database containing information from the A-Forms).

Consistent with the Administrative Law Judge's ruling on June 8, 2011, PG&E is providing the dates and circumstances of, and producing associated documents for, the categories

[9] OII at 19, paragraph 7.

of pre- and post-service weld failures and defects identified in the Production Plan attached to PG&E's Motion. The ALJ also ruled that notwithstanding Directive 7's use of the term "pipe," the term should be read to mean "pipeline."[10] This ruling expanded the scope of the directive as PG&E had understood it, and thus PG&E will be providing additional documents responsive to the expanded definition of Directive 7 on a rolling basis, but in any event no later than September 30, 2011.

H. Chapter 8—Sponsoring Witnesses

Chapter 8 responds to Directive 8 that PG&E identify the individuals who are sponsoring the various portions of this Response.

III. CONCLUSION

PG&E understands the importance of the Commission's investigation into PG&E's recordkeeping practices associated with its gas transmission pipelines, and has done its best to provide a comprehensive response to the OII's directives given that the directives cover a 55 year period—going back well before the working life of PG&E's current employees—and that

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[10] The terms "pipe" and "pipeline" are defined terms in federal pipeline safety regulations. The latter term is significantly broader than the former.

the responses had to be provided in a relatively compressed time. PG&E will continue to cooperate with the Commission, its staff and other parties over the course of this OII.

Respectfully submitted,

/s/

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TAB 2

APPENDIX A

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 1

CALIFORNIA AND FEDERAL PIPELINE SAFETY REGULATORY HISTORY

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1
CALIFORNIA AND FEDERAL PIPELINE SAFETY REGULATORY HISTORY

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1
CALIFORNIA AND FEDERAL PIPELINE SAFETY REGULATORY HISTORY

A. Introduction

The Commission seeks to ascertain whether "PG&E's gas safety recordkeeping has been conducted in a manner that violates the general provisions of Section 451 or of any other applicable law." OII at 11. "Gas safety recordkeeping" means "PG&E's acquisition, maintenance, organization, safekeeping and efficient retrieval of data that the Commission finds is necessary and appropriate under the circumstances for PG&E to make good and safe gas engineering decisions, and thus to promote safety as required by Section 451 of the Public Utilities Code." *Id.* The OII's recordkeeping directives (Paragraphs 2.A-E & 7) seek explanations and documents relating to transmission pipeline record maintenance procedures and practices that span more than 55 years from 1955 to 2010. *Id.* at 17-19.

As requested by the ALJ, this chapter reviews federal and state gas transmission pipeline safety regulations. Section B provides a broad overview of the development of pipeline safety laws. Section C discusses the development of laws and regulations that partially exempted preexisting pipeline facilities from certain pipeline safety regulations. Sections D and E discuss state and federal recordkeeping rules, focusing on changes over time. Section F describes the history of different regulations and resolution providing for the preservation and subsequent disposal of gas records.

To summarize, the Commission did not regulate pipeline safety until 1961, and federal authorities did not do so until 1970. When imposing safety rules, both the Commission and Congress exempted existing pipeline facilities insofar as their design, construction and initial testing were concerned. The policy decision meant that safety regulations and their related recordkeeping requirements had only limited application to existing facilities.

The Commission's recordkeeping requirements have evolved, becoming, if anything, less prescriptive over time. In its early history of regulating pipeline safety, the Commission adopted and incorporated by reference in the original General Order (GO) 112 several specific recordkeeping requirements. Over time, those requirements dropped out such that the current GO 112 (GO 112-E) addresses recordkeeping in a single, general recordkeeping provision. When the Commission has prescribed or adopted recordkeeping rules, it has often qualified those rules in resolutions authorizing the disposal of records after prescribed periods of time. Thus, for example, in 1963, a Commission resolution explicitly authorized the disposal of certain gas transmission pipeline records consistent with then-existing Federal Power Commission regulations. Similarly, in 1976, the Commission issued a resolution directly authorizing the disposal of certain GO 112 pipeline safety records after the expiration of prescribed retention periods.

Prior to the San Bruno tragedy, federal recordkeeping rules (and guidance statements around them) were even less prescriptive than state rules. Congress, as well as federal regulators and industry experts, had long recognized that historic pipeline safety records may no longer exist or, if they existed, may be incomplete. They adopted rules and provided guidance to accommodate record gaps common to older pipelines. Their guidance on recordkeeping was couched in flexible rather than prescriptive language. Presented with the opportunity to adopt general standards regarding the sufficiency of recordkeeping procedures, federal regulators declined. During the time frame covered by the OII, there was no one comprehensive or uniform federal recordkeeping standard, but several subparts contained recordkeeping requirements specific to those sections (e.g., 49 C.F.R. Part 192, Subpart I, Corrosion control records at §192.491).

B. Broad Overview of the Development of Gas Pipeline Safety Regulations and Codes

The chart below provides an overview of the development of gas pipeline safety regulations and codes. These developments are described generally in the narrative part of this section that follows the chart. The discussion traces the

initial imposition and incremental tightening and refinement of gas safety rules over time.

FIGURE 1-1
PACIFIC GAS AND ELECTRIC COMPANY
DEVELOPMENT OF GAS PIPELINE SAFETY REGULATIONS AND CODES

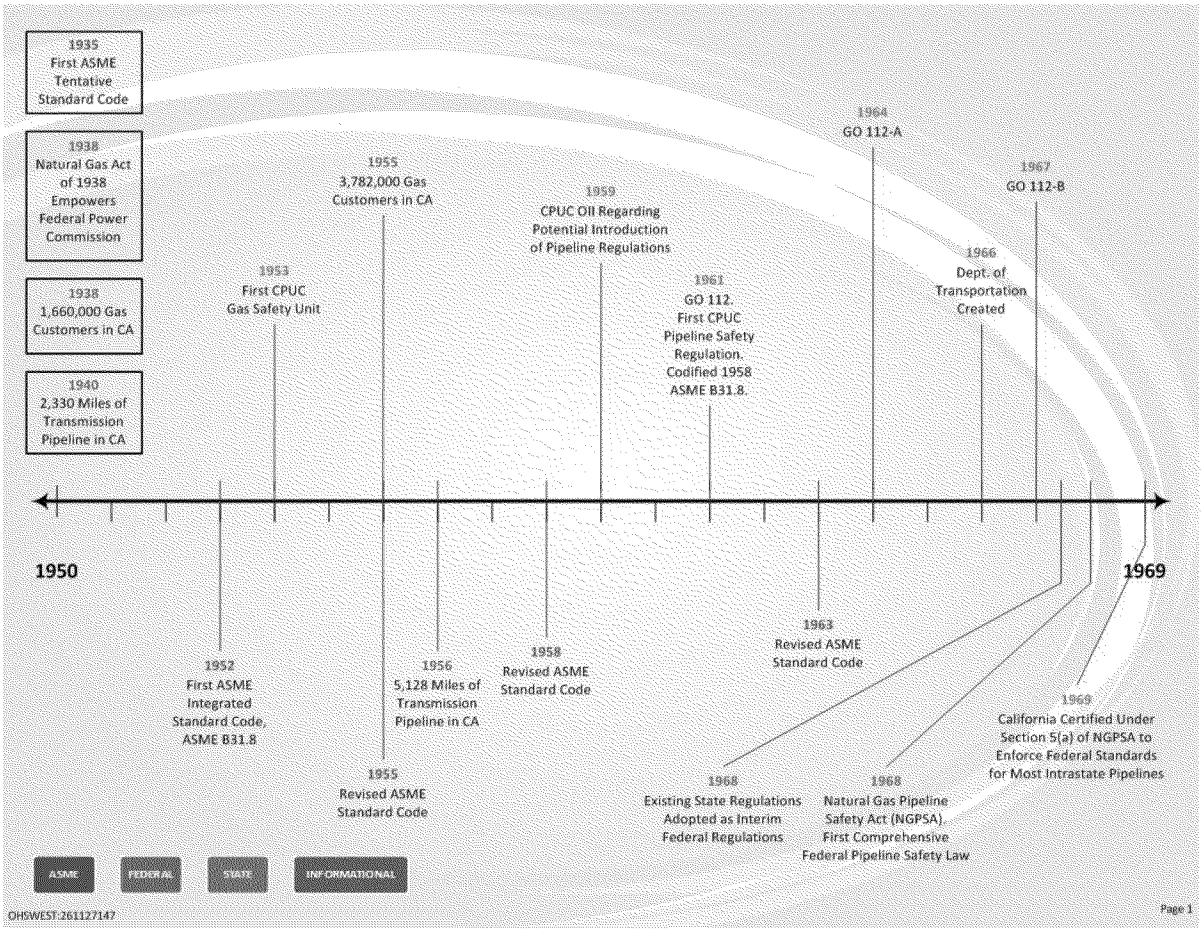
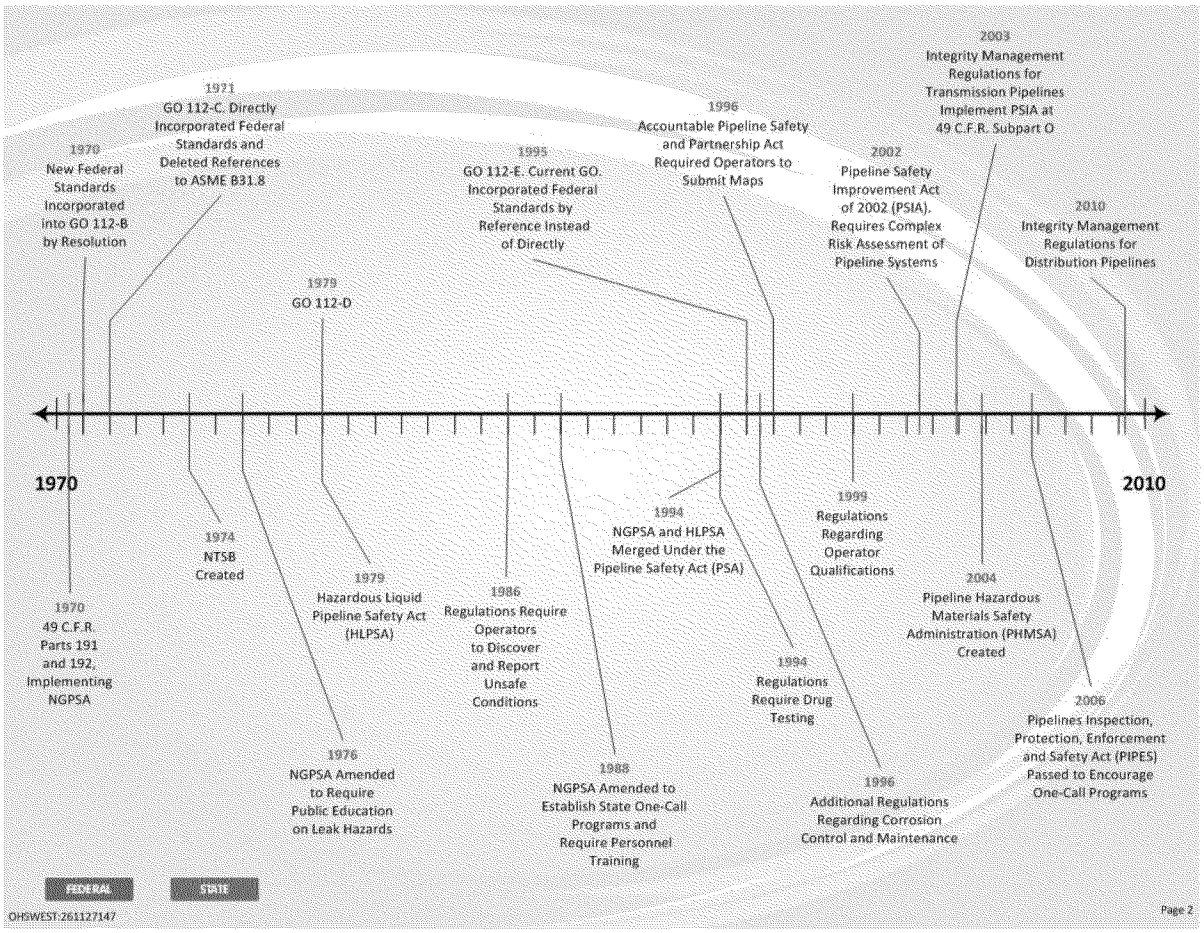


FIGURE 1-2
PACIFIC GAS AND ELECTRIC COMPANY
DEVELOPMENT OF GAS PIPELINE SAFETY REGULATIONS AND CODES



1. 1961-1970: California Regulates Natural Gas Pipelines, Relying on Industry Standards for Guidance

A significant portion of California's natural gas pipeline network was installed before the time period encompassed by the OII's Directives. In the words of a 1955 Commission report, industry growth in California between 1938 and 1955 was "phenomenal." California Public Utilities Commission, Utilities Division, *Report on the Operations of Gas Utilities, 1938-53*, p.2 (1955) ("CPUC 1955 Report") (Attachment #1, Regulatory History Chapter ("RH-1")). In 1938, there were 1,660,000 gas customers in California. *Id.* By 1955, there were 3,782,000, representing an increase of 128 percent in

17 years. *Id.* The increase in gas transmission pipeline mileage was equally dramatic. In 1940, the four major utilities in California owned and operated a combined 2,330 miles of transmission lines. *Id.* As of January 1, 1956, those same companies operated 5,128 miles, an increase of 120 percent. *Id.* During this same era, many smaller utilities in California merged with larger ones, adding more growth to larger utilities such as PG&E. Thus, for example, in 1938, the Commission authorized the merger of the San Joaquin Light and Power Corporation with PG&E. *Id.* at 19. In 1954, the Commission authorized PG&E to acquire by merger with Pacific Public Service Company the stock of Coast Counties Gas and Electric Company. *Id.*

Prior to the promulgation of rules by regulatory agencies, pipelines were generally constructed in voluntary accordance with nascent industry standards. The American Society of Mechanical Engineers (ASME) published its first American Tentative Standard Code for Pressure Piping in 1935. In 1952, ASME published its first integrated pipeline safety code, called the American Standard Code for Pressure Piping, Section 8, Gas Transmission and Distribution Piping Systems (ASME § B31.8). The Standard Code was substantially revised in 1955. ASME § B31.8 (1955).[1] The Commission was also active. In 1953, it established the first safety unit within the Gas Section. CPUC 1955 Report, p.17 (RH-1). Among other activities, the safety unit closely followed the work of the ASME. *Id.* It also reviewed the safety standards established by other regulatory commissions throughout the United States. *Id.*

In September 1959, the Commission issued an Order Instituting Investigation to determine, among other things, whether to impose a General Order governing design, construction and operation of gas transmission pipeline systems ("1959 OII") The 1959 OII culminated in the

[1] Roscoe Smith, a Gas Manager for PG&E, was a member of the B31.8 subcommittee that drafted the 1952 standards. Charles J. Tateosian and Robert Becken, both PG&E retirees, have also been long-standing members of the B31.8 subcommittee.

adoption of GO 112, Rules Governing Design, Construction, Testing, Maintenance and Operation of Utility Gas Transmission and Distribution Piping Systems, effective July 1, 1961. Dec. 61269, adopting GO-112, (Dec. 28, 1961) (RH-2); GO 112 (RH-3).[2] GO 112 effectively codified the 1958 revision of ASME B31.8, with modifications, including some that bore on recordkeeping.[3] GO 112, § 107.2 incorporating ASME B31.8 (1958) (RH-3). The ASME B31.8 standards would remain the primary source for California pipeline safety rules until the early 1970s when federal pipeline safety regulations, discussed below, came into effect.

2. 1968 - Present: The Evolution of Federal Gas Pipeline Safety Law

Federal authorities regulated interstate pipeline safety only incidentally prior to 1970. The 1938 Natural Gas Act (NGA) conferred on the Federal Power Commission (FPC) (the predecessor to the Federal Energy Regulatory Commission (FERC)) the authority to regulate the transportation and sale of natural gas. Pub. L. No. 75-688, 52 Stat. 821 (1938) (RH-8). Section 7 of the NGA empowered the FPC to regulate the improvement or extension of existing gas pipeline services. Over time, the FPC exercised its limited Section 7 authority to insist that new pipeline construction conform to industry standards as a condition of granting certificates of convenience and necessity. H.R. Rep. No. 90-1390, at 12 (1968) ("House Report") (RH-9). As will be discussed, the FPC also issued and revised regulations that governed the retention of records by utilities, including operation records of

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[2] The initial OII only proposed to address gas transmission pipelines. The Commission was persuaded by the utility companies to expand the scope of the rule to include distribution systems. Dec. 61269 (RH-2)

[3] In the 1960s, GO 112 was updated and superseded, first by GO 112-A in 1963 and later by GO 112-B in 1967. GO 112-A (RH-4); Decision No. 66399, adopting GO 112-A on Dec. 3, 1963, effective on Jan. 1, 1964 (RH-5); GO 112-B (RH-6); Decision No. 73223, adopting GO 112-B on Oct. 24, 1967, effective on Dec. 1, 1967 (RH-7). GO 112-A adopted by reference, with certain modifications, the 1963 edition of ASME B31.8. GO 112-A, § 701.2. GO 112-B incorporated changes brought about by issuance of the 1967 edition of B31.8, as well as new reporting requirements.

natural gas companies, subject to the FPC's jurisdiction. Beyond these incursions, however, the FPC generally did not regulate pipeline safety.

Throughout the 1950s and 1960s, Congress held hearings on pipeline safety, but took no legislative action. As early as 1950, a House member introduced legislation that would have authorized the FPC to prescribe general safety requirements for natural gas companies. *Id.* at 11. The bill was reintroduced in subsequent sessions of Congress. *Id*. In the early 1960s, there was renewed legislative interest, including renewed interest in granting the FPC statutory authority and responsibility for safety regulation of gas pipelines operating in interstate or foreign commerce. Each of these legislative efforts failed.

The creation of the Department of Transportation (DOT) in 1966, coupled with several serious pipeline accidents in the preceding years, prepared the way for another legislative effort. In April, 1966, the FPC sent the Senate Commerce Committee a report on the safety of interstate pipelines, including pipeline accidents. FPC, *Safety of Interstate Natural Gas Pipelines: A Report Prepared for the Use of the Committee on Commerce United States Senate, At the request of the Hon. Warren G. Magnuson, Chairman,* 98th Cong. (Committee Print 1966), regarding S.1553, "A Bill to amend the NGA to authorize the FPC to prescribe safety requirements for natural gas companies" (RH-10). On February 16, 1967, President Johnson stated in his consumer message:

> With the creation of the Department of Transportation, one agency now has responsibility for Federal safety regulation of air, water and land transportation, and oil pipelines. It is time to complete this comprehensive system of safety by giving the Secretary of Transportation authority to prescribe minimum safety standards for the movement of natural gas by pipeline.

Message to Congress from President Lyndon B. Johnson, *American Consumer Protection*, H.R. Doc. No. 90-57, at 11 (1967) (RH-11). The Natural Gas Pipeline Safety Act (NGPSA) was enacted in August 1968. It

was the first comprehensive federal pipeline safety law. Pub. L. 90-481, 82 Stat. 720 (1968) (RH-12).

The NGPSA directed the Secretary of Transportation to promulgate interim and final regulations. The Secretary responded by adopting existing state regulations, including the CPUC's, as "interim standards" for the period of time before the final regulations were promulgated. 33 Fed. Reg. 16500, 16500 (Nov. 13, 1968) (RH-13). In August 1970, the Office of Pipeline Safety (OPS) promulgated final rules at 49 C.F.R. Parts 191 and 192 regarding minimum federal safety standards including reporting requirements (Part 191) and design, construction, operation, and maintenance of natural gas pipeline facilities (Part 192). *See generally* 35 Fed. Reg. 13247-13276 (Aug. 19, 1970) (RH-14). Some of those regulations took effect in November 1970, and others did not become effective until March 1971. *Id.* at 13251. As discussed in greater detail below, Parts 191 and 192 of the 1970 regulations contained a scattering of recordkeeping requirements.

The NGPSA was amended in 1972 to allow states to act as the agent of DOT to oversee interstate lines. Pub. L. 92-410, 86 Stat. 616 (1972) (RH-15). With the Independent Safety Board Act of 1974, Congress created the National Transportation Safety Board (NTSB) as an independent federal agency charged with determining the probable cause of transportation accidents and promoting transportation safety. Pub. L. No. 93-633, 88 Stat. 2167 (1975) (RH-16). A few years later, Congress amended the NGPSA further to require, among other things, that operators educate the public on hazards associated with natural gas leaks. Pub. L. No. 94-477, 90 Stat. 2073 (1976) (RH-17).

Following a 1978 Government Accounting Office (GAO) Report critical of OPS presented to the Senate (RH-18), Congress enacted the Pipeline Safety Act of 1979, which established the Hazardous Liquid Pipeline Safety Act (HLPSA), amended the NGPSA to include liquefied natural gas, and granted OPS new enforcement powers, including the ability to issue Hazardous Facility Orders. Pub. L. No. 96-129, 93 Stat. 989 (1979) (RH-

19). In 1985, Congress enacted the Consolidated Omnibus Budget Reconciliation Act, which authorized DOT to collect user fees from all pipeline operators. Pub. L. No. 99-272, 100 Stat. 82, 139 (1986) (RH-20). As part of the 1986 reauthorization amendments, Congress required OPS to issue regulations obligating operators to discover unsafe conditions as part of their inspection and maintenance plans and to report certain safety-related conditions. Pub. L. No. 99-516, 100 Stat. 2966 (1986) (RH-21). (OPS adopted regulations regarding the same in 1988 at Part 191.23). Shortly thereafter, in 1988, further amendments to the NGPSA authorized OPS to establish state one-call programs and require training and testing of personnel who perform safety-sensitive work. Pub. L. No. 100-561, 102 Stat. 2805, 2817 (1988) (RH-22).[4] In 1991, OPS published 49 C.F.R. Part 198, establishing regulations for grants to aid state pipeline safety programs. 55 Fed. Reg. 38688-92 (Sept. 20, 1990) (RH-23).

In 1994, Congress merged the NGPSA and the HLPSA under the Pipeline Safety Act (PSA). Pub. L. No. 103-272, 108 Stat. 1301-29 (1994) (RH-24). In addition, in 1996, Congress enacted the Accountable Pipeline Safety and Partnership Act, which, among other things, amended the PSA to direct OPS to require operators to submit maps of their pipeline systems. Pub. L. No. 104-304, 110 Stat. 3793 (1996) (RH-25).

In response to pipeline incidents around the country, and a second GAO report critical of the OPS, Congress enacted the Pipeline Safety Improvement Act (PSIA) of 2002. Pub. L. No. 107-355, 116 Stat. 2985 (2002) (RH-26). Congress enacted the Norman Y. Mineta Research and Special Programs Improvement Act in 2004, creating the Pipeline and Hazardous Materials Safety Administration (PHMSA) to provide OPS with more resources. Pub. L. No. 108-426, 118 Stat. 2423 (2004) (RH-27). Congress enacted the Pipelines Inspection, Protection, Enforcement and Safety Act (PIPES) in 2006, which encouraged states to review their existing

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[4] To minimize confusion over which number to call before engaging in digging activities, the one-call program provides one number, 8-1-1, thereby eliminating the need for each state to use different one call notification system numbers.

"one-call" programs and expanded financial grant opportunities for states. Pub L. No. 109-468, 120 Stat. 3486 (2006) (RH-28).

3. 1970 - Present: The Commission Adopts Federal Standards

Since 1969, the Commission has been certified under Section 5(a) of the NGPSA to carry out and enforce federal pipeline safety standards in California for intrastate pipelines, not including municipally-owned distribution systems. 49 U.S.C. 60105(a); *see also* Department of Transportation, *Second Annual Report of the Secretary of Transportation on the Administration of the National Gas Pipeline Safety Act of 1968*, p. 6, Att. 6 (Table I) (1969) (submitted in accordance with NGPSA Section 14)(RH-29). Further, the Commission began incorporating federal standards into what was then GO 112-B by Resolution G-1499, effective November, 1970. Dec. 78513 adopting GO 112-C (RH-30). The Commission resolved that Part 192 be adopted to supplement GO 112-B and GO 94-A.[5] The immediate result was a GO that contained a mix of ASME B31.8 standards (legacies from the regulatory scheme that existed prior to federal regulation) and the newly incorporated federal regulations. This dual system, mixing the old and the new, lasted only a few months. In April 1971, the Commission adopted GO 112-C deleting the references to ASME and superseding GO 112-B in its entirety. GO 112-C (RH-32); Dec. 78513, adopting GO 112-C on Jan. 12, 1971, effective Apr. 30, 1971 (RH-30).

GO 112-C reflected a substantial shift in state regulatory policy. The Commission had previously taken the approach of incorporating ASME B31.8 standards, with modifications. It now eliminated references to ASME B31.8. *Id.* at 3 ("Any reference to the B31.8 Code has been eliminated in the proposed order"). GO 112-C instead directly incorporated the Part 192 standards, adding some modifications to reflect more stringent provisions than existed under the Commission's rules. GO 112-D, adopted June 5, 1979, continued along this path, modifying Part I and Part II of GO 112-C to

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[5] Former GO 94-A set out rules governing gas storage facilities and holders. (RH-31).

reflect federal regulatory changes, and adding a new Part III to implement the Liquefied Natural Gas Terminal Act of 1977 (RH-33). GO 112-D (RH-34); Dec. No. 90372, adopting GO 112-D effective July 5, 1979 (RH-35).

As noted, federal pipeline safety laws continuously changed in the 1970s and 1980s. The result was that the Commission had trouble keeping GO 112-C (and later 112-D) up to date. Because GO-112 directly incorporated the federal standards, it was a lengthy document. And there was always a risk of conflict with federal law if revisions to the GO lagged behind changes to federal law. The Commission addressed these problems when it adopted GO 112-E in 1995. GO 112-E (RH-36); Dec. 95-08-053, adopting GO 112-E on Aug. 11, 1995, effective Sept. 11, 1995 (RH-37). GO 112-E incorporated the federal regulations by reference, thereby eliminating the former practice of directly incorporating the federal regulatory standards into GO 112, making GO 112 a more concise document. In fact, Go 112-E eliminated other provisions unique to California, including several recordkeeping provisions. GO 112-E also set in place a structure that allowed it to automatically adopt federal regulatory changes as they were made. GO 112-E remains the primary GO governing gas transmission pipeline safety in California.[6]

C. Industry, State and Federal Partial Exemptions for Existing Pipelines

The chart below tracks the development -- first in the form of industry standards, and later state and federal rules -- of the policy decision to partially exempt existing pipeline facilities from regulation. The narrative that follows the chart explains these developments in greater detail.

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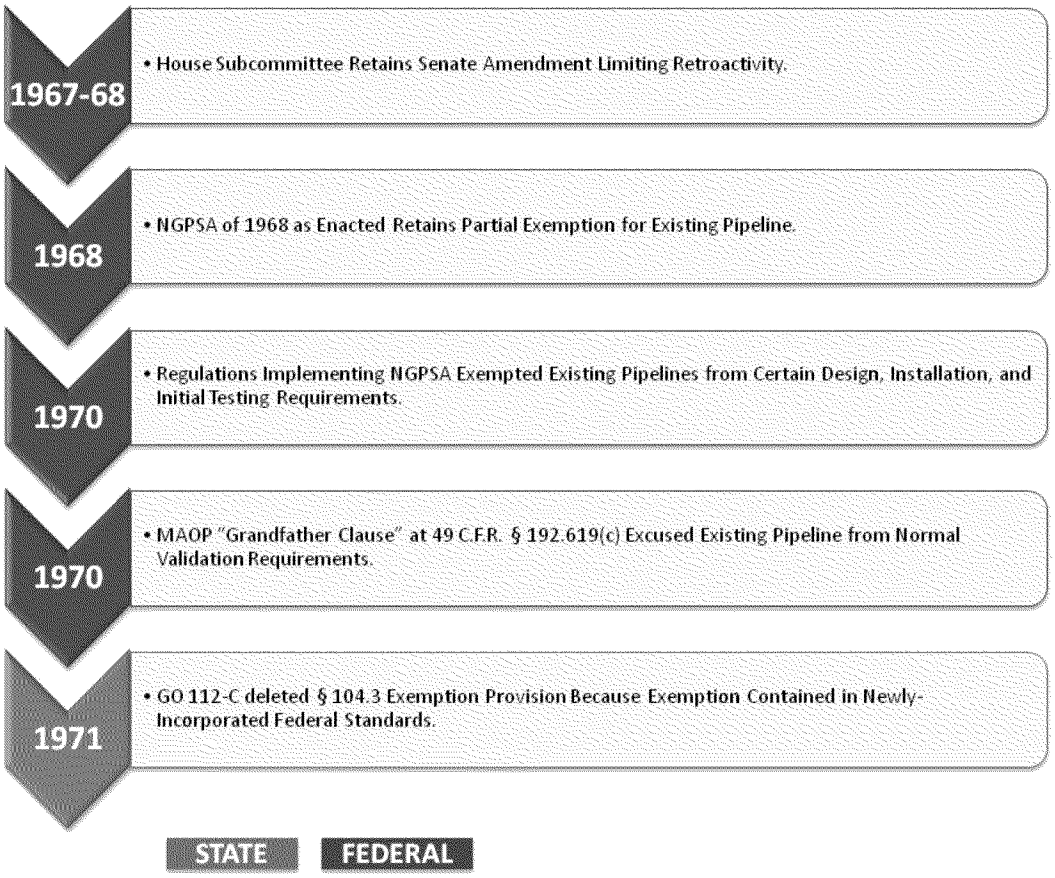
[6] Other General Orders have regulated gas operators but their provisions touch on transmission pipelines only peripherally. For example, GO 58-A sets standards for gas service but its provisions are mainly aimed at local distribution systems, gas service, and gas delivery.

FIGURE 1-3
PACIFIC GAS AND ELECTRIC COMPANY
DEVELOPMENT OF POLICY DECISION TO PARTIALLY EXEMPT EXISTING PIPELINES FROM REGULATION



1. GO-112 Partially Exempted Existing Facilities.

The 1959 OII that led to the adoption of the original GO-112 was not a reaction to a specific event, but instead was an effort on the part of the Commission to get out ahead of gas pipeline safety regulation. *See* Decision No. 61269 (December 28, 1960) (RH-2) (explaining why the Commission felt it necessary to adopt a general order to promote pipeline safety). The Commission did not need to wait for a serious pipeline safety accident before taking action. *Id.* In fact, regulatory agencies in 14 states had already prescribed pipeline safety rules. *Id.*

In other words, the Commission's pipeline safety regulations were forward-looking. Like the ASME standard it adopted, GO 112 partially

exempted existing pipeline facilities (and related records) from its reach. Section 104.3 stated:

> It is not intended that these rules be applied retroactively to existing installations in so far as design, fabrication, installation, established operating pressure, and testing are concerned. It is intended, however, that the provisions of these rules shall be applicable to the operation, maintenance, and up-rating of existing installations.

GO 112, § 104.3(RH-3). [7] The provision manifested the Commission's intent not to regulate the design, manufacture, construction, and initial testing of pipeline facilities placed in the ground prior to GO 112's July 1, 1961, effective date.

The same statement of intent that appeared in Section 104.3 of GO 112 appears in two more iterations of GO 112. Both GO 112-A and GO 112-B included the same partial exemption for existing facilities. GO 112-A, § 104.3 (RH-4); GO 112-B, § 104.3 (RH-6). These later statements confirm the Commission's resolve not to apply GO 112 (or GO 112 A or B) to

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[7] The wording of Section 104.3 is derived from a provision that appeared in both the 1955 and 1958 revisions of ASME B31.8. ASME B31.8, § 804.6 included the statement:

> It is not intended that this code be applied retroactively to existing installations insofar as design, fabrication, installation, established operating pressure, and testing are concerned. It is intended, however, that the provisions of this shall be applicable to the operation, maintenance, and up-rating of existing installations.

ASME 1955; ASME 1958 (RH-3). This point is significant because it shows a broader recognition within the pipeline industry that emerging safety standards had only limited application to existing facilities.

facilities that existed prior to July 1, 1961, the effective date of the original GO 112.

Records provisions in these early GO 112s must be read against the backdrop of § 104.3's partial exemption for existing facilities. For example, one former recordkeeping provision in GO 112, § 122, required "[s]pecifications for material and equipment, installation, testing and fabrication to be maintained by the utility." (RH-3). This prescriptive recordkeeping requirement (later removed from subsequent iterations of GO 112) obligated a utility to maintain certain records for facilities installed after July 1, 1961. By the terms of § 104.3, however, this provision never extended to the initial design, construction, and testing of preexisting facilities.

The partial exemption set forth in § 104.3 dropped out when the Commission adopted GO 112-C in April 1971. In its Decision, the Commission explained: "[s]ection 104.3 of G.O. 112-B which covers applicability of the rules to existing installations is deleted, because the subject is covered by Section 192.13 of Chapter II of proposed GO 112-C and the federal standards are more stringent." GO 112-C Decision at 3 (RH-30).[8] Thus, as of April, 1971, GO 112-C's provision limiting its

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[8] The GO 112-C Decision's reference to Section 192.13 was a reference to the retroactivity provisions of the newly promulgated 1970 federal pipeline safety regulations. Those regulations (as incorporated by GO 112-C) provided:

§ 192.13 General

(a) No person may operate a segment of pipeline that is readied for service after March 12, 1971, unless that pipeline has been designed, installed, constructed, initially inspected, and initially tested in accordance with this part.

(b) No person may operate a segment of pipeline that is relocated, or otherwise changed after November 12, 1970, unless that replacement, relocation, or change has been made in accordance with this part.

(c) Each operator shall maintain, modify as appropriate, and follow the plans, procedures, and programs that it is required to establish under this part.

(RH-30)

retroactive application had been deleted in favor of the comparable provision in federal law. The federal regulations, like GO 112, rested on a fundamental public policy decision to exempt from regulation the design, manufacture, construction and initial testing of existing facilities.

2. The 1968 Federal Law Also Partially Exempted Existing Facilities

Federal pipeline law also partially exempts existing pipeline facilities from its reach. As a consequence, and as discussed below, certain federal recordkeeping requirements promulgated in 1970, and amendments thereafter, did not extend to existing facilities.

The question of how a national pipeline safety law might apply to existing pipeline facilities figured prominently in the legislative debate that led to the NGPSA's enactment. Senate Bill 1166 (S.1166) was introduced in March, 1967. S. 1166, 90th Cong. (1967) (RH-38). As originally proposed, Section 3 of the bill authorized the Secretary to promulgate regulations with full retroactive application to existing facilities: "Such regulations . . . shall apply to the design, installation, inspection, testing, construction, extension, operation, replacement, and maintenance of existing and proposed gas pipelines . . . ." *Id.* at § 3.

The Senate Commerce Committee took up S.1166 in hearings held in April and August, 1967. In his prepared remarks addressed to the Senate Commerce Committee in April, the Secretary of Transportation urged the Committee to adopt a law with full retroactive application. *S. 1166, A Bill to Authorize the Secretary of Transportation to Prescribe Safety Regulations for the Transportation of Natural Gas by Pipeline, and for Other Purposes: Hearings Before the Senate Committee on Commerce,* 90th Cong 2-8 (1967) (prepared remarks of Secretary of Transportation Alan S. Boyd) (RH-39). The Secretary signaled that, if granted the authority, he would require the pressure testing of all existing pipeline facilities:

> I previously mentioned that the code used by the industry is deficient concerning existing pipelines both in transmission and distribution systems. The American

people must be assured that these lines are safe and that lines constructed today will remain safe throughout their useful life. To do this, if the Department is given the authority by enactment of this legislation, we propose a retesting program for existing lines and a more complete test of new lines after construction.

Id. at 8.

These remarks prompted the following exchange:

SENATOR GRIFFIN: Mr. Secretary, on page 13 of your statement you say that "We propose a retesting program for existing lines." I don't know a great deal about this industry, but I would imagine a retesting program of all existing lines could be a rather major undertaking.

SECRETARY BOYD: I think it is quite right to assume that it is a major undertaking. We are unable to ascertain how much it will cost because a large part of that question is really a function of time. Certainly our thinking up to the moment is that there should be a very reasonable period of time within which to initiate, carry out, and complete the testing program. I can't give you a more definitive answer.

Id. at 20 (colloquy between Sen. Robert P. Griffin (MI) and Secretary Boyd). Later, in the same hearings, the Chairman of the FPC was questioned by Senator Griffin on the same topic. *Id.* at 30-50 (testimony of Lee C. White, Chairman of the FPC). The Chairman testified in substance that the costs of retesting existing pipelines would be borne by the gas system, and perhaps ultimately by the consumers in the form of higher rates. *Id.* at 40. The Committee also received information indicating that the cost of retesting all 200,000 existing miles of transmission pipeline in the United States could exceed one billion dollars. *Id.* at 337 (testimony of W. A. Strauss, representing the Interstate Natural Gas Association of America (INGAA)).

In the fall of 1967, the Senate Commerce Committee reported out a version of S.1166 substantially different from the one initially introduced. In particular, the full retroactivity clause of Section 3 had been redrafted to provide for only limited retroactivity:

> [S]tandards affecting the design, installation, construction, initial inspection, and initial testing shall not be applicable to pipeline facilities in existence on the date such standards are adopted, unless the Secretary finds that a potentially hazardous situation exists, in which case he may by order require compliance with any such standards. Such Federal safety standards shall be practicable and designed to meet the needs of pipeline safety.

S.1166, as reported to the full chamber by the Senate Commerce Committee, Section 3(b), at 6 (1967) (RH-40). The reasons prompting the change—a change from a fully retroactive law to a partially retroactive one—were set forth in the Senate Committee Report:

> The committee appreciates the fear of the industry that it might be required to bear the expense of removing large quantities of pipeline laid before a standard becomes effective for no other reason than that it does not comply with the Federal standard, irrespective of whether the pipe is sound and safe. For this reason, the committee has provided that standards affecting the design, installation, construction, initial inspection and initial testing shall not be applicable to pipeline facilities in existence on the date such standard is adopted, unless the Secretary finds that a potential hazardous situation exists, in which case, he may by order require compliance with any such standard.

S. Rep. 733, 90th Cong., p. 7 (1967) (RH-41). Thus, when S. 1166 passed out of the Senate, it included Section 3(b)'s limited exemption for

existing facilities. S.1166, as passed by the Senate, 90th Cong., § 3(b), at 4 (1967) (RH-42).

In late 1967, S.1166 moved to the House, where it was joined with other House pipeline safety bills and referred to the Subcommittee on Communications and Power of the Committee on Interstate and Foreign Commerce. The House Subcommittee held numerous hearings between December, 1967 and March, 1968. *H.R. 6551, S.1166, Bills to Prescribe Safety Standards for the Transportation of Natural and Other Gas By Pipeline, and for Other Purposes Before the House Subcommittee on Communications and Power of the Committee on Interstate and Foreign Commerce*, 90th Cong. (1967-68) (RH-43). In testimony before the Subcommittee, the Transportation Secretary urged that Section 3(b), as amended in the Senate Commerce Committee, be stricken. He characterized Section 3(b) as a "partial exemption from retroactive application" of standards contained in S.1166." *Id.* at 17 (prepared remarks of Secretary Boyd). The Secretary went on to testify: "[t]he primary problem results from the fact that whatever standards have been applied, have been applied primarily to new pipe and to new construction." H. Rep. No. 90-1390, at 17 (1968) (appendix to statement of Secretary Boyd) (RH-9). The Secretary testified further that he considered the major shortcoming of the ASME code, which had been adopted by most of the States and voluntarily implemented by the industry, was that it did not provide for systematic testing or evaluation of pipe already in the ground. *Id.* As was the case in the Senate, there was significant debate on Section 3(b) in the House. One concern expressed by the pipeline industry was that, even as amended, Section 3(b) retained a clause allowing the Secretary to declare a hazard and apply existing standards to eliminate the hazard. *Id.* at 22-23 (Subsection "Applications of Standards to, and Removal of, Hazards in Existing Pipeline Facilities"). The industry was concerned that without limits, the clause could be read to allow the Secretary to effectively gut Section 3(b)'s limited retroactivity provision. *Id.*

The House retained the partial exemption for existing pipeline, and weakened slightly the Secretary's ability to declare existing hazards by requiring that his finding be particularized. House Subcommittee on Communications and Power, 90th Cong., S.1166, § 3(b) at 4 (Subcommittee Print 1968) (RH-44). The House Report summarized:

> The committee believes that in giving the Secretary this authority to move directly to remove a hazard, the Secretary has the power permitting him to achieve protection to the public much more quickly and effectively than he might have were he to invoke the cumbersome and more restrictive route of attempting to apply standards of general universality to a given situation.

H. Rep. 1390, 90th Cong., p.23 (1968)(RH-9). The bill advanced to the House Committee of the Whole, where it was passed on July 2, 1968. After differences between the Senate and House versions of S.1166 were reconciled in Conference, it was passed by the House on July 26, 1968, and by the Senate on July 31, 1968. Section 3(b) of the Natural Gas Pipeline Safety Act of 1968, Pub. L. 90-481 was signed into law on August 13, 1968. As enacted, Section 3(b) provided in part:

> No later than twenty-four months after the enactment of this Act, and from time to time thereafter, the Secretary shall, by order, establish minimum Federal safety standards for the transportation of gas and pipeline facilities. Such standards may apply to the design, installation, inspection, testing, construction, extension, operation, replacement, and maintenance of pipeline facilities. *Standards affecting the design, installation, construction, initial inspection, and initial testing shall not be applicable to pipeline facilities in existence on the date such standards are adopted.*

Public Law 90-481, 82 Stat. 720 (1968) (emphasis added) (RH-12).

The final rule promulgating the minimum federal safety standards in 1970 implements the legislative exemption for existing facilities by exempting them from "those provisions applicable to design, installation, construction, initial inspection, and initial testing of new pipelines." 35 Fed. Reg. at 13250 (RH-14). DOT clarified in the Preamble of that same rule, however, that "existing pipelines were subject to the maintenance, repair, and operations requirements." *Id.* at 13250. DOT also explained that the new provision at 49 C.F.R. § 192.13 was added to "clearly state the applicability of these regulations with respect to new and existing pipelines, and to avoid confusion as to the retroactive effect of these standards." 35 Fed. Reg. at 13251. Because of the "long lead times involved in preparing for pipeline construction," the new requirements for design, installation, construction, initial inspection, and initial testing would only apply to new pipelines that became ready for service after March 12, 1971. *Id.*

In particular, DOT recognized the need to treat existing pipelines separately when it promulgated 49 C.F.R. § 192.619(c), allowing an option for operators of pipelines existing prior to promulgation of the 1970 final rules to establish maximum allowable operating pressure ("MAOP") based on historical operating pressure, rather than relying on design criteria or pressure testing. 35 Fed. Reg. at 13273 (RH-14). Commonly referred to as the "grandfather clause," this provision was the product of the rulemaking by DOT in 1970 establishing Part 192. It was not addressed during the legislative history associated with the passage of the NGPSA or any proposed rules. Instead, in response to comments submitted by the FPC that some pipelines may or may not have been pressure tested in compliance with ASME B31.8, the Preamble to the 1970 rulemaking stated:

> In view of the statements made by the Federal Power Commission, and the fact that this Department does not now have enough information to determine that existing operating pressures are unsafe, a "grandfather" clause has been included in the final rule to permit continued operation of pipelines at the highest pressure to which

> the pipeline had been subject during the 5 years preceding July 1, 1970.
>
> The uprating requirements in Subpart K apply when an operator wants to establish a maximum allowable operating pressure higher than the highest actual operating pressure to which the pipeline was subjected in these 5 years. This will prevent an operator from using a theoretical maximum allowable operating pressure which may have been determined under some formulae used 20, 30 or 40 years ago.

35 Fed. Reg. at 13248 (RH-14).

In implementing the regulations, OPS consistently exempted pipeline facilities installed prior to 1971 from the design, construction, and initial testing requirements in Part 192. The Transportation Safety Institute (TSI), the DOT training agency, provides a chart setting forth the retroactive and non-retroactive subparts of Part 192. The April 2010 DOT/TSI document, chart entitled "Pipeline safety Laws" (RH-45), provides, in part:

TABLE 1-1
PACIFIC GAS AND ELECTRIC COMPANY
RETROACTIVE AND NON-RETROACTIVE SUBPARTS OF PART 192

Retroactive Subparts	**Non-Retroactive Subparts**
A. General	B. Materials
I. Corrosion (Dates:.July 31, 1971, August 1, 1971)	C. Pipe Design
K. Uprating	D. Design of Pipeline Components
L. Operations	E. Welding of Steel in Pipelines
M. Maintenance (Dates: November 12, 1970, March 12, 1971, July 31, 1977)	
O. Pipeline Integrity Management	F. Joining of Materials Other than by Welding

P. Distribution Integrity Management	G. General Construction Requirements for Transmission Lines
	H. Customer Meters, Services, Regulators and Service Lines
	J. Testing Requirements
	N. Operator Qualifications

Since 1973, OPS has also provided interpretations that support the exemption provisions in Section 192.13.[9] Logically, if these subparts do not apply retroactively to existing pipelines, then the recordkeeping provisions associated with them do not either.

This account of how and why policymakers decided to partially exempt existing facilities demonstrates that, more than a generation ago, state and federal policymakers grappled with a significant decision. They chose to partially exempt existing pipeline facilities from certain regulatory requirements, including regulations requiring the pressure-testing of

[9] Examples include: (1) PHMSA, PI-73-006, Interp 192.13(8) (OPS interpretive letter January 26, 1973 letter to the Department of Justice, State of Louisiana ("You ask whether the current erosion protection efforts make the pipeline subject to the requirements in section 192.13(b) . . . [i]t does not appear that a pipeline segment is in any way being replaced, relocated, or other wise changed, that section is not considered applicable")) (RH-46); (2) PHMSA, PI-79-019, Interp. 192.13(15) (June 20, 1979 letter to John Parker in Clinton, North Carolina ("Section 192.317(a) is a construction requirement that, in accordance with section 192.13, applies to new pipelines readied for service after March 13, 1971, or to existing pipeline that are replaced, relocated, or otherwise changed after November 12, 1970")) (RH-47); (3) PHMSA, Interp. 192.13(19) (November 3, 1982 letter to Tom Reifschneider in Council Bluffs, Iowa ("In this case, § 192.311 would not apply since it only governs the construction of new transmission lines and mains or existing ones that are being replaced, relocated, or otherwise changed (*see* §§ 192.13 and 192.301))) (RH-48); (4) PHMSA, Interp. 192.13(22) (November 19, 1984 letter to Alfred Colabella in Bordentown, New Jersey (". . . any pipelines (or portion thereof) that were readied for service before March 13, 1971, and have not been replaced, relocated, or otherwise changed since November 12, 1970 may be used as service lines under part 192 without regard for the material, design, and construction standards (including standards for initial leak or pressure testing, and initial inspection). The pipelines must, however, meet the applicable operation, maintenance and corrosion control requirements of Part 192.") (RH-49).

transmission pipelines already in the ground. After the San Bruno accident, this policy decision is being revisited, as it should. Sixty-one percent of the Nation's transmission lines in the ground today were installed before federal regulations came into effect. American Gas Association, *AGA White Paper on Verification of MAOPs for Existing Steel Transmission Pipeline*, p. 1 (April 2011) ("AGA MAOP White Paper") (RH-50).

D. Change in CPUC Gas Safety Recordkeeping Rules -- 1961 to 2010

This section and the chart below summarize potentially relevant California gas pipeline recordkeeping rules. The narrative part of this section traces the evolution of gas safety recordkeeping rules set out in general orders, resolutions and federal regulations and guidance.

FIGURE 1-4
PACIFIC GAS AND ELECTRIC COMPANY
STATE RECORDKEEPING PROVISIONS: 1961-2010

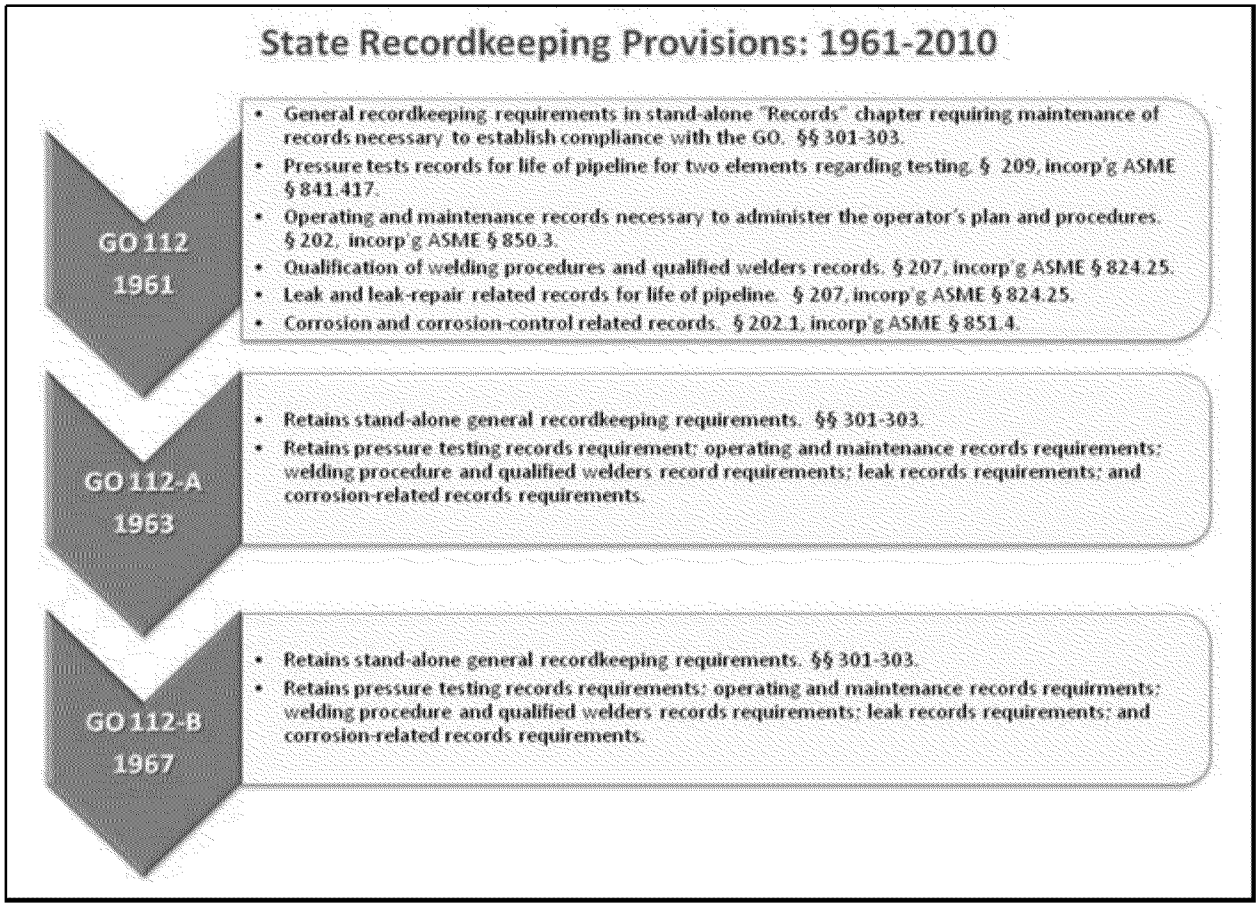
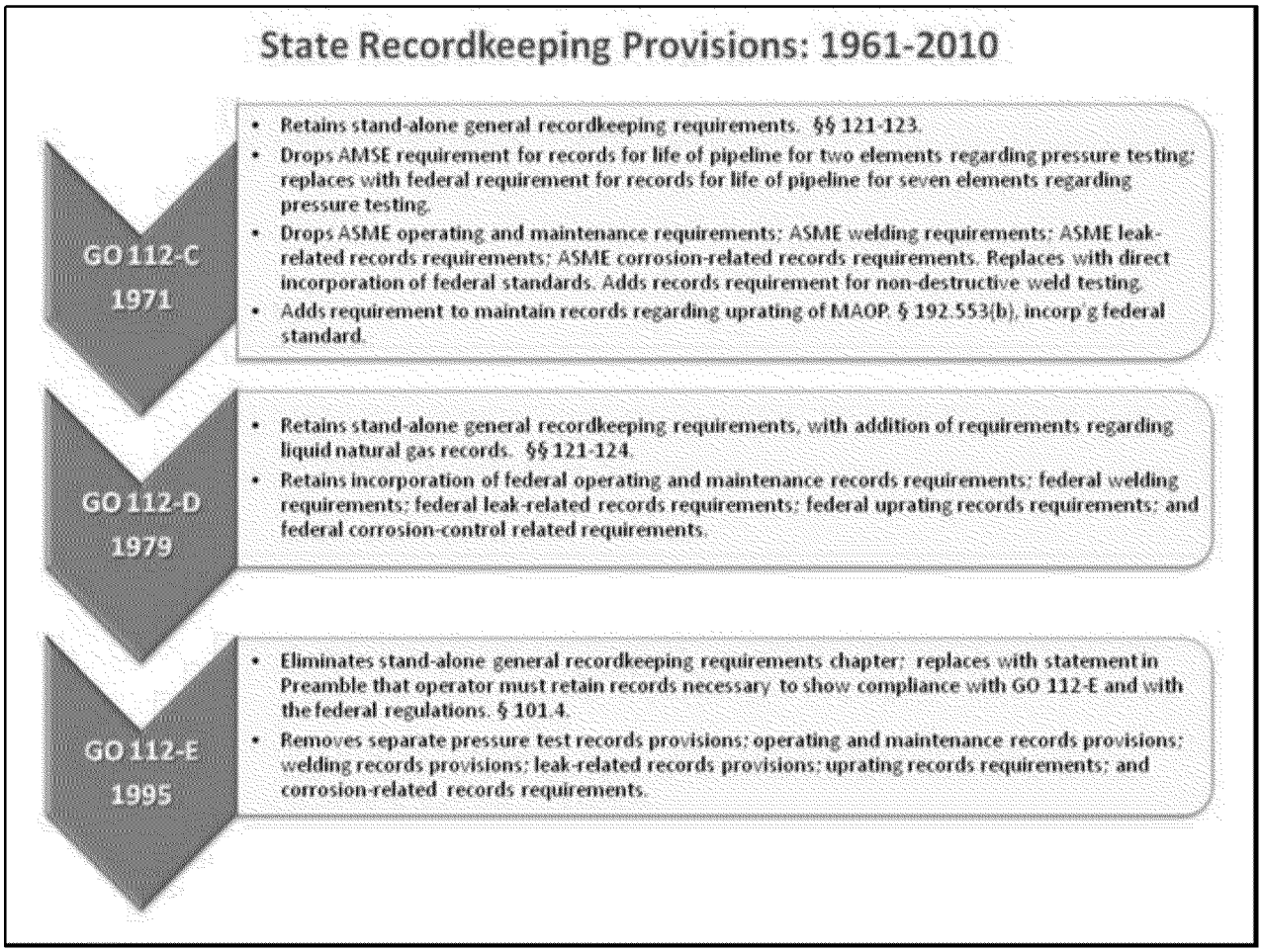


FIGURE 1-5
PACIFIC GAS AND ELECTRIC COMPANY
STATE RECORDKEEPING PROVISIONS: 1961-2010



1. CPUC Gas Safety Recordkeeping Provisions

The original 1961 GO 112 included a separate Chapter (Chapter III) that addressed "Records." It provided:

> 301 GENERAL
>
> 301.1 The responsibility for the maintenance of the necessary records to establish that compliance with these rules has been accomplished rests with the utility. Such records shall be available for inspection at all times by the Commission or the Commission staff.

302 SPECIFICATIONS

302.2 Specifications for material and equipment, installation, testing and fabrication shall be maintained by the utility.

303 OPERATING AND MAINTENANCE PROCEDURES

303.1 Plans covering operating and maintenance procedures, including maximum actual operating pressure to which the line is intended to be subjected, shall be maintained by the utility.

303.2 No pipeline shall be operated in excess of the maximum actual operating pressure recorded by the company in accordance with this section.

(RH-3). These same general recordkeeping requirements survived without substantial change in GO 112-A (§§ 301-303) (RH-4); 112-B (§§ 301-303) (RH-6); 112-C (§§ 121-123) (RH-32); and General Order 112-D (§§ 121-124) (RH-34).

In addition to the General Records provisions discussed above, GO 112 also incorporated certain ASME B31.8 records provisions. GO 112 § 107.1 provided that gas transmission and distribution facilities shall be constructed and operated in compliance with the provisions of ASME B31.8 – 1958. (RH-3). Spread throughout ASME B31.8 are discrete recordkeeping provisions that, to the extent they do not conflict with other provisions of GO 112, applied from July 1, 1961, until the Commission ceased incorporating ASME standards when it adopted GO 112-C in April, 1971. The ASME recordkeeping provisions incorporated through GO 112 are summarized below.

Pressure Test Records. The 1958 ASME Standard, as incorporated in GO 112, included a recordkeeping provision for pressure-testing records. (RH-3). ASME 841.417 provided as follows: "The operating company shall maintain in its file for the useful life of each pipeline and main, records showing the type of fluid used for test and the test pressure." This ASME recordkeeping provision was incorporated without change in GO 112A (RH-4) and GO 112B (RH-6). With the adoption of GO 112-C, in April, 1971, ASME 841.417 dropped out of the GO. GO 112-C instead incorporated the

pressure-test recordkeeping provisions set forth in 49 C.F.R. § 192.517. *See* GO 112-C, Part II (RH-32).

The pressure test recordkeeping provision incorporated into GO 112, 112-A and 112-B was unique in at least one respect. It was significantly less demanding than a later federal analog. To satisfy the GO, the pressure-test record must contain two requirements: (1) the type of fluid used in the test, and (2) the test pressure. (RH-3; RH-4; RH-6). The latter federal requirements issued in 1970 contained several additional elements. *See* 49 C.F.R. § 192.517; 35 Fed. Reg. at 13270 (RH-14).

Operating and Maintenance Records. GO 112 incorporated a 1958 ASME B31.8 provision setting forth the obligation of an operating company to maintain a plan covering operating and maintenance procedures. Section 850.3 provided:

> **850.3 Basic Requirement.** Each operating company having gas transmission or distribution facilities within the scope of this code shall:
>
> (a) Have a plan covering operating and maintenance procedures in accordance with the purpose of this code.
>
> (b) Operate and maintain its facilities in conformance with this plan.
>
> (c) Keep records necessary to administer the plan properly.
>
> (d) Modify the plan from time to time as experience with it dictates and as exposure of the public to the facilities and changes in operating conditions require.

GO-112 incorporating ASME B31.8, § 850.3 (1958). (RH-3). This ASME recordkeeping provision was incorporated without change in GO 112-A (RH-4) and GO 112-B. *See* GO 112-A & 112-B (RH-6). As with other ASME incorporated provisions, it dropped out with the adoption of GO 112-C, in April 1971.

Welding Records. GO 112 incorporated a 1958 ASME B31.8 provision relating to records for qualification of procedures and welders on pipelines operating at hoop stresses of 20% or more of the Specified Minimum Yield Strength. (RH-3). Section 824.25 provided:

Records of the tests that establish the qualification of a welding procedure shall be maintained as long as the procedure is in use. The operating company or contractor shall, during the construction involved, maintain a record of the welders qualified showing the date and results of tests.

This ASME recordkeeping provision was incorporated without change in GO 112-A (RH-4) and GO 112-B (RH-6). As discussed above, Section 824.25 dropped out of GO 112-C.

Corrosion Records. The 1958 ASME B31.8 standard, as incorporated in GO 112 included a recordkeeping provision governing certain limited records that pertain to pipeline corrosion and corrosion control (RH-3). ASME 851.4 provided as follows:

851.4 Corrosion Records. Records shall be made of each pipeline inspection for external or internal corrosion covering conditions found, adequacy of cathodic protection, if so protected, condition of pipeline coating. Depth of pits noted and extent of corroded area. If repairs are made, method used shall be stated.

(RH-3). This ASME B31.8 recordkeeping provision was incorporated without change in GO 112A and GO 112B (RH-4; RH-6). Again, with the adoption of GO 112-C, in April 1971, Section 851.4 dropped out.

Leak Records. The 1958 ASME Standard, as incorporated in GO 112 included a recordkeeping provision for pipeline leak records. (RH-3). Section 851.5 provided as follows:

851.5 Pipeline Leak Records. Records shall be made covering all leaks discovered and repairs made. All pipeline breaks shall be reported in detail. These records along with leakage survey records, line patrol records and other records relating to routine or unusual inspections shall be kept in the file of the operating company involved, as long as the section of line involved remains in service.

(RH-3). This ASME recordkeeping provision was incorporated without change in GO 112A (RH-4) and GO 112B (RH-6),. With the adoption of GO 112-C, in April 1971, ASME 851.5 also dropped out.

2. The Commission Withdraws Stand-Alone State Recordkeeping Standards

Despite the coming and going of certain ASME recordkeeping requirements into and out of different iterations of GO 112, the General Records provisions contained in the original GO 112 remained in place from GO 112 through GO 112-D. (RH-3; RH-4; RH-6; RH-32; RH-34). By 1995, however, they too would drop out. Sections 121-124 of 112-D (the General Records provisions) were deleted in GO 112-E in 1995. GO 112-E (RH-36); Dec. 95-08-053 adopting GO 112-E (RH-37). GO 112-E instead contains a short recordkeeping statement in its Preamble:

> 101.4 The utilities shall maintain the necessary records to ensure compliance with these rules and the Federal Pipeline Safety Regulation, 49 CPR [sic], that [sic] are applicable. Such records shall be available for inspection at all times by the Commission or Commission Staff.

(RH-36). There is only a brief discussion of this provision in the Decision adopting GO 112-E. "Utilities are required to maintain necessary records, available for inspection by the Commission, to ensure compliance with these rules and the applicable sections of 49 CFR." Despite this brief explanation, it is possible to discern the Commission's rationale for the change to less prescriptive recordkeeping rules. The Commission sought to construct a GO that was concise and that would more closely match federal rules and their continuing changes. *See* Dec. 95-08-053 (explaining that staff proposed GO 112-E to eliminate the lag time in adopting changes to conform to federal regulatory changes and the duplication of state and federal standards) (RH-37). The Commission likely perceived that the removal of specific recordkeeping provisions in favor of a provision making general reference to federal recordkeeping requirements was consistent with that regulatory approach.

Thus, by the time of GO 112-E's adoption, the last vestiges of specific recordkeeping requirements either incorporated from ASME or imposed directly by Commission rule had been removed. Deleted from GO 112-E are the specific Records provisions contained in the now-superseded 112-D (Section 122 (SPECIFICATIONS), Section 123 (OPERATING AND MAINTENANCE PROCEDURES) and Section 124 (ABNORMALITY AND FAILURE RECORDS). The federal recordkeeping provisions, and the regulatory philosophy behind them (see discussion below), would, going forward, provide the main source of recordkeeping guidance for the State's pipeline operators.

3. Limited Past Records Retrievability Guidance.

One of the OII's Directives (Paragraph 2.E) previews a potentially new standard governing the retrievability of records: records should be maintained in such a way as to be "identified, accessed, and retrieved efficiently and promptly." OII at 18. It is difficult to identify in the Commission's recordkeeping rules or elsewhere significant past guidance about the retrievability (as opposed to retention) of records. The guidance that does exist aims at ensuring that records are readily retrievable locally and are available to regulators. Thus, for example, 1962 FPC regulations required that at each office of the natural gas company where records are kept or stored, such records as are required to be preserved and shall be so arranged, filed, and currently indexed that they may be readily identified and made available to the FPC's representatives. 27 Fed. Reg. Reg. 12241-52 (Dec. 12, 1962), codified at 18 C.F.R. Part 225.2 (RH-51). GO 58-A, which remains in effect, contains similar provisions specifying that gas records—mainly but not exclusively gas distribution and service records—should be maintained locally in districts, divisions, and control, storage and compressor stations. *See* GO 58-A 3.b-d (RH-52).

E. Changes in Federal Gas Safety Recordkeeping Requirements from 1968 to 2010

The regulations implementing the 1968 NGPSA introduced federal recordkeeping standards. Following the initial regulations, OPS added only a handful of discrete recordkeeping requirements over the following 30 years until the introduction of Integrity Management regulations in 2003.

In overview, federal regulators embraced a regulatory philosophy that emphasized flexibility. The regulations include numerous examples where regulators accommodate the practical reality that operators, particularly of older pipelines, may lack gas pipeline records. Federal regulators have rejected invitations to provide the industry with specific recordkeeping standards or to review the recordkeeping procedures of individual operators.

FIGURE 1-6
PACIFIC GAS AND ELECTRIC COMPANY
FEDERAL RECORDKEEPING REQUIREMENTS AND GUIDANCE: 1970-2010

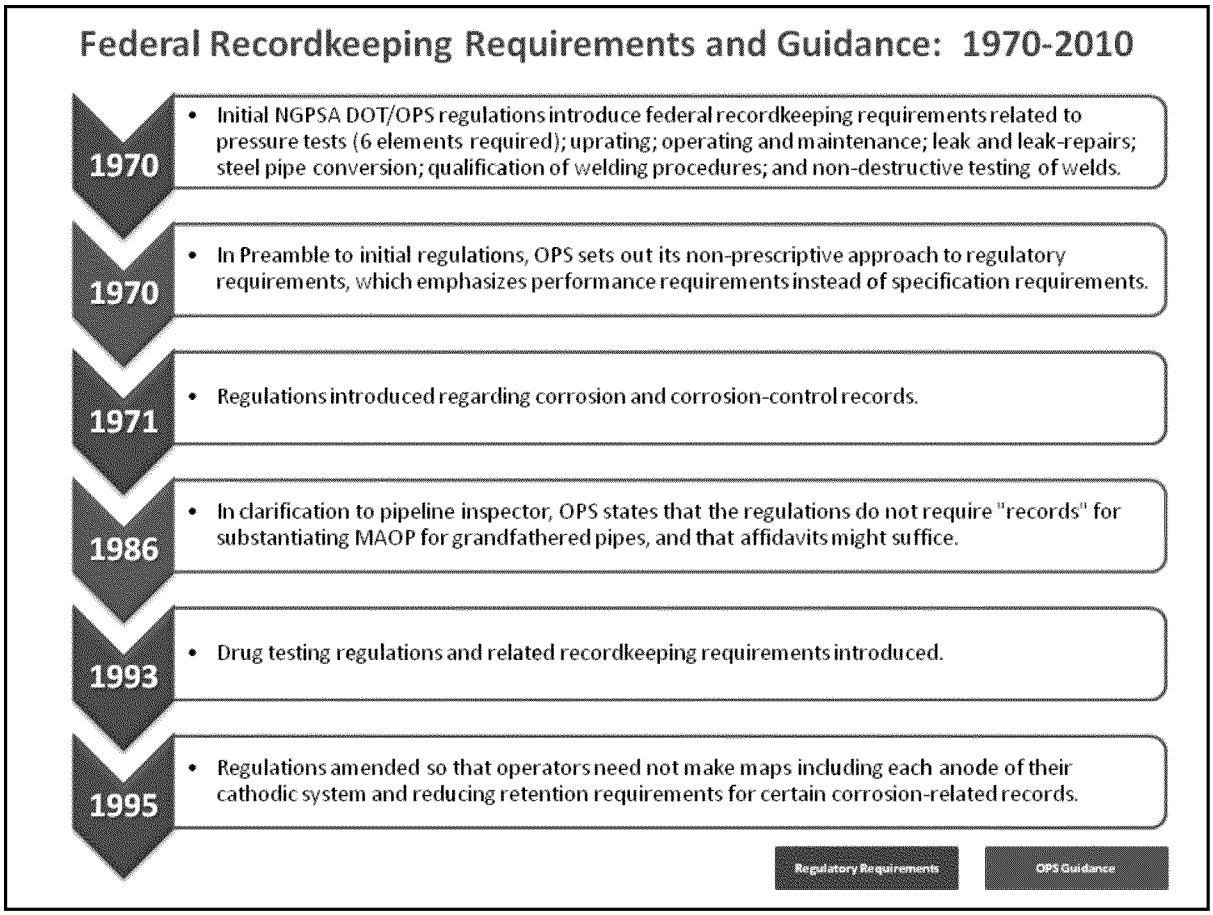
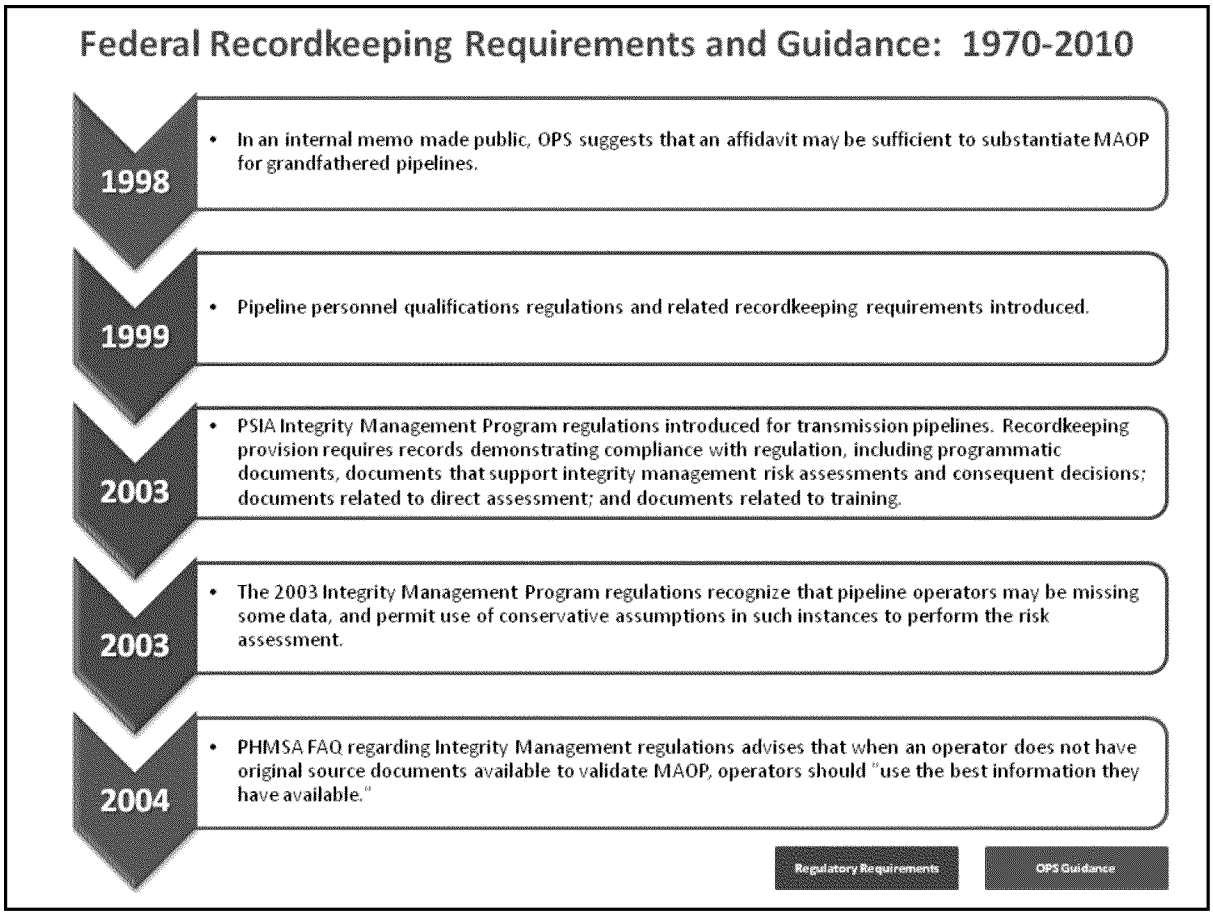
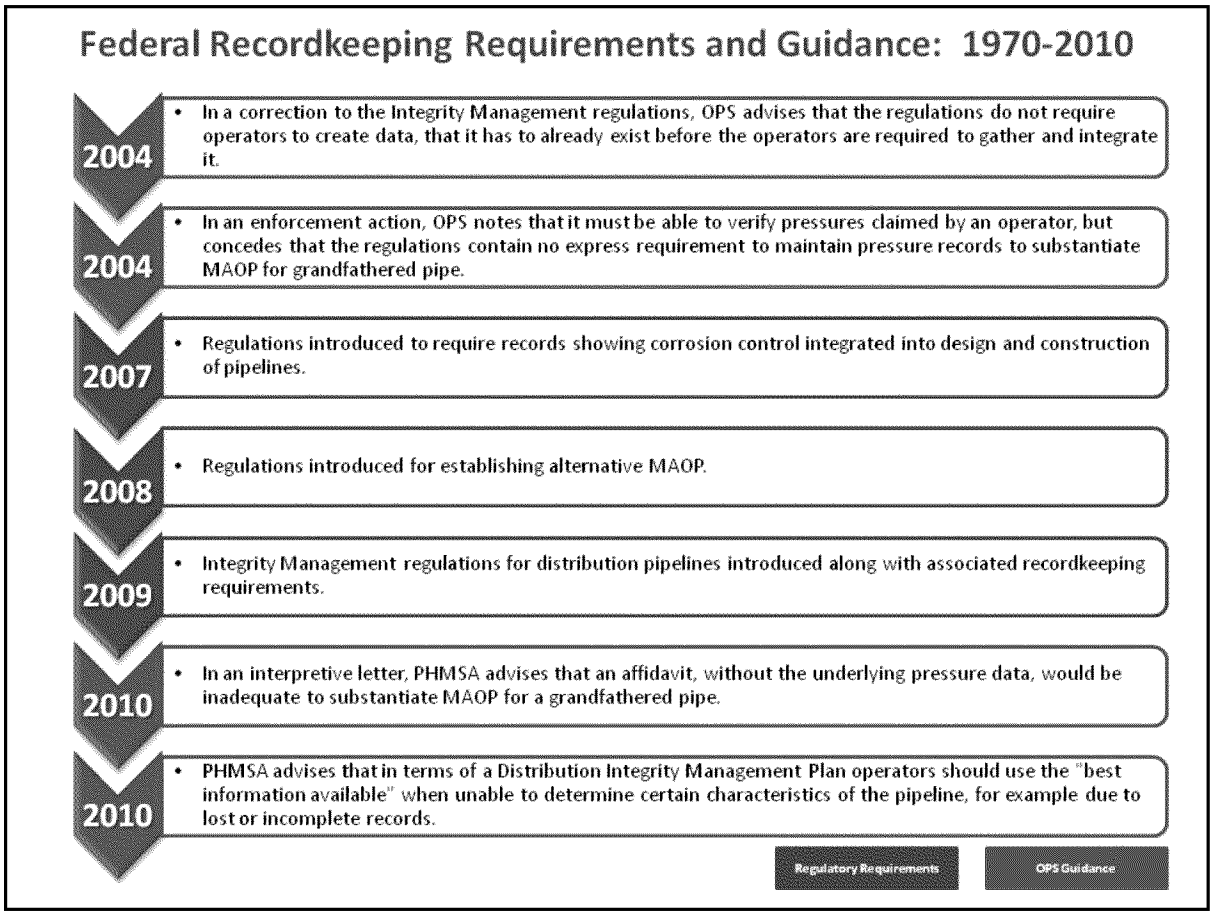


FIGURE 1-7
PACIFIC GAS AND ELECTRIC COMPANY
FEDERAL RECORDKEEPING REQUIREMENTS AND GUIDANCE: 1970-2010





1. Federal Regulators Recognized that Operators May Not Have Complete Records

"The natural gas industry is no different from other industries that face a challenge in maintaining its records of assets that are over 40 years old. One can imagine the challenges of keeping detailed physical paper records on every pipeline segment some of which date back in excess of forty years." AGA MAOP White Paper, p.2 (RH-50). From the beginning, federal pipeline safety regulations have confronted this challenge by providing guidance addressed to the practical reality that operators may not have complete pipeline records, particularly for pre-1970 pipelines. For example, Cesar de Leon is expected to testify at a later stage in this proceeding that in the late 1970s, when he was head of the OPS, he was consulted by a pipeline company preparing to acquire a pipeline system with incomplete records. Mr. de Leon recalled advising that the lack of complete records

should not deter the acquisition of the pipeline system because it would not affect the acquiring company's ability to operate the system in compliance with the regulations.

The 2003 Integrity Management rules and guidance address in frank terms the problem that data may not exist for certain pipelines. After issuing the final rule in December 2003, OPS made corrections. One of the corrections was to § 192.917(b), a paragraph requiring an operator to gather and integrate data from its entire pipeline system that could be relevant to identifying potential threats. In a petition for reconsideration, an industry group expressed the concern "that an operator will be required to create data" where none existed. In the Preamble, OPS responded:

Although it seems self-evident that an operator must only gather and integrate existing data about its pipeline system, industry has expressed concern that an operator will be required to create data. We have revised the paragraph to clarify that the data has to exist before it is gathered and integrated for analysis.

69 Fed. Reg. 18228, 18229 (April 6, 2004) (RH-53). The correction added the qualifier "existing" to the regulation. *Id*. at 18232.

This early recognition that the industry's records may be less than complete carries forward into more recently promulgated Integrity Management regulations at 49 C.F.R. 192 Part O. Those regulations incorporate the standards of ASME B31.8S (2004). The ASME Standards permit the use of conservative assumptions when operators do not possess complete pipeline information. For example, when addressing the requirements for gathering, reviewing, and integrating data for the different threats, the Standard enumerates what an Integrity Management program must address. Specifically, the Standard states, "[w]here the operator is missing data, conservative assumptions shall be used when performing the risk assessment or, alternatively, the segment shall be prioritized higher." The Standard allows for the use of conservative assumptions in risk assessment for external corrosion, internal corrosion, stress corrosion cracking, manufacturing threats, construction threats, equipment threats,

and weather-related threats. The Standard goes on to note that "[w]hen pipe data is unknown, the operator may refer to History of Line Pipe Manufacturing in North America by J.F. Kiefner and E.B. Clark, 1996, SME." *See also* DIMP Guidance, "Knowledge," in *Elements of a Distribution Integrity Management Plan* ("If practical, the operator should use the best information available to make decisions about what is in the existing system. In some cases, an operator may be unable to determine the materials or characteristics of some of the components of the system. This may be due to lost records, systems gained through mergers or acquisitions without complete records, or other reasons. For example, the year of installation might be used to make such decisions about piping material, joint type, coating type, or repair methods used") (RH-55).

Recordkeeping guidance has dealt directly—if inconsistently—with recordkeeping gaps in the area of establishing MAOP under 49 C.F.R. § 192.619, . Pipeline operators posed the question whether they had to provide original source documents to establish MAOP, and if those records do not exist "will DOT accept inventory map data for pipeline information, MAOP database information, etc.?" The response was practical: "Operators should use the best information they have available . . ." while ensuring that the data is accurate. PHMSA, Integrity Management FAQ-205 (issued Dec. 6, 2004) (RH-56). Yet what "best available information" means has changed over time. In 1986, a DOT pipeline inspector requested clarification from OPS regarding the requirements under 49 C.F.R. § 192.619(c). PHMSA, PI-86-005 (Aug. 4, 1986) (RH-57). He inquired whether "the regulations require that the operator have records to substantiate the pressures used to establish the MAOP per 192.619(c)?" *Id.* In an internal exchange, which was then made public guidance, OPS responded that "[t]he regulations do not require "records," however, enforcement personnel have to apply judgment as to what they will accept to substantiate the operator claim. A violation would have to be clearly obvious to be enforceable." *Id.* OPS then went on to state that "sworn statements by the operators" would be adequate to substantiate MAOP for

grandfathered pipe. *Id.* In 1998, OPS prepared MAOP establishment guidance document reiterating the suggestion that an affidavit could be sufficient in some circumstances. PHMSA, *Determination of Maximum Allowable Operating Pressure in Natural Gas Pipelines, PHMSA* (April 22, 1998) (includes instructions and a form) (RH-58). And then in a 2004 enforcement action, OPS stated that it must be able to verify the pressures that an operator claims to be applicable (but also conceded that the regulations contain no express requirement that pressure records must be maintained to substantiate MAOP for grandfathered pipe). PHMSA, Final Order, CPF 4-2004-1007 (Sept. 13, 2006)) (RH-59). In 2010, OPS provided an interpretative letter stating that an affidavit, without any underlying pressure data, would not satisfy substantiation under Section 619(c). PHMSA, PI-09-0021 (Aug. 11, 2010) (RH-60).

In sum, missing and incomplete pipeline records, particularly for older lines, are challenges the industry as a whole confronts. Federal regulators had to this point accommodated record gaps in pragmatic terms. In regulations, interpretative letters and other guidance they recognized the practical reality that pipeline operators may not possess complete records regarding all of their pipeline segments.

2. A Flexible Approach to Federal Safety Regulations

Federal pipeline safety standards have generally been written in performance-based language to permit operators flexibility in compliance and to allow innovation in the industry. This regulatory philosophy was set out in the Preamble to the initial 1970 regulations:

> Performance v. specification requirements. As indicated in the series of notices upon which this regulation is based, we intend to state the Federal safety standards in performance terms, rather than as detailed specifications, whenever it is possible to do so within the state-of-the-art and without lowering the required level of safety.

Final Rule, 35 Fed. Reg. at 13250 (RH-14). Federal pipeline safety rules have generally been written to permit operators flexibility in compliance and to allow innovation in the industry. 54 Fed. Reg. 46685, 46686 (Nov. 6, 1989) (RH-63). OPS has thus resisted writing rules that specify, or tell an operator "how to do it." 59 Fed. Reg. 6579, 6580 (Feb. 11, 1994) (RH-64).

The limited recordkeeping guidance from OPS that exists hews closely to this overarching regulatory philosophy. In 1975, OPS responded to a letter from an operator regarding the microfilming of various corrosion control records. After receiving the recordkeeping requirement inquiry, OPS advised: "[t]his section does not prohibit the use of microfilming to preserve the records nor does it require that the original documents be retained after being put on film. The regulations do not require the certification of the microfilm process." PHMSA, PI-75-01 (October 21, 1975), letter interpreting 49 C.F.R. §192.491 from Cesar de Leon, Acting Director, OPS (RH-65).

Indeed, the OPS has in the past declined to adopt general standards regarding the sufficiency of recordkeeping procedures or an operator's specific recordkeeping procedures unless legitimacy of the records was questioned. In a letter dated August 5, 1993, OPS responded to an operator's request for guidance regarding the use of computers to store information instead of paper records. OPS wrote that "[u]nder Parts 191 and 192, operators may use any recordkeeping procedure that produces authentic records, without the prior approval of this agency." PHMSA, PI-93-047 (Aug. 5, 1993) (RH-66). In the same letter, OPS resisted an invitation to review an operator's procedures. It noted a practical problem in doing so: The OPS had not provided any recordkeeping standards against which to audit the adequacy of the operator's procedures.

> Although authenticity of records concerns us, for both computer and paper records, *we do not believe there is sufficient need to adopt generally applicable standards governing recordkeeping procedures*. In the absence of such standards, we ordinarily do not review an operator's recordkeeping procedures unless the legitimacy of

records is in question. Accordingly we have no comments at this time on the adequacy of your proposed standards.

Id. (emphasis added). In an early question regarding whether Section 192.603(b) required an operator to maintain maps of gas transmission or distribution systems, OPS responded in terms that echoed its flexible regulatory philosophy. "If an operator requires maps as records to properly administer the operating and maintenance plan to meet the Federal safety requirements, then these maps must be maintained by the operators." PHMSA, PI-72-031 (July 17, 1972), letter interpreting §192.603(b) from Joseph C. Caldwell, Director, OPS (RH-67).

3. Federal Gas Safety Recordkeeping Provisions

This subsection summarizes federal recordkeeping rules in Part 192.[10] In summary, the 1970 federal regulations introduced recordkeeping provisions related to testing, operation, maintenance, repair, MAOP determinations, uprating, and welding. A year later, the regulations added requirements for corrosion control records. New recordkeeping requirements were then not added until 1993, when recordkeeping requirements related to drug testing of pipeline personnel were promulgated. In 1994, additional operation and maintenance recordkeeping requirements were introduced, and in 1999, recordkeeping requirements related to personnel qualifications were instituted. In 2003, requirements for records of pressure tests to detect leaks were added. From the promulgation of the various recordkeeping requirements in the original 1970 regulations, there have not been many significant recordkeeping changes until the integrity management regulations were put into effect in 2004. In keeping with OPS's philosophy, the recordkeeping provisions are generally not prescriptive or standard-based. Key recordkeeping requirements are summarized below

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[10] For ease of reference, a chart is attached to this Chapter as Appendix A. The chart summarizes some of the current Part 192 recordkeeping provisions.

a. Pressure Test Records

In Subpart J of the 1970 federal regulations addressing test requirements, § 192.517 required operators to retain for the useful life of the pipeline records of each strength test performed under § 192.505 (for steel pipeline operating at a hoop stress of 30% or more SMYS) and under § 192.507 (for pipeline operating at a hoop stress less than 30% of SMYS and at or above 100 psi). 35 Fed. Reg. at 13270 (RH-14). Under § 192.517, each record was required to contain at least the following elements: (1) the operator's name, the name of the operator's employee responsible for making the test, and the name of any test company used; (2) the test medium used; (3) the test pressure; (4) the test duration; (5) pressure recording charts, or other record of pressure readings; (6) elevation variations, whenever significant for the particular test; and (7) leaks and failures noted and their disposition. The Final Rule does not mention any comments on this recordkeeping requirement or discuss any reasoning associated with its particulars.

b. MAOP Records

At Section 192.619, the 1970 regulation specified how to determine the maximum allowable operating pressure. 35 Fed. Reg. at 13273 (RH-14). In 2008, PHMSA added regulations at § 192.620 permitting determination of an alternative MAOP. 73 Fed Reg. 62174, 62177 (Oct. 17, 2008) (RH-68). Section 192.620(c) requires that operators maintain for the life of the pipeline records demonstrating compliance with the requirements under § 192.620 for making an alternative MAOP determination. *Id.* As discussed above, OPS guidance on what records operators must keep to substantiate MAOP has been practical. It has at certain points instructed that affidavits may suffice instead of original records, although that guidance has been variable. PI-86-005 (RH-57); PHMSA April 1998 MAOP Guidance (RH-58); Final Order, CPF 4-2004-1007(RH-59); PI-09-0021 (RH-60).

The 1970 regulations set out the requirements for operators to uprate a pipeline, *i.e.*, increase its maximum allowable operating

pressure, at § 192.551 et seq. 35 Fed. Reg. at 13270-71 (RH-14). At § 192.553(b), the regulations required that operators who uprate a pipeline segment retain for the life of the segment a record of each investigation required by the regulations, of all the work performed, and of each pressure test conducted in connection with the uprating. *Id.* at 13271. This uprating records requirement at § 192.553(b) has not changed since it was issued in 1970.

c. Operating and Maintenance Records

The 1970 Subpart L, Operations, regulations require that an operator "establish a written operating and maintenance plan" and "keep records necessary to administer the plan." 35 Fed. Reg. at 13272, 49 C.F.R. § 192.603 (RH-14). The "essentials" of an operating and maintenance plan were set out at § 192.605, and included instructions for employees for normal operations and maintenance, records required under the Maintenance subpart, programs related to facilities that present the greatest hazard, programs for conversions from low-pressure to high-pressure systems, and provisions for periodic inspections to ensure operating pressures were appropriate for the class location. *Id, 49 C.F.R.* § 192.605 (a) to (e). The elements required under § 192.605 for an operating and maintenance plan remained the same from 1970 until 1994. In 1994, OPS significantly revised § 192.605, reframing the provision to specify certain procedures that operators must develop and include in a "[p]rocedural manual for operations, maintenance, and emergencies." 59 Fed. Reg. at 6584-85 (RH-64). The required procedures are divided into the categories of "maintenance and normal operations," 49 C.F.R. § 192.605(b); "abnormal operation," § 192.605(c) "safety-related conditions reports," 49 C.F.R. § 192.605(d); and "surveillance, emergency response, and accident investigation," 49 C.F.R. § 192.605(e). The relationship of the recordkeeping requirements to the beefed-up underlying requirements, however, remained the same, as § 192.603 was merely rephrased to state that each operator "shall keep records necessary to administer the

procedures established under § 192.605." The provision does not specify a retention period or prescribe the "records necessary to administer the procedures." The recordkeeping requirements under § 192.603 for complying with the maintenance of the "procedural manual" have not changed since the 1994 amendment.

Section 192.112, added with the alternative MAOP provisions in 2008, states that for pipeline to be eligible for operation under the alternative MAOP calculated under § 192.620 (which PG&E does not use), a segment must meet certain design requirements and operators must maintain for the life of the pipeline records demonstrating compliance with those requirements. 73 Fed. Reg. at 62175-76 (RH-68). Further, the segment must meet certain additional construction requirements and § 192.328 requires that operators maintain records demonstrating compliance for the lifetime of the pipeline. *Id.* at 62176-77.

d. Maintenance and Repair Records

The 1970 regulations specified maintenance and repair records that operators must keep for transmission lines at § 192.709 under Subpart M. 35 Fed. Reg. at 13273 (RH-14). Operators were required to keep, for as long as the transmission segment remained in service, records covering each leak discovered, repair made, transmission line break, leakage survey, and line break. *Id.* Those recordkeeping requirements remained the same until 1996, when OPS replaced the requirements with specified periods for three sets of documents. 61 Fed. Reg. 28770, 28786 (June 6, 1996) (RH-69). Under the amended version, § 192.709 requires an operator to keep records on the date, location and description of each repair for as long as the pipe remains in service. 49 C.F.R. § 192.709(b). The operator must retain the same information for repairs to parts of the pipeline system other than the pipe, but only for five years. 49 C.F.R. § 192.709(c). Records of each patrol, survey, inspection and test required by the Operations and Maintenance Subparts must be retained for at least five years or until the next, patrol,

survey, inspection or test, whichever is longer. 49 C.F.R. § 192.709(c). These requirements have not changed since the 1996 amendment.

e. Steel Pipeline Conversion Records

Should an operator choose to convert a steel pipeline previously used in service not subject to Part 192 to qualify for service under the part through meeting the requirements set out at § 192.14, added by amendment in 1977, § 192.14(b) requires keeping records for the life of the pipeline showing compliance with those requirements. 42 Fed. Reg. 60146, 6148 (Nov. 25, 1977) (RH-70).

f. Welding Records

Subpart E of the 1970 regulations set out the requirements for welding of steel pipes. Section 192.225 specified "[q]ualification of welding procedures," with § 192.225(c) requiring that each welding procedure be recorded in detail during the qualifying tests and that the resulting record be retained and followed whenever the welding procedure was used. 35 Fed. Reg. at 13265 (RH-14). The § 192.225(c) requirement has remained the same since its promulgation, except for the clarification added in a 1988 amendment that the results of the test must be included in the record. 51 Fed. Reg. 20294, 20297 (June 4, 1986) (RH-71). When nondestructive testing of welds is required under § 192.241(b), operators must retain records for the life of the pipeline information regarding those tests, including the number of welds rejected as a result. 49 C.F.R. § 192.243(f) 35 Fed. Reg. at 13266 (RH-14). This requirement has not changed.

g. Corrosion Control Records

OPS decided to delay promulgating initial regulations regarding corrosion control until the year following the issuance of the initial regulations implementing the NSPGA. In 1971, OPS amended 49 C.F.R. 192 to add Subpart I, which specified requirements for corrosion control. 36 Fed. Reg. 12297-12304 (June 30, 1971) (RH-72). Section 192.491 addressed corrosion control records. *Id.* at 12304. It required

that after July 31, 1972, each operator maintain, for as long as the pipeline remained in service, records or maps showing the locations of cathodically protected piping, galvanic anodes, cathodic protection facilities, and neighboring structures bonded to the cathodic protection system. 49 C.F.R. § 192.491(b)(1). The operator was also required to retain for the life of the pipeline records of each test, survey or inspection required by the subpart, in sufficient detail to demonstrate the adequacy of corrosion control measures or that a corrosive condition did not exist. 49 C.F.R. § 192.491(b)(2) (1971). Section 192.491's requirements for corrosion control records remained the same, except that in a 1996 amendment, OPS relieved operators of the burden of making maps that would show the specific locations of every anode, and also reduced the retention requirement to five years for the corrosion test, survey, and inspection records required under § 192.491(b)(2). 61 Fed. Reg. at 28785 (RH-69). The lifetime retention requirement for records or maps showing locations under § 192.491(b)(1) remained the same, however. *Id.* Additionally, in 2007 PHMSA amended Part 192 to require, at § 192.476, that internal corrosion control is integrated into the design and construction of transmission pipelines. 72 Fed. Reg. 20059-60 (April 23, 2007) (RH-73). Section 192.476(d) requires operators to maintain records showing compliance with that requirement. *Id.* at 20060.

h. Operator Qualification and Fitness Records

Qualifications: In a 1999 amendment to 49 C.F.R. Part 192, OPS inserted Subpart N, addressing qualifications of pipeline personnel. 64 Fed Reg. 46853, 46867 (Aug. 27, 1999) (RH-74). At § 192.807, OPS added the requirement that operators maintain records demonstrating compliance with the personnel qualifications subpart. *Id.* at 46865-66. The records were required to include identification of the qualified individuals, identification of the covered tasks the individual was qualified to perform, the dates of the qualification of the individual, and the qualification method. 49 C.F.R. § 192.807(a). The operators were

required to maintain the records while the individual was performing the covered tasks. Records of prior qualifications of individuals and records of individuals no longer performing covered tasks were to be retained for five years. 49 C.F.R. § 192.807(b). The requirements of § 192.807 for personnel qualifications recordkeeping have not changed since their introduction in 1999.

Testing: In 1993, OPS amended 49 C.F.R. Part 199 to require operators to submit reports on drug testing of pipeline personnel. 58 Fed. Reg. 68258-68272 (Dec. 23, 1993) (RH-75). The amendment required that operators retain records showing positive drug test results, records showing the type of test used, and records that demonstrated rehabilitation. *Id.* at 68258-59, 49 C.F.R. § 199.23(a). The operators were required to keep the records for at least five years. In 2003, the requirements were amended at § 199.117 so that operators were required to also retain records confirming that supervisors and employees had been trained as required by the part. 68 Fed. Reg. 75455, 75465 (Dec. 31, 2003). (RH-76). Operators were required to keep those training records for at least three years. *Id.* The drug testing record requirements have not been changed since the 2003 amendment.

i. Integrity Management Recordkeeping Requirements

As described above, the federal regulators implemented new complex requirements to assess pipeline risk and ensure pipeline safety about a decade ago, as mandated by the Pipeline Safety Improvement Act of 2002. Pub. L. No. 107-355, 116 Stat. 2985 (2002) (RH-26); 68 Fed. Reg. 69778-837 (Dec. 15, 2003) (RH-77). The Integrity Management regulations set out recordkeeping requirements at § 192.947. 68 Fed. Reg. at 69827. The recordkeeping provision includes the general requirement that an operator maintain, for the useful life of the pipeline, records demonstrating compliance with Subpart O, the Integrity Management regulations. 49 C.F.R. § 192.947. The operator must also retain nine types of documents for review during an

inspection. Three of the required types could be characterized as programmatic Integrity Management documents: a written Integrity Management program in accordance with § 192.907; a written baseline assessment plan in accordance with § 192.919; and the schedule required by § 192.933 that prioritizes the conditions found during and assessment for evaluation and remediation, including technical justifications for the schedule. *See* 49 C.F.R. §§ 192947(a), (c) & (f). Two categories capture documents that support the programmatic Integrity Management documents: documents supporting the threat identification and risk assessment in accordance with § 192.917, and documents to support any decision, analysis or process developed and used to implement and evaluate each element of the baseline assessment plan and Integrity Management program. *See* 49 C.F.R. § 192.947(d)). Two categories relate to direct assessment: documents to carry out the requirements in § 192.923 through § 192.929 for a direct assessment plan (§ 192.947(g)), and documents to carry out the requirements in § 192.931 for confirmatory direct assessment (§ 192.947(h)). One category targets documents demonstrating that personnel have the required training and a description of the training program, in accordance with the requirements of § 192.915 (§ 192.947(e)). The final category is for verification documents demonstrating that the operator has provided any documentation or notification required by the Integrity Management regulations to OPS or, when applicable, a state authority. § 192.947(i). The Integrity Management recordkeeping requirements at § 192.947 have not changed since their introduction in 2003.

* * * * *

In summary, three themes emerge from this discussion about historical recordkeeping requirements. First, the recordkeeping provisions in GO 112 & 112-A-112-E changed and became less prescriptive over time. Second, federal regulations have dealt pragmatically with the challenge that gas operators may lack complete

gas pipeline safety records. Third, federal regulators have declined to impose detailed specified recordkeeping standards, leaving the rules flexible.

F. Regulatory Authorization to Dispose of Certain Gas Records after Prescribed Retention Periods

This section and the chart below trace the history of different record retention provisions in federal and state law. Some of these provisions originate in FPC orders that reach various categories of natural gas records, including operational records. Others flow from Commission resolutions incorporating and supplementing the FPC rules. As discussed below, a 1976 Commission Resolution specifically addresses document retention periods for GO 112 records. Common to these orders and resolutions are rules specifying a retention period for certain gas records after which the rules provide for the discarding of records.

FIGURE 1-8
PACIFIC GAS AND ELECTRIC COMPANY
HISTORY OF RECORD RETENTION PROVISIONS IN FEDERAL AND STATE LAW

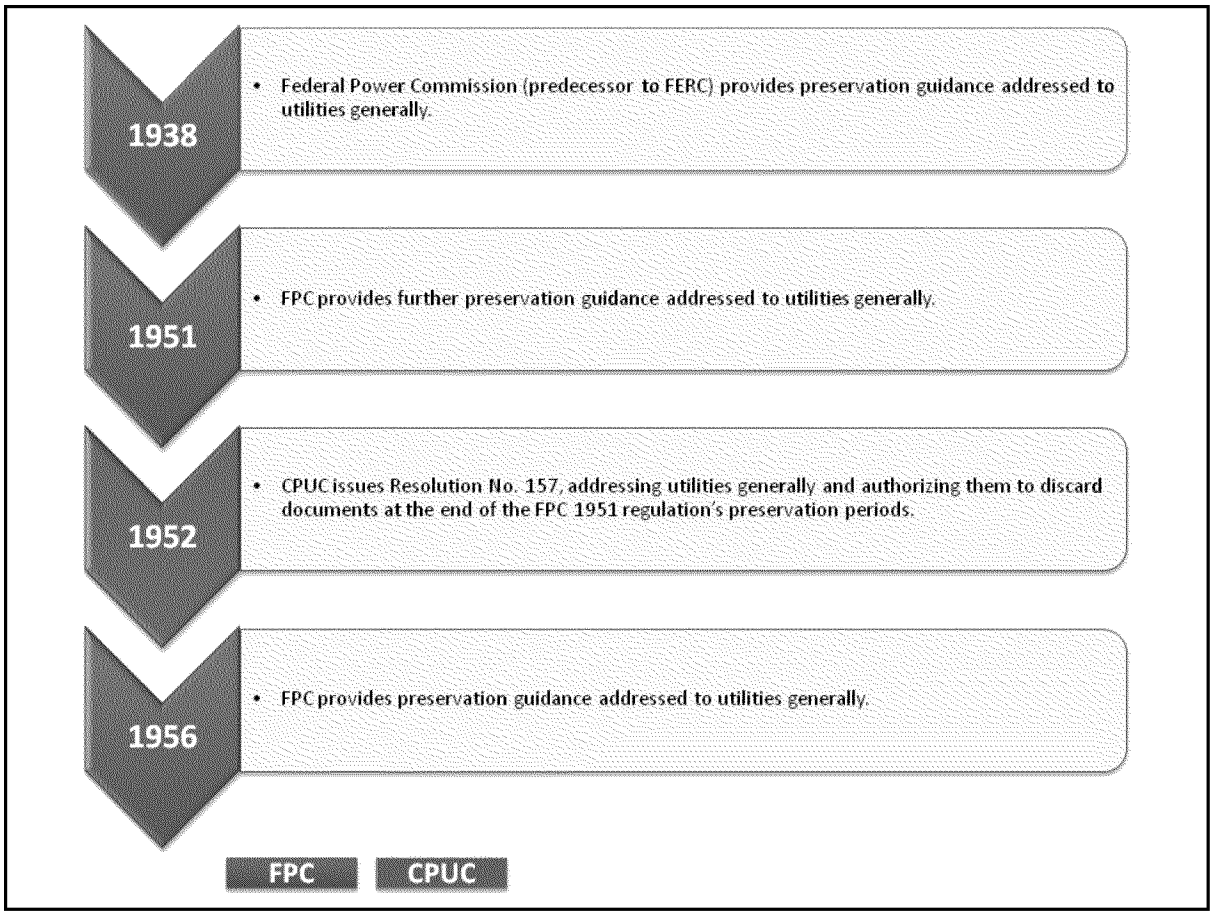
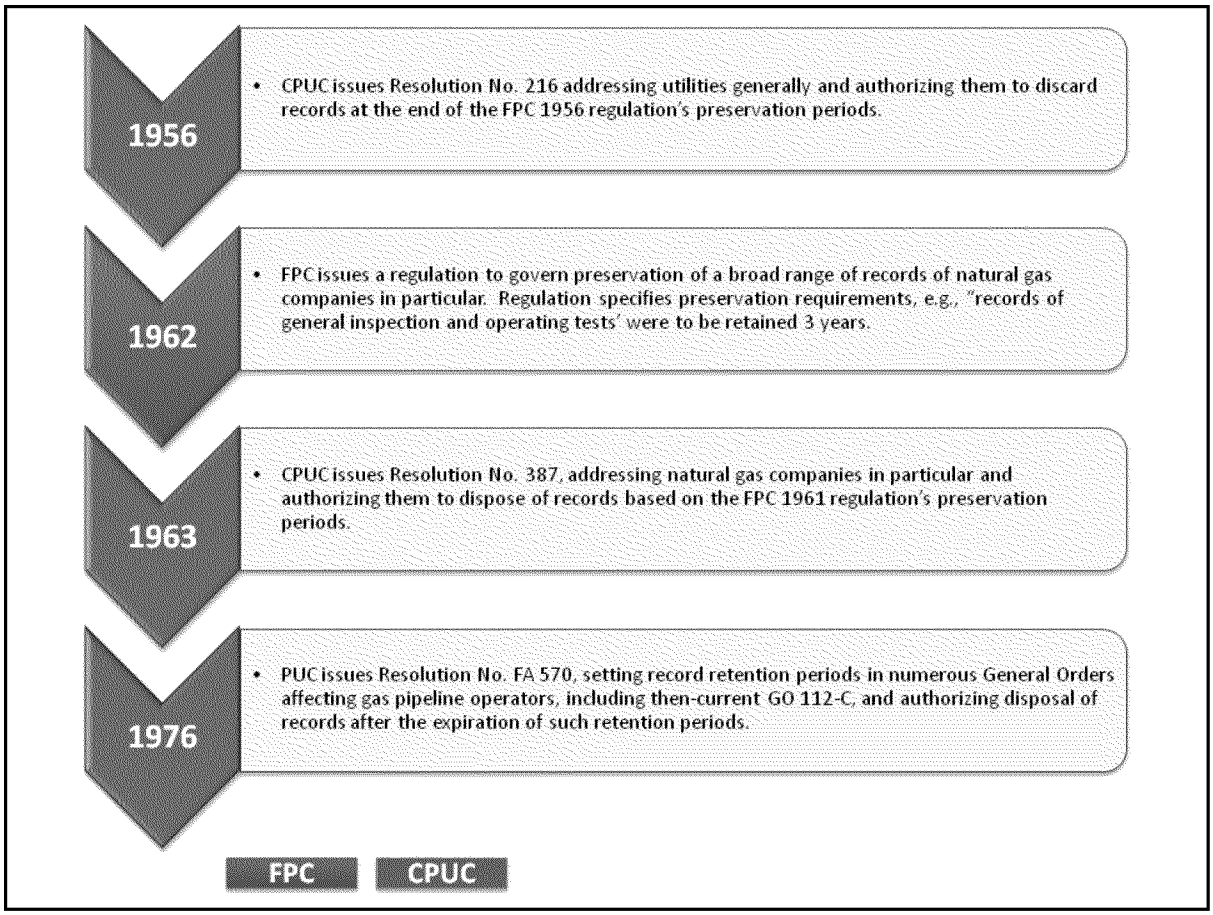


FIGURE 1-9
PACIFIC GAS AND ELECTRIC COMPANY
HISTORY OF RECORD RETENTION PROVISIONS IN FEDERAL AND STATE LAW



At various times prior to 1962 – specifically in 1938, 1951 and 1956 -- the FPC provided record preservation guidance to utilities (as opposed to natural gas companies). Beginning in December 1962, the FPC issued a regulation entitled "Regulations to Govern the Preservation of Records of Natural Gas Companies." 27 Fed. Reg. Reg. 12241-52 (RH-51). The regulation (18 C.F.R. Part 225) applied to natural gas companies within the FPC's jurisdiction and its scope included "all books of account and other records prepared by or on behalf of the natural gas company." *Id.* at 12242. Through the years, Part 225 has been amended -- in 1972, 1982, 1983, 1986 and 2000. As modified, the Part 225 regulations remain in effect today.

The original Section 225.3 of Part 225 included an Index to Schedule of Records and Periods of Retention. *See* 18 C.F.R. § 225.3. The Index listed

record retention periods for a broad range of natural gas company documents. Many of these related to corporate, accounting and purchase records. But some related to gas operations. The table below depicts the original preservation periods for Index Number 59.2 (Operations – Transmission and Distribution – Gas) and summarizes key regulatory changes to those provisions:

TABLE 1-2
PACIFIC GAS AND ELECTRIC COMPANY
PRESERVATION PERIODS FOR INDEX NUMBER 59.2

Description of Records	Period to be Retained	Microfilm[11] Indicator	Subsequent History
(a) transmission line logs	3 years	M	Relabeled in 2000 as "Substation and transmission line log" and amended to reflect that if the measurement data have not been disputed or adjusted, destroy after 1 year
(b) Transmission and distribution department dispatching operating logs	Do [ditto]	M	Relabeled in 2000 as "System operator's logs and reports of operation and amended in 2000 to provide that if the measurement data have not been disputed

11 The reference to "Microfilm Indicator" was a reference to a provision allowing certain records to be microfilmed and the film retained in lieu of the original records. *See* 18 C.F.R. § 225.1(e).

Description of Records	Period to be Retained	Microfilm[11] Indicator	Subsequent History
			or adjusted, destroy after 1 year
(c) Service interruption logs and reports	6 years		Deleted in 1983
(d) Records of general inspection and operating tests	3 years	M	Deleted in 1983
(e) Reports and inspections and repairs of all street openings	6 years	M	Deleted in 1983
(f) Apparatus failure reports	Do [ditto]	M	Deleted in 1983
(g) Records of meter tests	Until superceding test, but not less than two years or as may be necessary to comply with service rules regarding refunds on fast meters	…..	Deleted in 1983
(h) Meter history records	For life of meter (*see also* item 59.2(g))	M	Deleted in 1983
(i) Meter shop reports (monthly shop reports summarizing tests, repairs, etc.	6 years	M	Retention period reduced to 3 years in 1972 amendments and subsequently deleted in 1983 amendments
(j) Gas measuring records	Do [ditto]	M	Amended in 1972 regulatory amendments to

Description of Records	Period to be Retained	Microfilm[11] Indicator	Subsequent History
			provide a 1 year retention period. Relabeled in 2000 as "(c)" and amended to reflect that if the measurement data have not been disputed or adjusted, destroy after 1 year
(k) Transmission line operating reports	Do [ditto]	M	Amended in 1972 regulatory amendments to provide for a 3 year retention period. Relabeled in 2000 as "(d)" and amended to reflect that if the measurement data have not been disputed or adjusted, destroy after 1 year.
(l) Compressor operation and reports	Do [ditto]	M	Relabeled as "(e)" in 2000 and amended to provide that if the measurement data have not been disputed or adjusted, destroy after 1 year.
(m) Gas pressure	Do [ditto]	M	Deleted in 1983

Description of Records	Period to be Retained	Microfilm[11] Indicator	Subsequent History
department reports			
(n) Recording instrument charts such as pressure (static and differential), temperature, specific gravity, heating value, etc.	3 years, except that where the basic information is transferred to another record, the charts need only be retained for 1 year provided the basic chart data is retained for 3 years	M	Amended in 1972, and relabeled in 2000 as "(f)" and further amended to provide that if the measurement data have not been disputed or adjusted, destroy after 1 year

Id. at 12247-51. Records not identified in the Part 225.3 table could be disposed of at the option of the natural gas company, provided, however:

> That records which are used in lieu of those listed shall be preserved for the periods prescribed for the records used for substantially similar purposes, *And, provided further*, that retention of records pertaining to added services, functions, plant, etc., the establishment of which cannot be presently foreseen, shall conform to the principles embodied herein.

Id. at 12251 (emphasis in original).

In turn, beginning no later than the 1950s, the Commission repeatedly issued Resolutions authorizing the disposal of certain kinds of records at the expiration of the preservation periods prescribed in the FPC's regulations. It issued such a resolution in 1952, (Resolution No. 157, issued July 22, 1952) (RH-78), again in 1956 (Resolution No. 216, issued Jan. 16, 1956) (RH-79) and again in 1963, (Resolution No. 387, issued Oct. 22, 1963) (RH-80). The 1952 and 1956 resolutions were addressed generally to utility records. The 1963 Resolution, in contrast, specifically addressed Part 225 records of natural gas

companies. The Resolution provided that gas companies operating in California under the jurisdiction of the Commission may dispose of records at the expiration of the retention periods prescribed in the Federal Power Commission's December, 1962 Regulations discussed above. *Id*.

The Commission's 1963 Resolution did not explicitly reference GO 112. Nonetheless, by authorizing the disposal of records at the expiration of the retention periods specified in the 1962 FPC regulations, which regulations broadly address "all books of account and other records prepared by or on behalf of the natural gas company," including gas operations records, the scope of 1963 Resolution appears to have reached at least some records of the kind within GO 112's scope.[12]

Later, the Commission would provide explicit guidance for GO 112 records. . On August 3, 1976, the Commission issued Resolution No. FA 570 (RH-81). The Resolution set retention periods for records requirements contained in numerous GOs governing gas and electric operations, including GO 112-C. In addressing GO-112-C, the Resolution provided in part:

TABLE 1-3
PACIFIC GAS AND ELECTRIC COMPANY
RESOLUTION NO. FA 570 RECORDS RETENTION PROVISIONS

General Order	Utility Affected	Retention Period	Record
G.O. 112-C	Gas	5 Years	Reports on operation and

[12] General Order 28 also addresses the preservation of records of public utilities and common carriers. However, its provisions are addressed to financial and corporate records: voucher register or accounts payable ledger; accounts receivable register, or ledger inventories; vouchers and papers supporting all deeds and title papers; trial balances of all ledgers; general and auxiliary ledgers; general and auxiliary journals; general and auxiliary cash books; all cash papers and journal entries; capital stock ledger, journal stubs and all records pertaining thereto; annual reports; minute books; all records, contracts estimates and memoranda pertaining to the original cost of property and to Additions and Betterments; all records pertaining to depreciation and replacement of equipment and plant.

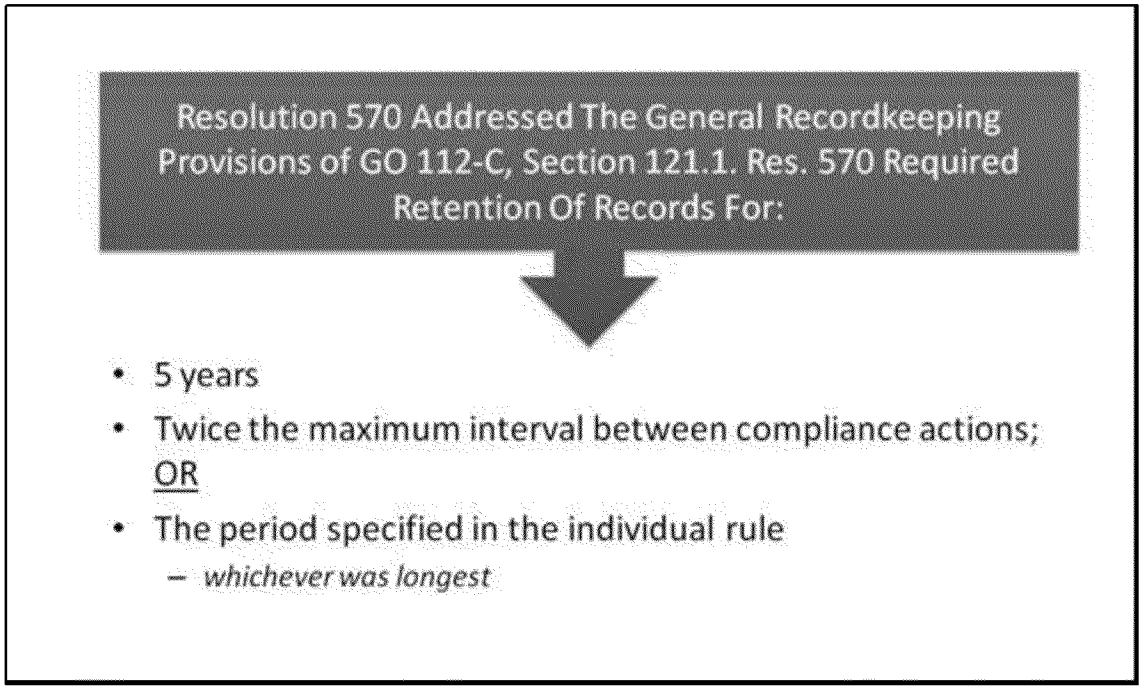
			maintenance studies and location class changes (Sections 141.4 and 5)
		5 Years	Records for establishing compliance (Section 121.1) Retain for 5 years, twice the maximum interval between compliance actions as specified in the rule, or the retention periods specified in the rule, whichever is longest
		2 years	Recording pressure gauge charts (Section 192.741

The Resolution added a document disposal provision similar to those seen in FPC Part 225 and older Commission resolutions: records "may be disposed of after the expiration of such retention periods." *Id.*

One of the specific provisions of GO 112-C that was qualified by the 1976 Resolution was Section 121.1. It formerly provided in relevant part: "the responsibility for the maintenance of necessary records to establish that compliance with these rules has been accomplished rests with the utility." (RH-

32).[13] As to this broad category of records, the 1976 Resolution provided the following retention periods:

FIGURE 1-10
PACIFIC GAS AND ELECTRIC COMPANY
1976 RESOLUTION DOCUMENT RETENTION PROVISIONS



Taken together, Section 121.1 of GO 112-C and the 1976 Resolution record retention provision that qualifies it cover a number of gas safety records. The reference to Section 121.1 in GO 112-C means that the 1976 Resolution's retention periods apply to all records necessary for establishing compliance with GO 112-C. In the case of records for which Section 121.1 of GO 112-C does not prescribe a record retention period, the 1976 Resolution authorizes the disposal of all such records after they have been retained for five years. (RH-81). An example of this kind of record might be records created pursuant to § 192.605(e) of the federal regulations, which requires that an operations and maintenance plan provide for periodic inspections to ensure that operating

[13] The 1976 Resolution reconsidered and superseded an earlier Commission Resolution (FA-554) that the Commission had initially adopted following the 1972 amendments to the FPC document retention regulations.

pressures are appropriate to the class location. The Resolution also addresses necessary records for which the retention period is specified in a federal rule. For these records, the retention period is as specified. *See, e.g.,* §§ 192.491(a) – (c); 192.517(a), (b); 192.553(b); 192.709(a), (b), (e); 192.807(b), (requiring certain records to be maintained for either five years or the useful life of a pipeline) (RH-81). The Resolution also addresses necessary records of actions for which there is some logical interval between recordable events. An example might be the many intervals in Subpart M of Part 192 between required maintenance procedures (RH-81).

Appendix A: A Summary of Current Part 192
Federal Pipeline Safety Recordkeeping Requirements

Applicable Regulation	Recordkeeping Provision
Subpart A - General	
§ 192.14	When an operator converts a steel pipeline previously used in service not subject to Part 192, operator must retain records for life of pipeline compliance with requirements for conversion. 49 C.F.R. § 192.14(b).
Subpart E- Welding	
§ 192.225; § 192.243	Retain records of qualifications of welding procedures as long as procedure used. 49 C.F.R. § 192.225(b). Retain records of nondestructive testing of welds under 49 C.F.R. § 192.241(b) for life of pipeline, including number of welds rejected. 49 C.F.R. § 192.243(f).
Subpart I - Corrosion Control	
§ 192.476	Maintain records demonstrating that internal corrosion control is integrated into the design and construction of the pipeline. 49 C.F.R. § 192.476(d).
§ 192.491	For the life of the pipe, maintain records and maps showing location of cathodically protected piping, facilities, anodes, etc. 49 C.F.R. §§ 192.491(a), (b). Test, survey and inspection data required under the regulations that demonstrate compliance with the regulations must be retained for at least 5 years, with exceptions for records required by 465(a) and (e), and 475(b). 49 C.F.R. § 192.491(c).
Subpart J - Pressure Tests	
§ 192.517	Maintain for the life of the pipeline a record of tests performed under Sections 505 (strength testing for steel pipeline to operate at a hoop stress of 30% or more of SMYS) and 507 (test requirements for pipelines to operate at a hoop stress less than 30% of SMYS and at or above 100 psi. Records should include (1) operator and employee identification; (2) test medium used; (3) test pressure; (4) test duration; (5) pressure recording charts or readings; (6) elevation variations, when significant; and (7) leaks and failures and their dispositions. 49 C.F.R. § 192.517(a). Maintain all other records regarding low pressure, plastic or service lines for 5 years. 49 C.F.R. § 192.517(b).

Applicable Regulation	Recordkeeping Provision
Subpart K – Uprating	
§ 192.553	Retain for life of pipeline each investigation required for uprating, including all work performed, and all pressure tests conducted. 49 C.F.R. § 192.553(b).
Subpart L – Operations and MAOP	
§ 192.603	General provision requiring that each operator "keep records necessary to administer the procedures" set forth in the required Operations and Maintenance manual. 49 C.F.R. § 192.603(b).
§§ 192.619; 620 (MAOP and alternative MAOP for transmission lines).	For pipelines operating subject to alternative MAOP determination under § 192.620, maintain for life of pipeline: (a) records demonstrating compliance with certain design requirements under for alternative MAOP determination (§ 192.620(c)); (b) records demonstrating meet additional construction requirements (§ 192.328); and (c) records demonstrating compliance with requirements under § 192.620 for making alternative MAOP determination. 49 C.F.R. § 192.620(c).
Subpart M – Maintenance and Repair	
§ 192.709	Maintain for the life of the pipe records of repair (including date, location and description of repair). 49 C.F.R. § 192.709(a). Maintain for at least five years repair records for non-pipe components. 49 C.F.R. § 192.709(b). Maintain for at least five years records of patrols, surveys, inspections and tests (and any related repairs) required by Operations and Maintenance regulations. 49 C.F.R. § 192.709(c).
Subpart N - Qualification of Pipeline Personnel	
§ 192.807	Maintain records that demonstrate compliance with qualification requirements, including identification of qualified operators, covered tasks, dates of current qualifications and qualification methods. 49 C.F.R. § 192.807(a). Records supporting prior qualification and records of individuals no longer performing covered tasks current qualification need only be maintained for 5 years. 49 C.F.R. § 192.807(b).
Subpart O - Integrity Management	
§ 192.947	For the life of the pipeline, operator must maintain records that demonstrate compliance with the IM regulations, including at least the following: • Written IM program • Documents supporting threat identification and risk assessment • Written baseline assessment plan • Back-up documentation for any decision, analysis and process

Applicable Regulation	Recordkeeping Provision
	used to implement and evaluate each element of the BAP and IM program. • Documentation of personnel training • Schedule for prioritizing conditions found in assessments, including technical justification • Documents to carry out direct and confirmatory assessment plans • Verification of any documentation or notice required to be made to CPUC and/or OPS 49 C.F.R. § 192.947(a)-(i).
Part 199- Drug Testing	
§§ 199.17; 199.23	Retain for at least three years records demonstrating supervisors and employees received required training. 49 C.F.R. § 199.17. Retain for at least five records regarding positive drug tests of covered pipeline personnel. 49 C.F.R. §§ 199.23(a).

TAB 3

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 1A: INTRODUCTION TO PG&E'S GAS TRANSMISSION SYSTEM

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1A
INTRODUCTION TO PG&E'S GAS TRANSMISSION SYSTEM

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PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 1A
INTRODUCTION TO PG&E'S GAS TRANSMISSION SYSTEM

A. PG&E's Gas Transmission System

1. Introduction

Natural gas has been distributed by pipeline in some areas of the country for over a hundred years. (GTH-48). Pipeline systems expanded to meet demand during strong economic cycles and in response to population changes. More than sixty percent of the Nation's gas transmission pipelines were installed before federal regulations took effect in 1970. (GTH-61). Some gas transmission and distribution utilities, such as PG&E, which began as small operations, grew through mergers or acquisitions to service a larger territory. Their systems changed character as interstate transportation of natural gas became more prevalent following World War II. The transmission systems of these companies tend to be heterogeneous, meaning that their pipeline systems are of different age, materials, diameter, pressure, and specifications.

The term heterogeneous aptly characterizes PG&E's transmission system. PG&E's service territory is large; and its pipeline construction, maintenance and operations activities stretched across a large part of California. A significant portion of PG&E's existing transmission system was installed before extensive pipeline safety regulation, before pipeline recordkeeping regulations, and before technological changes that have improved modern data management and retrieval processes. The existing pipeline system is diverse in terms of its specifications and its age. For these reasons, it is difficult to generalize about the system's design and construction or PG&E's historic maintenance and operations practices.

This chapter provides an overview of PG&E's transmission system, including its historical development. Similar to Chapter 1 (California and Federal Pipeline Safety Regulatory History (filed April 18, 2011)), Chapter 1A is meant to provide context for the chapters that follow.

2. An Overview of PG&E's Existing Transmission System.

PG&E serves 15 million natural gas and electric customers (4.3 million individual gas accounts) in northern and central California. Its service territory covers 70,000 square miles.

The system comprises approximately 6,750 miles of pipeline operating at pressures greater than 60 pounds per square inch gauge (psig), approximately 40 miles of gas gathering pipeline, and more than 42,000 miles of distribution pipe that operate at a pressure of 60 psig or less. Of the 6,750 miles of gas transmission pipe, approximately 5,800[1] miles meet the definition of a Department of Transportation (DOT) Gas Transmission pipeline. *See* 49 C.F.R. § 192.3. By comparison, Southern California Gas Company, the nation's largest natural gas transmission and distribution utility by customer count, has approximately 3,989 miles of high pressure gas transmission pipeline. (GTH-49).

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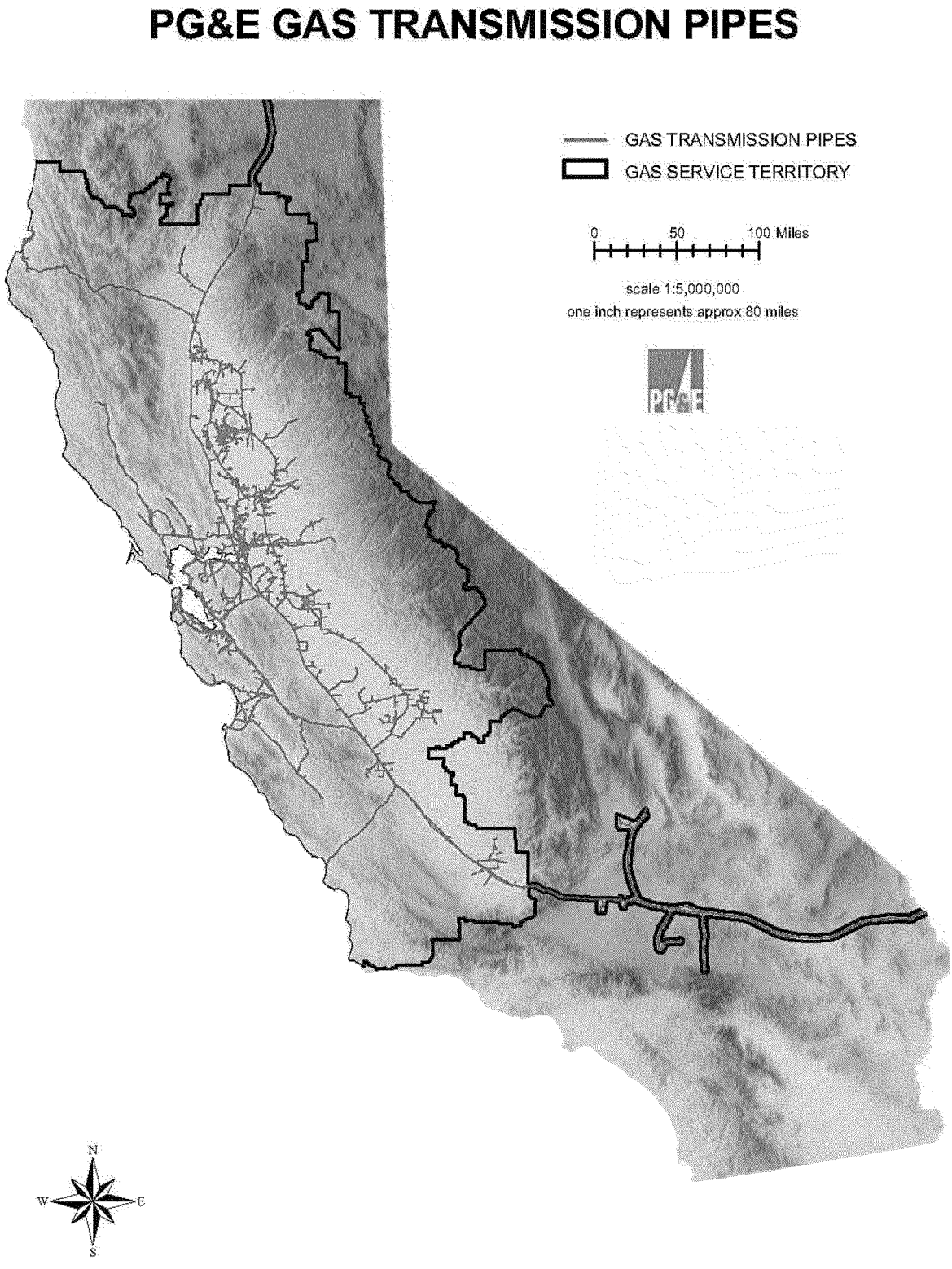
[1] *See* 2009 PHMSA F 7100.2-1 forms, Pacific Gas and Electric Co (operator #15007) and Standard Pacific Gas Line, Inc. (operator #18608) (GTH-60).

FIGURE 1A-1
PACIFIC GAS AND ELECTRIC COMPANY
PG&E GAS TRANSMISSION PIPES



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PG&E operates both backbone and local transmission lines. Backbone lines are larger diameter pipelines that receive and carry gas from interstate sources. Local transmission lines deliver gas to local distribution networks, from which the gas is delivered to most customers.

As the map below depicts, PG&E's backbone lines extend virtually the entire length of the state.

FIGURE 1A-2
PACIFIC GAS AND ELECTRIC COMPANY
PG&E'S BACKBONE SYSTEM

PG&E's backbone lines extend approximately 850 miles from Topock, California in the south, to Malin, Oregon in the north. Lines 400 and 401 make up the northern facilities of the system, Lines 300 A&B the southern facilities, and Lines 107, 114, 131 and 303 the Bay Area Loop. These backbone lines are large diameter pipelines (30" to 42") with Maximum Allowable Operating Pressures (MAOP) between 475 and 1,140 psig.

Combined, the backbone system consists of approximately 2,000 miles of pipeline, representing 35 percent of PG&E's gas transmission system. There are eight compressor stations along the backbone, five supporting L 400/401/402 and three supporting L 300A&B. These facilities help move gas from the various interstate receipt points to customers throughout PG&E's service territory. The backbone system is primarily maintained by PG&E gas technicians and mechanics assigned to PG&E maintenance facilities, including those at Topock, Hinkley, Kettleman City, Tracy, Los Medanos, McDonald Island, Willows, Burney, Rio Vista and Milpitas.

PG&E's backbone gas transmission pipeline system is designed to transport up to 3.1 billion cubic feet per day of natural gas from interstate pipeline receipt points at the northern and southern California borders, Malin and Topock, respectively, to metropolitan areas and customers within the San Francisco Bay Area, Sacramento and San Joaquin Valley. In 2009, roughly 50% of PG&E's natural gas supply was received at Malin, Oregon from either Canada or the Rocky Mountain areas. (GTH-50). Approximately 40% of PG&E's natural gas supply originated in the Southwest and was received at Topock, California. Natural gas reserves within California, mostly from the Sacramento Valley, accounted for only 6 percent of PG&E's supply. The small remainder was received at the Nevada/California border from the Rocky Mountain area. These relative percentages vary from year-to-year depending on gas market conditions.

3. Local Transmission System

PG&E's local transmission system consists of approximately 3,600 miles of DOT defined gas transmission pipelines. The local transmission facilities include PG&E's non-backbone numbered transmission lines, distribution feeder mains, and PG&E's six-sevenths interest in the Stanpac Line. To a significant extent, local transmission lines are maintained by personnel working out of one of PG&E's numerous division offices located throughout PG&E's service territory.

Other DOT defined pipeline segments operated by PG&E include underground storage field gathering lines, high pressure customer lines, local gas gathering and station piping, totaling approximately 200 miles.

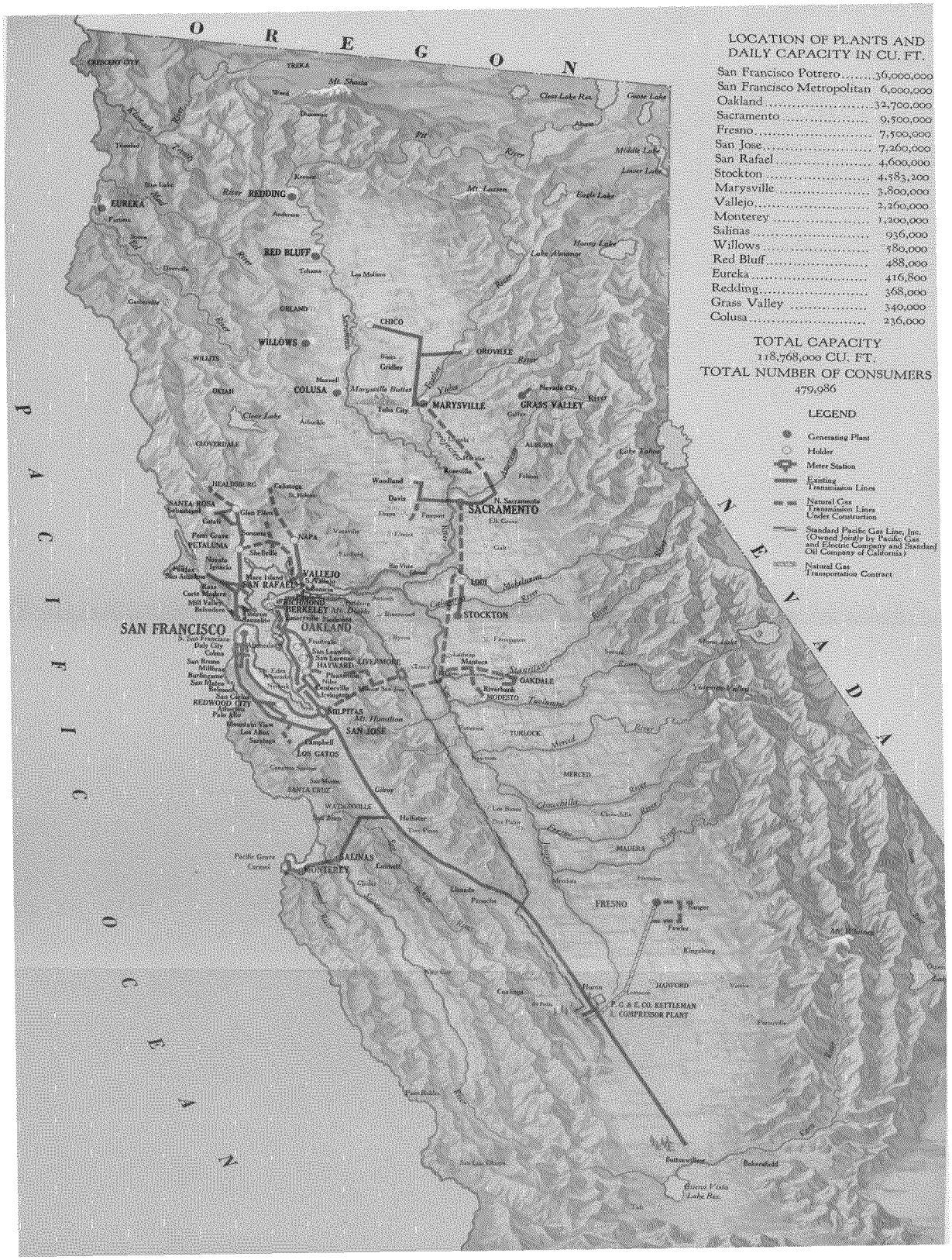
PG&E maintains large gas storage facilities at McDonald Island, Los Medanos and Pleasant Creek. PG&E also has interconnections with additional storage facilities at Wild Goose and Lodi. These storage facilities contribute to the management of the supply of natural gas during peak demand periods.

B. The Growth of PG&E's Gas Transmission System

1. Early Natural Gas Transmission Lines.

PG&E's present-day natural gas transmission system has its beginnings in the late 1920s. In that era, large natural gas reserves were identified and extracted at Buttonwillow and Kettleman Hills. (GTH-1). In January 1929, PG&E began construction of pipelines that brought natural gas from these fields to various locations, including the Milpitas metering station. At Milpitas, a pipeline was constructed along the eastern shore of the Bay to Oakland and Richmond, while the main corridor was run 44 miles to San Francisco. (GTH-51). Before 1950, all of PG&E's gas supply originated from sources in California. (GTH-52). The transmission system in these early days was comparatively small, as the map of PG&E's gas transmission system in 1929 depicts.

FIGURE 1A-3
PACIFIC GAS AND ELECTRIC COMPANY
PACIFIC GAS & ELECTRIC GAS TRANSMISSION SYSTEM 1929



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The transmission system expanded and became increasingly integrated in the 1930s to bring additional sources of gas supplies to new customers. By the end of 1930, 183,000 customers in San Francisco had converted to natural gas from heating oil or other sources. (GTH-53). During the 1930s, additional natural reserves were discovered and extracted at the McDonald Island and Rio Vista fields. (GTH-51). Transmission lines were constructed to expand system capacity and transport gas from those fields to population centers. By 1936, for example, PG&E had installed a second transmission line from Milpitas to San Francisco. (RH-132); (GTH-2).

2. The Post World War II System Expansion.

In the 1940s and 1950s, California's population and industrial base grew significantly. Between 1940 and 1953, the population in the forty-six California counties PG&E served grew 73%, from 3,281,874 in 1940 to 5,675,000 in 1953. (GTH-7). In 1940, there were 658,830 PG&E gas customers in California. (GTH-3). By 1953, PG&E increased its gas customers by 81 percent to 1,194,098. (GTH--7). Defense and other industries also expanded, placing increased demands on the system.

PG&E's transmission system grew to keep pace with increased demand. In 1947, PG&E began to purchase natural gas from the Southern California and Southern Counties Gas Companies. (GTH-51). In 1950, PG&E had completed construction on a 34 inch diameter, 503 mile long gas transmission line running from Milpitas to Topock, California to connect to a third-party interstate line transporting gas from Texas and New Mexico. PG&E's Milpitas to Topock line had the capacity to deliver 400 million cubic feet of gas daily from fields in Texas and New Mexico. (GTH-5). At the time, the Topock-Milpitas pipeline was the largest diameter pipeline ever constructed for the transmission of natural gas. (GTH-54). In the few short years between 1947 and 1952, the source of PG&E's natural gas supplies shifted. In 1947, 100% of those supplies came from California fields. By 1952, that figure would shrink to less than 50%. (GTH-6). Today, it is less than 10%.

In addition to expanding its transmission system, PG&E grew by acquiring smaller utilities, including gas distribution utilities. (GTH-55).

PG&E merged with the San Joaquin Light and Power Corporation in 1938, and Pacific Public Service Company in 1954. In other instances, the company purchased the facilities of other utilities. Thus, for example in 1944, it purchased the butane-air system owned by Coast Counties Gas and Electric Company in Arcata and subsequently converted the system so that it could supply natural gas.

So great was the demand for natural gas that just as PG&E was completing the 503 mile Topock-Milpitas pipeline in 1950, it initiated plans to parallel a portion of the line with an additional 34-inch diameter pipe and to install additional compressor units to increase supply. Construction on the second line began in 1952 and, by 1957, the Company had paralleled the entire 503 miles. (GTH-11). Daily capacity of the completed Topock-Milpitas pipeline nearly tripled since its first use in 1950. (GTH-56). By 1957, 70% of PG&E's gas supply originated from fields in Texas and New Mexico. (GTH-11). This extraordinary post-World War II expansion of gas pipeline facilities, including the installation of the two Topock-Milpitas lines, was part of what was then the largest gas and electric system expansion ever undertaken by any utility in the United States. (GTH-51).

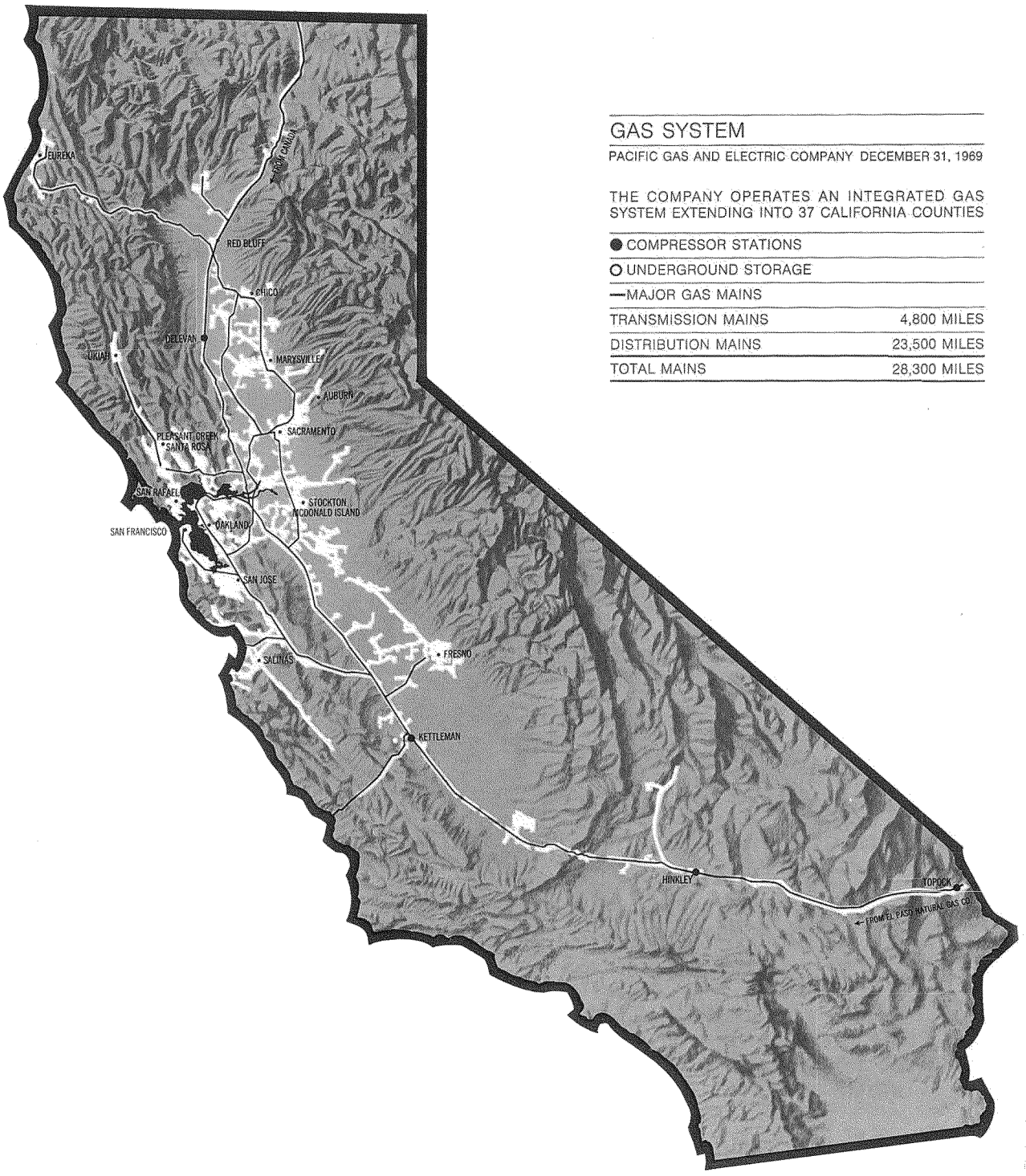
PG&E continued to expand its gas facilities throughout the 1950s. In 1956, the Company started work on several major projects. It converted a partially depleted gas field in Yolo County into the Company's first natural gas underground storage area. It constructed an 83-mile line in a southerly direction to Sacramento. It built a 175-mile line from northern Sacramento Valley to Eureka, traversing the Coastal Mountain Range. In addition, new reserves of natural gas in Northern California were discovered. (GTH-10). PG&E's wholly-owned subsidiary, Natural Gas Corporation of California, drilled two additional wells and formulated plans for additional drilling in 1957 on leaseholds adjacent to the successful wells.

The next year, in 1958, PG&E bought the McDonald Island field, located about 50 miles east of San Francisco. (GTH-12). The field included eleven wells and an 18-inch main that connects the field to the PG&E main gas transmission system. To meet peak demands, the field could put up to 400 million cubic feet per day of gas into the system. (GTH-15). Construction of Line 400, which connected California to Alberta, Canada, was complete by

1961. The 36-inch diameter line stretched 1,400 miles from Alberta to California. It provided the capacity to transport a maximum of 454 million cubic feet of gas per day, representing over 20% of PG&E's total natural gas supply in 1961.

Thus, on the eve of the first federal pipeline safety regulations in 1970, PG&E's transmission system had expanded significantly over the years to include 4,800 miles of transmission mains. The following map depicts the system as it existed in 1969.

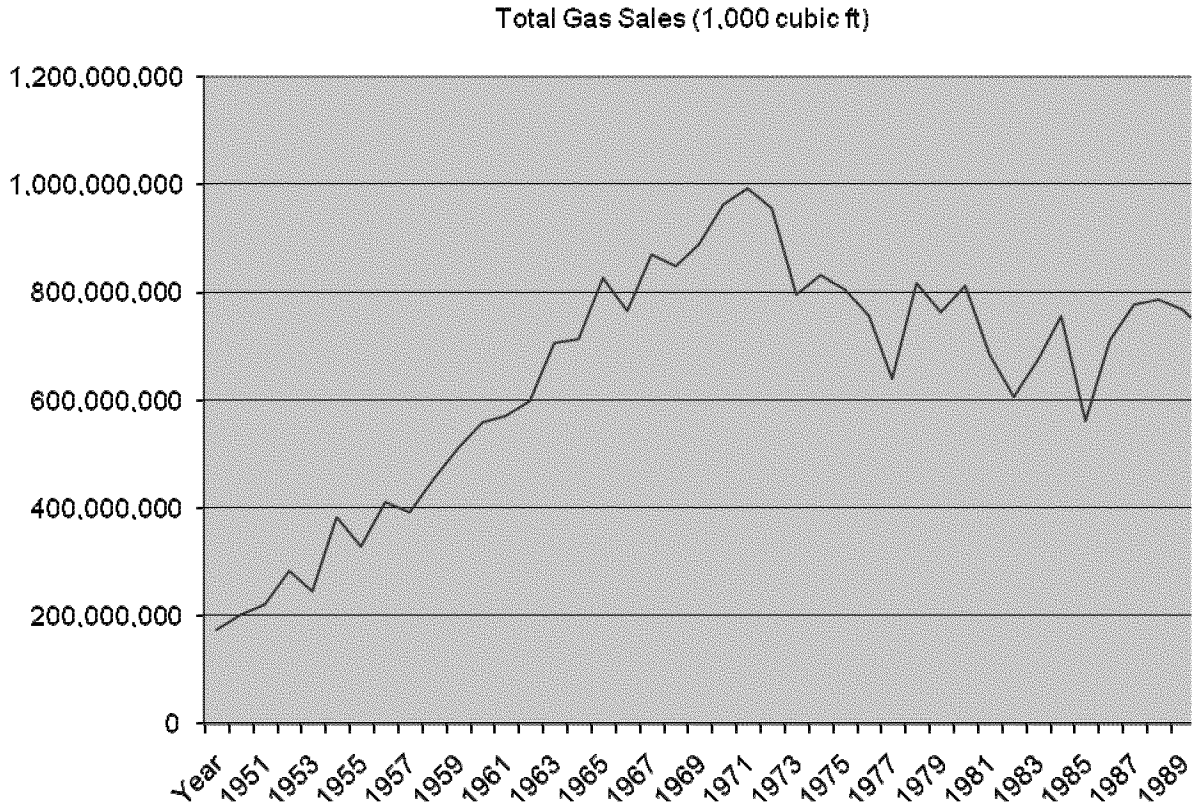
FIGURE 1A-4
PACIFIC GAS AND ELECTRIC COMPANY
PG&E GAS TRANSMISSION SYSTEM 1969



The gas transmission system continued to expand after 1970, but at a slower rate than seen in previous years. In the 1970s, the Company

contended with a shortage of gas supply resulting in rising natural gas prices. By 1975, PG&E paid an average price of 97 cents per thousand cubic feet for its natural gas representing a 205% increase over the price in 1970. (GTH-29). The gas shortage and rise in prices were among the factors that contributed to a reduction in the customer demand for natural gas. As the chart below depicts, the upward trend in the volume of gas sales began to flatten and then fall in the early 1970s[2]:

TABLE 1A-5
PACIFIC GAS AND ELECTRIC COMPANY
PG&E'S TOTAL GAS SALES (1948-1990)



Facing limited gas supplies and increased prices, PG&E expanded its capability to make greater use of its underground gas storage fields. PG&E

[2] In the mid-1970s, declining gas supply forced moderate curtailments of sales to low priority gas users. (GTH-29).

built additional wells and completed additional pipelines connecting its McDonald Island gas storage fields to the PG&E's gas system. (GTH-28).

The 1980s were marked by several significant events. Natural gas prices started to fall by 1983. (GTH-37). The national gas market underwent restructuring. (GTH-40). As described in more detail in Chapter 6C, PG&E formalized a program to replace existing transmission and distribution lines. (GTH-57). Most of the work occurred in San Francisco and the East Bay, with work also occurring in cities such as Sacramento, San Jose and Fresno. In the late 1980s and early 1990s PG&E began new pipeline facility construction. In 1991, PG&E opened its newly reconstructed Milpitas Gas Terminal. (GTH-58). In this same era, PG&E expanded its ability to obtain gas supplies from Canada by constructing Line 401. (GTH-59). Completed in 1993, Line 401 parallels Line 400.

PG&E has several recent and ongoing local transmission projects to meet increased population growth, particularly in the Central Valley. In recent years, some of the fastest growing regions in the United States, e.g., Placer, south Sacramento, and Fresno counties, are located in PG&E's service territory. PG&E recently completed construction on Line 406, a fourteen mile pipeline in Yolo County, and is now turning to work on Line 407 from Yolo to Roseville. PG&E also expects to soon obtain increased supplies from the proposed Ruby Pipeline, owned and operated by El Paso Corporation, which is expected to supply over 1 billion cubic feet per day of gas from Opal, Wyoming to Malin, Oregon. (GTH-50).

3. PG&E's Existing Transmission System Is Large, Long Standing and Diverse In Terms of Its Specifications.

The discussion above has focused only on the most significant transmission pipeline projects. There were countless other smaller projects. As is characteristic of the system of other natural gas transmission utilities, PG&E's system is made up of pipe of significantly varied specifications. It was installed over the course of many years, and through numerous large and small construction projects. Figures 1A-6.1 and 1A-6.2 below depict the diversity of PG&E's current gas transmission infrastructure in terms of pipe diameter (Figure 1A-6.1) and age (Figure 1A-6.2) (GTH-60):

TABLE 1A-1
PACIFIC GAS AND ELECTRIC COMPANY
MILES BY SIZE

Miles of Gas Transmission Pipelines at year end 2009, as reported in PHMSA F7100.2-1. Miles by nominal pipe size.

Line No.		Unknown	4" of Less	Over 4" Thru 10"	Over 10" Thru 20"	Over 20" Thru 28"	Over 28"	Total
1	Transmission	0.12	395.78	1,453.28	1,425.79	545.62	1,956.37	5,776.96
2	Gas Gathering	6.93	22.30	12.67	0.08	0.00	0.00	41.98
3	**Total**	**7.05**	**418.08**	**1,465.95**	**1,425.87**	**545.62**	**1,956.37**	**5,818.94**

TABLE 1A-2
PACIFIC GAS AND ELECTRIC COMPANY
MILES BY DECADE

Miles of Gas Transmission Pipelines at year end 2009, as reported in PHMSA F7100.2-1. Miles by pipe by decade of installation.

Line No.		Unknown	Pre-1940	1940 – 1949	1950 – 1959	1960 – 1969	1970 – 1979	1980 – 1989	1990 – 1999	2000 – 2009	Total
1	Transmission	35.93	267.22	435.94	1,970.67	1,173.66	356.77	549.69	794.17	192.90	5,776.96
2	Gas Gathering	7.88	0.00	0.42	3.95	16.06	5.41	6.84	1.41	0.01	41.98
3	**Total**	**43.82**	**267.22**	**436.36**	**1,974.62**	**1,189.72**	**362.18**	**556.53**	**795.58**	**192.91**	**5,818.94**

Thus, approximately 67% of PG&E's current natural gas transmission system was installed prior to federal regulations taking effect in 1970. This compares to a nationwide average figure of about 61%. Federal pipeline safety laws did not require newly installed gas transmission lines to be piggable until 1994. *See* 49 C.F.R. § 192.150. More than 83% of PG&E's existing transmission system was installed before 1990. This compares with an industry average of approximately 80%.

Approximately 70% of PG&E's transmission lines run through Class 1 and Class 2 locations – generally described as less populated areas. Figure 1A-6.3 below depicts the distribution of PG&E transmission miles according to class location:

TABLE 1A-3
PACIFIC GAS AND ELECTRIC COMPANY
MILES BY CLASS LOCATION

Miles of Gas Transmission Pipelines at year end 2009, as reported in PHMSA F7100.2-1. Miles by pipe by Class Location.[(a)]

Line No.		Class 1	Class 2	Class 3	Class 4	Total
1	Transmission	3,484.86	583.91	1,704.47	3.71	5,776.96
2	Gas Gathering	41.93	0.00	0.05	0.00	41.98
3	**Total**	**3,526.79**	**583.91**	**1,704.52**	**3.71**	**5,818.94**

[(a)] Class 3 and class 4 locations are highly populated areas as defined in 49 CFR § 192.5. "A class location unit is defined as an area that extends 660 feet on either side of the centerline of a continuous 1-mile length of pipeline." Class 3 is a class location unit containing 46 or more buildings intended for human occupancy. Class 4 is any class location unit where buildings of 4 or more stories above ground are prevalent.

As this overview of PG&E's gas transmission system illustrates, PG&E's system is large, long-standing, and diverse. The history of PG&E's expansion over the last century illustrates its incredible growth in the middle part of the last century to serve California's ever-increasing need for natural gas. PG&E's transmission system has evolved from one reliant entirely on intrastate gas sources to one that receives almost all of its gas from interstate sources and transports it throughout a large part of California. PG&E's pipeline construction, maintenance, and operation activities span a long period of time. Its pipelines are diverse in terms of their sizes, age, and characteristics.