

ATTACHMENT A

AMENDED APPENDIX A

(Amended Appendix A consists of amendments to Chapter 2A of
PG&E's Response Filed on June 20, 2011.)

PACIFIC GAS AND ELECTRIC COMPANY
CHAPTER 2A
PG&E'S RECORDKEEPING POLICIES AND PRACTICES
1955-2010

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1 PG&E has maintained a complete set of its applicable document retention
2 policies dating back to before 1955. PG&E has also maintained a large number
3 of its superseded or retired gas transmission record maintenance policies and
4 practices, some dating back to the 1950s (although they were not mandated to
5 be retained for extended periods of time). PG&E provides an overview of these
6 policies and practices in subsection C, below. Attachment 2A consists of tables
7 that (i) summarize the relevant policies and practices, (ii) identify the changes in
8 the policies and practices over time, and (iii) summarize the reasons for those
9 changes.

10 Directive 2 also seeks information about PG&E's record maintenance
11 practices. As noted above, Directive 2E asks PG&E how its gas transmission
12 safety records are maintained "in ways that [they] can be identified, accessed,
13 and retrieved efficiently and promptly." PG&E responds in detail in subsection
14 D, below.

15 PG&E's recordkeeping policies and practices have sought to ensure that
16 gas safety records are available to those who use them, namely, maintenance
17 personnel working in the field, operators monitoring the flow of gas in a control
18 room or at a load center, and gas pipeline engineers designing and constructing
19 new pipelines and overseeing the integrity of existing ones. PG&E designed
20 record access and retrieval systems to meet the needs of the personnel who
21 used them. Some systems are now old or aging, and do not take full advantage
22 of newer record access and retrieval technologies. And, some data are missing
23 or were not adequately transferred into the latest versions of data management
24 systems. As explained by Edward J. Ondak (a pipeline safety expert) in Chapter
25 2B, these are industry-wide challenges. Although PG&E's recordkeeping
26 practices can be improved, they have historically been pragmatic and functional.

27 **B. June 8, 2011 Report of the Independent Review Panel**

28 PG&E is carefully reviewing the June 8, 2011 report that the Independent
29 Review Panel submitted to the Commission. The report includes statements
30 critical of PG&E's data management practices, including this statement:

31 While we understand the entire pipeline industry has had challenges
32 in digitizing and systematizing all the engineering design, construction

1 and operating data, we find PG&E's efforts inchoate. **The lack of an**
2 **overarching effort to centralize diffuse sources of data hinders the**
3 **collection, quality assurance and analysis of data to characterize**
4 **threats to pipelines as well as to assess the risk posed by the**
5 **threats on the likelihood of a pipeline's failure and consequences.**

6 Report of the Independent Review Panel San Bruno Explosion, p. 8 (June 8,
7 2011) (emphasis in the original).

8 PG&E is evaluating this conclusion (as well as others in the Report). We
9 believe that there is more that PG&E can do to improve the management of
10 information about its transmission pipeline system, and PG&E is committed to
11 taking appropriate actions to confront and overcome the recordkeeping
12 challenges it faces. Over time, PG&E's gas organization has moved from one
13 place to another with the result that some records have been lost, misplaced, or
14 discarded. The gas organization has reorganized several times in past decades,
15 with some functions being moved from one line of business to another. In
16 hindsight, these changes have impacted records management practices. PG&E
17 has developed many records management systems, in different eras of data
18 management technology. Looking back, we see that the Company has
19 struggled to maintain the continuity and reliability of records across these
20 records management systems. These are not excuses or explanations. They
21 are preliminary assessments about the challenges PG&E faces.

22 PG&E will identify industry experts who will assist PG&E in addressing its
23 record maintenance challenges. The Independent Review Panel's work is
24 central to this effort, and PG&E intends to confer further with the Panel's
25 consultants.

26 **C. Overview of PG&E's Gas Transmission Safety Record** 27 **Maintenance and Retention Policies**

28 PG&E has long had enterprise-wide document maintenance policies. The
29 current (as of August 2010) governing standard for providing or creating
30 guidance documents is contained in Corporation Standard GOV-2001S,
31 Guidance Documents Standard Rev.0, issued on 07/12/10 (Attachment P2-6).
32 This standard establishes an enterprise-wide framework for writing, reviewing,

1 approving, canceling, and communicating all guidance documents issued by
2 PG&E Corporation and its affiliates and subsidiaries, including PG&E. GOV-
3 2001S is, in essence, a policy that establishes the standards by which other
4 policies are created, maintained and/or superseded.

5 The distinction that PG&E draws between a policy and a practice is that a
6 policy provides broad direction to the operations on how to perform work;
7 practices, in contrast, are described in guidance documents. For practices,
8 PG&E currently uses three common guidance document types to communicate
9 “what-to-do” and “how-to-do-it”: Standards, Work Procedures, and Bulletins.
10 Policies are the overarching direction provided to the business, standards define
11 what needs to be done to implement the policies, and work procedures provide
12 details on how the work is to be performed. Bulletins are used to communicate
13 interim changes to policies or standards between policy and standard revision
14 cycles. In some cases, guidance documents are presented together in a manual
15 or with other supporting documents such as job aids, numbered documents,
16 forms, drawings, and specifications.¹

17 **1. PG&E’s Document Maintenance Policies**

18 PG&E’s document maintenance policies have evolved over time and
19 adapted to state and federal regulatory changes concerning gas
20 transmission document maintenance policies. Attachment 2A details
21 PG&E’s document maintenance and retention policies related to gas
22 transmission safety recordkeeping, as well as the changes to those policies
23 over time and the reasons for those changes (where such information is
24 available). The policies listed in the Attachment cover many subject areas,
25 but each touches on record maintenance or retention in some way. Until
26 relatively recently (the 1990s), PG&E did not routinely log the changes

¹ Historically, PG&E has had different names for guidance documents, including: Policies, Standards, Design Standards, Guidelines, Work Procedures, Bulletins, Forms, and Manuals. Many of these document types are still in use but are being converted over time to the existing Corporate Standard format and naming convention. In responding to Directive 2, PG&E will refer to all these various document types as “policies.”

1 between and among the versions of its policies, nor did it formally record the
 2 reasons for those changes. Thus, in an effort to respond to Directive 2,
 3 PG&E has created a change log for record-related policies dating back to
 4 the 1950s. PG&E has made diligent efforts to make the log (contained in
 5 Attachment 2A) as accurate as possible given the passage of time.

6 **2. Document Retention Policies as Applied to PG&E’s Gas**
 7 **Transmission Records**

8 Many of PG&E’s policies contain record retention instructions. These
 9 instructions track or implement regulatory requirements, or impose
 10 additional company requirements. Retention obligations during the past 55
 11 years stem from various regulatory sources: PHMSA regulations, FERC
 12 regulations, FPC regulations, and Commission regulations adopting or
 13 incorporating the federal regulations. The retention and destruction rules of
 14 these different agencies are not always easy to harmonize. All of PG&E’s
 15 retention policies can be found in the accompanying produced materials,
 16 which are organized and indexed topically. PG&E’s primary, current (as of
 17 August 2010 or immediately thereafter) retention policies are listed below in
 18 Table 2A-1.

TABLE 2A-1
PACIFIC GAS AND ELECTRIC COMPANY
PG&E PRIMARY POLICIES ASSOCIATED WITH RECORD RETENTION PERIODS FOR GAS
TRANSMISSION PIPELINE

Document Date	Title	Attachment P2-#
10/01/2008	Utility Standard Practice (USP) 4, Record Retention and Disposal	P2-228
05/22/2008	Guide to Record Retention	P2-227
04/16/2010	Records Retention and Disposal Guidance for Transmission & Distribution Systems	P2-230
10/01/2010	GOV-7001S: Record Retention and Disposal Standard	P2-233

1 **3. How Document Retention Requirements Relate To PG&E’s**
2 **Gas Transmission Records**

3 The CPUC’s Legal Division requested PG&E to discuss its
4 recordkeeping practices by category of records as set forth in its June 3,
5 2011, PHC statement. Specifically, Legal Division seeks information
6 concerning how and where five categories of records are kept: (i) as-built
7 drawings, documents, and photos; (ii) pipe specifications; manufacturer’s
8 operating manuals, and instructions; (iii) operating history of the pipe,
9 including but not limited to pressure; (iv) maintenance and repair history of
10 the pipe; and (v) risk assessments done of the pipe. Below, we outline the
11 retention policies applicable to each of these categories.² Section D
12 discusses PG&E’s recordkeeping practices generally, by category requested
13 in Legal Division’s PHC Statement.³

14 As-built drawings, documents, and photos. Starting in 1961, with the
15 adoption of General Order 112, and in 1970 with the adoption of the federal
16 code, as-built drawings and related design and construction information
17 were required to be maintained for so long as the pipe remained in service.
18 18 C.F.R. § 225.3, Index No. 21. PG&E’s policies have required retention of
19 these types of records for the life of the pipeline.

20 Pipe specifications. Pipe specification information is generally subject to
21 a retention requirement for as long as the pipe remains in service. 18
22 C.F.R. § 225.3, Item 21. Pre-existing pipeline facilities were exempt from
23 construction, design, and initial testing requirements when regulations were
24 first introduced. PG&E’s internal policies have also required the retention of
25 these sorts of records for the life of the pipeline.

² For a full discussion of document retention requirements applicable to gas transmission records, and when the regulations became effective, see Chapter 1, Regulatory History.

³ This is not to say that records, once created, must remain in the same format for all time. As discussed in Chapters 1 and 2B, pipeline safety regulations allow operators to use any recordkeeping procedure that produces authentic records.

1 Manufacturer's operating manuals and instructions. There are no
2 manufacturer's operating manuals or instructions for transmission pipe.
3 Therefore, PG&E does not have a document retention policy that is directly
4 applicable. For manufacturer's operating manuals or instructions for station
5 components such as compressors and filters, PG&E's practice is to retain
6 these manuals in the facility where the component is situated and centrally
7 in gas engineering records.

8 Operating history of the pipe, including but not limited to pressure.
9 PG&E understands this request to refer to operating pressure records and
10 other similar records, e.g., operator logs. Under PHMSA subpart L
11 (Operations), these types of records are required to be retained as "records
12 necessary to administer the procedures" set forth in an O&M manual. 49
13 C.F.R. § 192.603(b). There is no time period specified in § 192.603(b),
14 however, and the retention period would be subject to any specific
15 requirements set forth in an operator's O&M manual. PG&E's internal
16 policies set forth the relevant retention requirements.

17 Maintenance and repair history. PG&E understands this request to refer
18 to maintenance and repair records of the kind described in the pertinent
19 parts of PHMSA subpart M (Maintenance). Presently, records of repairs
20 made to a segment of pipe (as opposed to other parts of the pipeline
21 system) must be retained for as long as the pipe segment remains in
22 service. Repair records for non-pipe components generally must be
23 maintained for at least five years. Records related to patrols, surveys,
24 inspections, and tests required by subparts L and M of Part 192 are
25 generally subject to a five-year record retention period, or until the next
26 patrol, survey, inspection, or test is completed, whichever is longer. PG&E's
27 internal policies have also required the retention of these types of records
28 for the same periods.

29 Risk assessments. PG&E understands this request to refer to the
30 integrity management process described in the pertinent parts of PHMSA
31 subpart O (Gas Transmission Pipeline Integrity Management). Subpart O
32 requires retention of records for the useful life of the pipeline in order to

1 demonstrate compliance, and prescribes the retention of specific minimum
2 records. PG&E's internal policies have required the retention of these types
3 of records for the same period as specified above.

4 **D. PG&E's Recordkeeping Practices From 1955-2010**

5 **1. Introduction and Summary of Historical Developments**

6 Directive 2E of the OII asks PG&E to explain how it ensures that its gas
7 transmission documents (referenced in Directives 2A-2D) are "identified,
8 accessed, and retrieved efficiently and promptly." In addition to this
9 directive, CPUC's Legal Division has asked PG&E for a description of the
10 location and retrievability of PG&E's gas transmission records.

11 Historically, PG&E has made pragmatic recordkeeping choices aimed at
12 making important gas safety records available to those who used them:
13 maintenance personnel working with the pipe in the field, operators
14 monitoring the flow of gas at a load center or in a gas control room, and gas
15 pipeline engineers constructing new pipelines or managing or improving
16 existing ones.

17 Many records have been stored in local divisions and districts because
18 that is where the work is done. Local maintenance personnel have
19 generally needed records to perform specific tasks, *e.g.*, to repair a valve.
20 In contrast, gas operations personnel rely on system-wide operational data,
21 such as real time compressor and regulator station data, but generally do
22 not need detailed information about pipe specifications or maintenance
23 history. The needs of gas pipeline engineers straddle those of maintenance
24 and operations. Engineers need access to system-wide databases to
25 quickly orient themselves when problem solving or when defining the scope
26 of an engineering task, and they need access to more detailed pipeline
27 records when performing underlying engineering projects. PG&E's
28 recordkeeping practices have attempted to provide these engineers with
29 ready access to summary data (Pipeline Survey Sheets, and later, GIS
30 applications) as well as access to detailed, source data contained in job
31 files.

1 Some pipeline records are kept longer than others, and some are kept in
2 different forms (*e.g.*, source versus summary form, paper versus microfilm or
3 electronic form). Source and summary paper and other hardcopy records
4 have generally proven durable and reliable when completed properly, and
5 remain part of PG&E's recordkeeping practices.⁴ However, PG&E, like
6 many other operators in the U.S., has had to confront the problem of
7 physically storing hardcopy records. See Chapter 2B. Over time, PG&E's
8 business has grown and evolved, and the locations where it conducts
9 business have changed and multiplied. As PG&E relocated and
10 reorganized business units and groups, PG&E moved records from one
11 location to another. At the time of those moves, PG&E personnel made
12 decisions to retain some records and discard others. Those decisions as to
13 which records were necessary to keep, and which could be discarded based
14 upon regulations at the time, were influenced by operational needs, storage
15 availability and cost, engineering judgment, and recordkeeping
16 requirements. In some cases, particularly during the course of relocations
17 or business reorganizations, valuable records had the potential to be lost or
18 discarded. Anecdotal information, coupled with some record gaps, suggest
19 that over the 55 year period covered by the OII, some data were lost,
20 transferred to another form, or discarded.

21 Electronic recordkeeping may improve (and at times has improved) the
22 retrievability of source and summary data. However, here too there can be
23 a trade off. With the adoption of each data management improvement

⁴ Everyone is familiar with the power and versatility of modern computer systems. Today's powerful information technology, however, was not available when PG&E first began installing gas transmission pipeline, or even in the 1950s through 1960s, when its gas transmission system expanded dramatically to meet the needs of California's growing population. Thus, in the early years, PG&E's gas transmission recordkeeping was almost entirely paper (or at least hardcopy) based. Job files existed in hardcopy format, as did, *e.g.*, leak logs, leak repair forms, valve maintenance records, and operating pressure records. These practices were consistent with those of the industry, as explained by Mr. Ondak in Chapter 2B. Even today, computers and electronic records have not completely replaced paper records for all purposes.

1 comes the risk that data may be left behind or mis-entered in the migration
2 process (either through human translation error or through software or
3 version transitions). Compatibility issues during the migration process from
4 one information format to another can also present obstacles. A challenge
5 for PG&E (and for other operators) has been to anticipate the information
6 that will be important in the future and to ensure that that information
7 migrates to new electronic management systems in a durable, reliable, and
8 retrievable form.

9 Changes to pipeline safety rules have also altered how pipeline records
10 are used, in ways that have strained existing record management and data
11 retrieval systems. As discussed in Chapter 2B, pipeline safety rules have
12 never given much attention to an individual operator's overall recordkeeping
13 procedures. They have generally mandated that records be maintained,
14 and for how long, but without specific guidance as to how records should be
15 maintained. In contrast, these same pipeline safety rules have made
16 sweeping changes to pipeline transmission safety practices, culminating in
17 the adoption of Transmission Integrity Management Program (TIMP) rules in
18 December 2003 (PHMSA subpart O), effective in 2004. With the benefit of
19 hindsight, it can now be seen that TIMP fundamentally changed how PG&E
20 and other operators need to use their pipeline safety records. The change
21 can be summarized this way: Once pipeline operators maintained records
22 so they were available for use in response to a specific event, such as the
23 need to repair or replace a section of pipe. But pipeline operators now also
24 maintain records as part of a proactive effort to manage the integrity of an
25 entire pipeline system. The shift is from a reactive and static records
26 management system to a proactive and dynamic one. TIMP rules created
27 new demands for accessing, reviewing and integrating historical pipeline
28 information and records, in ways that existing recordkeeping systems and
29 practices were neither designed nor intended to address.

30 PG&E began putting in place more sophisticated records management
31 systems before TIMP. PG&E realizes, however, that it needs to do more to
32 improve its records management practices to support modern pipeline

1 safety practices. It needs to work harder to ensure the durability and
2 reliability of records over time, and it needs to implement records
3 management tools that promote wider and quicker access to, and integrated
4 analysis of, reliable pipeline safety data.

5 The historical developments in PG&E's gas transmission safety
6 recordkeeping, which reflect the general themes identified above, are
7 summarized in the following Table 2A-2.⁵

⁵ As an additional background information regarding PG&E's recordkeeping practices more generally, PG&E notes that in 1948 the Company adopted a standardized Decimal File System based upon the Dewey Decimal System and published a manual outlining this system. PG&E revised its Decimal File System manual periodically, with eight editions published from 1948 to 1990. PG&E's decimal file system was used to standardize the filing and document retrieval system for intra-company memoranda and correspondence. Memoranda and correspondence were assigned a filing system number, which was typically typed on the first page of the document. PG&E employees routinely would consult the decimal file manual to determine the correct filing system number to be used. Once reviewed by recipients, the memoranda or correspondence would be filed under this number in each recipient office. The 1983 and 1990 editions of the Decimal File System are attached as P2-1472 and P2-1473.

**TABLE 2A-2
PACIFIC GAS AND ELECTRIC COMPANY
PG&E GAS TRANSMISSION RECORDS EVOLUTION, 1955-2010**

Date	Development	PG&E Organizational Status or Changes	Record Status
1942	<u>During WWII, PG&E begins a Vital Records program to protect critical records. The records identified for inclusion related primarily to ownership and accounts. They were stored in vaults in Sonora, California.</u>	N/A.	<u>Vital records were maintained as duplicate hard copies or on microfilm and are stored in steel containers.</u>
1948- <u>approximately</u> 1995	<u>PG&E adopts a "Decimal File System" that uses a numerical system for filing and categorizing company memoranda and correspondence. The Decimal File System instructions were updated periodically (there were eight versions between 1948 and 1990). Use of the filing system appears to have ceased by the mid-1990s.</u>	N/A.	<u>The Decimal File System was used for hard copy memoranda and correspondence.</u>
1950 -1951	<u>The records collected when the Vital Records program began were updated and the program was expanded to include maps of underground facilities and design drawings. The records continue to be stored at the Vital Records Center vaults in Sonora, California.</u> <u>Additionally, critical maps and records for the San Francisco and East Bay Divisions came to be stored in steel containers and buried underground in each division.</u>	N/A.	<u>Vital records were maintained as duplicate hard copies or on microfilm and are stored in steel containers.</u>
1955	Beginning of the relevant time period for the Oil	Most gas transmission engineering (esp. large-scale projects) is centralized in PG&E's San Francisco headquarters Maintenance and construction work is	Records are maintained in hardcopy format Records search, access, and retrieval functions are necessarily constrained by

Date	Development	PG&E Organizational Status or Changes	Record Status
		largely done out of field offices Operations work is performed in System Gas Control and in approximately 10 manned "load centers"	technological and geographic limitations
1961	GO-112 takes effect; GO-112 requires pressure test information to be kept, on a going-forward basis, for life of facility	Same as above	Records maintained in hard copy and/or microfilm format
<u>1961</u>	<u>PG&E builds a central records storage facility, the Bayshore Records Center.</u>	<u>Same as above.</u>	<u>Records maintained in hard copy format</u>
<u>1967</u>	<u>Due to space needs, PG&E makes the first expansion to the Bayshore Records Center.</u>	<u>Same as above</u>	<u>Records maintained in hard copy format</u>
1968-1969	PG&E creates Pipeline Survey Sheets (PLSSs) that provide in summary form data about pipeline characteristics	Same as above	PLSSs are created and maintained centrally in hardcopy format, and copies are distributed among PG&E local offices Redline updates done in local offices
Late 1960s to early 1990s	<p><u>In 1969, PG&E revamps and expands the Vital Records program. The refocus was on records "necessary to permit resumption of operations if they are interrupted by enemy attack, civil strife, sabotage, or natural disaster." The Company surveyed Departments to determine which records should be included under the new criteria. Departments then began periodically forwarding copies of Vital Records on that basis.</u></p> <p><u>Haas Powerhouse in the San Joaquin Division was selected as the storage location for records that came within the expanded Vital Records program.</u></p>	Same as above	<p><u>Starting in the late 60s, twice a year Bayshore Records Center personnel would transport the Vital Records copies that had been forwarded to Bayshore to the Vital Records Center at Haas Powerhouse. This practice lasted until 1994, when redundancy through electronic copies made storage at Haas unnecessary. Towards the</u></p>

Date	Development	PG&E Organizational Status or Changes	Record Status
	<p><u>Company</u> The vital records, including pipeline drawings and other engineering records, are backed up on aperture cards for storage in the Haas Vital Records Center (also called the Record Security Center).</p>		<p>end of this period, transport to Haas was reduced to once a year as the volume of records forwarded was reduced.</p> <p>At least by 1973, copies of engineering drawings were provided on aperture cards that were transported to the Vital Records Center.</p> <p>Approximately once a year in the 1980s and early 1990s, Gas Design Drafting group delivered a set of aperture cards to Bayshore Records facility. Aperture cards were then periodically transported to Haas Power Plant where they were stored in a Vital Records Center.</p>
1970	<p>PHMSA regulations adopted and incorporated into GO-112-C. PHMSA regulations adopt additional recordkeeping requirements, including requirements for "grandfathered" pipe</p>	Same as above	Records continue to be maintained in hardcopy format only
Early 1970s	<p>PG&E develops a mainframe computer system for gas leaks</p>	Same as above	<p>Leak Repair Forms continue to be maintained in hardcopy format, and are the source documents for leak information, but leak repair information is keypunched into the mainframe system. The system enhances archiving capabilities</p>

Date	Development	PG&E Organizational Status or Changes	Record Status
1971	<u>Because the existing Bayshore Records Center facility was filling to capacity, three floors of the "Sugar House" building at the Potrero Power Plant facility start to be utilized as Records Center Annex. The main documents stored there are Plant Accounting Department documents.</u>	<u>Same as above.</u>	<u>Records are maintained in hard copy format</u>
1973	<u>28 boxes of Plant Accounting documents are inadvertently destroyed. The boxes were from the North Bay Electric Department, and contained 1970-71 electric job files and work orders.</u>	<u>Same as above.</u>	<u>Records are maintained in hard copy format</u>
1973-1974	<u>Records capacity pressures prompt a review of the kinds of records included in the Vital Records program.</u>	<u>Same as above.</u>	<u>Records are maintained in hard copy format.</u> <u>Engineering drawings are stored on aperture cards.</u>
1975	<u>PG&E undertakes a Microfilming Feasibility Study.</u>	<u>Same as above.</u>	<u>Records sent to Bayshore Records Center for storage continue to be maintained in hardcopy format.</u>
1975-78	<u>Records storage space on the 33rd floor of 77 Beale Street is expanded and reorganized</u>	<u>Same as above</u>	<u>Records are maintained in hard copy format</u>
1980	Operational records are moved from 29 th floor of 77 Beale Street, San Francisco to Walnut Creek	Pipeline Operations Headquarters moves out of San Francisco, separating engineering from operations	Records continue to be maintained in hardcopy format. Operations' central library relocates to Walnut Creek Moves require recordkeeping decisions to be made, based on current operational needs, engineering judgment, and recordkeeping requirements

Date	Development	PG&E Organizational Status or Changes	Record Status
1982	<u>PG&E develops and installs a "Stored Records Management System," a basic computerized system designed to provide Bayshore Records Center personnel reports regarding record boxes stored at Bayshore.</u>	<u>N/A</u>	<u>Records are maintained in hard copy format.</u>
1982	<u>A severe storm floods the Bayshore Records Center and affects the lower row of boxes. Action was taken to restore water-damaged records. Some records could not be restored, but all such records had been identified by Departments as non-essential.</u>	<u>N/A.</u>	<u>Records are maintained in hard copy format</u>
1983	<u>PG&E expands its Bayshore Records Center for a second time, adding an additional building adjacent to the PSEA Clubhouse building (which was itself not used for records storage).</u>	<u>N/A.</u>	<u>Records are maintained in hard copy format</u>
1985	Record storage locations change	Engineering Records Unit moves offices	Engineering Records relocates from 77 Beale to 123 Mission Street (San Francisco) Moves require recordkeeping decisions to be made, based on current operational needs, engineering judgment, and recordkeeping requirements
1984-1988	PG&E implements Supervisory Control and Data Acquisition (SCADA) system	SCADA allows centralized control and monitoring of the gas transmission system, and leads to the gradual elimination of continuous staffing of manned "load centers" and stations	Real-time operations records (pressures, valve settings, etc.) begin to be maintained electronically in the SCADA system
1986-1987	PG&E reorganizes its gas organization and reassigns non-backbone transmission design and construction accountability to the local offices	In a corporate reorganization, local gas transmission engineering work is decentralized. Engineering on the numbered transmission lines (the	Certain local transmission design basis records and plat sheets are increasingly housed in local divisions to

Date	Development	PG&E Organizational Status or Changes	Record Status
		transmission backbone) continues to be performed centrally	facilitate use by local engineers. They continue to exist in hardcopy format Some records no longer managed and updated centrally
1986-1987	<u>Sugar House Records Storage Annex facility condemned and declared unsafe. Records removed from Sugar House and transferred to PG&E warehouse in Oakland acquired in 1987 for records storage. Records stored at Sugar House were mainly Plant Accounting Department documents.</u>	N/A	<u>Records are maintained in hard copy format.</u>
1986	The Napa Service Center Floods as a result of the Napa River overflowing	N/A	Some records are damaged or go missing as a result of the flood.
1987	Creation of the "PC Leaks" computer system to capture leak information from Leak Repair Forms	Same as above	Hardcopy Leak Repair Forms continue to be the source record for leak information, but the new computer system allows access to electronic summary Leak Repair Form data
1989	Loma Prieta earthquake; <u>all records removed temporarily from Bayshore Records Center to a rented warehouse in South San Francisco while shelving at Bayshore is repaired. No records destroyed in Bayshore Records Center as result of earthquake. storage at Potrero Power Plant ("Sugar House") no longer viable. Record storage locations change</u>	N/A	<u>Boxes of hardcopy records temporarily removed from Bayshore Records Center; no records destroyed at Bayshore.</u> Records moved from Sugar House to PSEA Clubhouse (at Potrero Power Plant) Moves require recordkeeping

Date	Development	PG&E Organizational Status or Changes	Record Status
			decisions to be made, based on current operational needs, engineering judgment, and recordkeeping requirements
1989-1992	PSEA Clubhouse flooded; some records water damaged. Record storage locations change	N/A	Records moved from PSEA Clubhouse to Bayshore/Geneva facility Moves require recordkeeping decisions to be made, based on current operational needs, engineering judgment, and recordkeeping requirements
1994	Began consolidation of Gas Control	PG&E consolidates 10 field control centers to 4 terminals	Some records moved from 10 field locations to the 4 terminals; some records moved to central record storage; some records no longer required to be retained are discarded
1993-1994	Workforce Reduction effort	Records and Information Coordinator function eliminated	Some records no longer managed and updated centrally
1994	Aperture cards previously stored at Vital Records Center within the Haas Power Plant are transferred back to Bayshore Records Center	N/A	Aperture cards remain at Bayshore Records Center, <u>untouched in a secure vault</u> , until they are removed and scanned in August 2011
1994-1995	PG&E begins development of a Geographic	N/A	GIS is a useful summary of,

Date	Development	PG&E Organizational Status or Changes	Record Status
	Information System (GIS) for its gas transmission pipelines		<p>or portal to, transmission pipeline information. Design and engineering records continue to be the source record</p> <p>PG&E stops updating former hard copy PLSSs with the adoption of GIS, which causes the hard copy PLSSs to become obsolete. <u>Electronic copies of the obsolete PLSS records are maintained in the Electronic Document Management System.</u></p>
1995-1996	Some gas engineering documents in San Francisco relocated to Walnut Creek	Centralized Gas Transmission Engineering is relocated to Walnut Creek	<p>Records are moved from San Francisco (123 Mission) to Walnut Creek and to PG&E's Bayshore storage facility; some remain in San Francisco</p> <p>Some records previously stored at Bayshore (such as GM records) are transferred to Walnut Creek</p> <p>Some other job files (e.g., at some stations) are consolidated in Walnut Creek</p> <p>Moves require recordkeeping decisions to be made, based on current operational needs, engineering judgment, and recordkeeping requirements</p>

Date	Development	PG&E Organizational Status or Changes	Record Status
			Some pipeline records were misplaced or discarded in and around this time frame
1998	<u>Bayshore Records Center personnel develop a FoxPro searchable database for tracking and identifying boxes transmitted to and from Bayshore. The system includes basic box content information, as provided by the box senders.</u>	<u>N/A</u>	<u>The FoxPro database tracks boxes of hard copy records transmitted to or from Bayshore Records Center. The database continues to be used.</u>
1999	Creation of the Integrated Gas Information System (IGIS) as a result of efforts by the Gas Leaks and Records Subcommittee, a partnership of management, IBEW, and ESC employees	Decentralized engineering of local transmission jobs continues	Hardcopy "A" Forms continue to be the source document for leak information, but IGIS allows improved, enterprise-wide access to leak information. Some PC Leaks data are migrated and some are archived in legacy systems
2001	Record storage locations change	Transmission engineering work continues to be divided between the centralized Gas Transmission Engineering (larger jobs) and the local divisions (smaller, local transmission jobs)	Records stored in several locations in Walnut Creek are consolidated into one Walnut Creek location
2003	PHMSA adopts Integrity Management regulations (49 C.F.R. Part 192, Subpart O)	Existing risk management organization begins to incorporate Integrity Management requirements	Integrity Management does not fundamentally alter the types of records stored, but it increases the need to obtain relevant information

1 **2. Overview of the Records Generated From Gas Transmission**
2 **Activities (as of August 2010)**

3 PG&E here addresses its current (as of August 2010) gas transmission
4 safety records and recordkeeping.⁶ Below is a table of the activities PG&E
5 performs on its gas transmission lines and a summary of the records that
6 PG&E generates from those activities. The table summarizes, among other
7 things, the type of record, its function and location, and who accesses the
8 record and for what purpose and in what manner. In response to the
9 CPUC's Legal Division's request, PG&E has organized this response to
10 generally correspond to the categories of documents identified by Legal
11 Division in its June 3 PHC statement.

⁶ Through PG&E's MAOP Validation effort, PG&E has gathered a significant portion of its design and construction records to a central location for purposes of validating MAOP on its HCA pipelines. In Phase 3 of the MAOP Validation effort, PG&E intends to gather the same information associated with its non-HCA pipelines to perform the MAOP calculation. That effort will continue into next year. Given this effort, many of PG&E's job files have moved during the records collection activities associated with the MAOP Validation effort. [Please note that due to limitations in the word processing program we were unable to indicate changed footnote numbers from the September 30, 2011 filing through strikethrough in this version].

**TABLE 2A-3
PACIFIC GAS AND ELECTRIC COMPANY
RECORD TYPES CREATED IN CONNECTION WITH GAS TRANSMISSION ACTIVITIES, AS OF AUGUST 2010⁷**

Record Type	Is Record PG&E's Source Record?	Information in Record Contained in Summary Record/Analytic Tool?	Purpose of Record	Record Location	Typically Accessed By	Typically Accessed For	How Accessed	Relation to GIS
Records Associated with Design and Construction of Gas Transmission Pipelines⁸								
"Job files" components: Design drawings* Engineering calculations and certifications Job estimates Bills of materials Accounting documents Pressure test documents Weld inspection reports Information on pipe covering or coating, or cathodic protection	Yes	Plat maps Pipeline Survey Sheets (PLSSs) Geographic Information System (GIS) (Map Guide/Gas Map/Gas View) EDMS Applications: ELS IBM DB2 FileNet Aperature Cards	To record original and as-built design and construction data concerning gas transmission pipelines	Created at engineering location, maintained at job site during construction, and archived centrally in Walnut Creek, in records storage in Bayshore facility, in the local offices, and in Pipeline Engineer files	Engineers Estimators Construction personnel Mappers Integrity Management Project Managers Records Personnel	In-Line Inspection (ILI) assessment External Corrosion Direct Assessment (ECDA) Uprating of pipelines Greenfield or Brownfield planning Construction projects To perform threat assessment for integrity management using historical data MAOP validation	Through retrieval of hardcopy files facilitated by Walnut Creek Central Records personnel Certain station and pipeline drawings can be retrieved using Engineering Library Search (ELS) and/or modified using IBM DB2 (vectorized drawing repository for Gas Transmission)	Job file numbers are associated with GIS pipeline segments. This association enables personnel to view a transmission pipeline segment, identify the associated job file numbers, and retrieve the original job files

⁷ Table 2A-3 covers the general record types created in connection with gas transmission activities. Where there is no primary record, the Table displays summary record/analytical tool function and related information.

⁸ This group of records generally corresponds to "As-built drawings (final and red-line), documents, and photos" and "pipeline specifications" in Legal Division's PHC statement.

Record Type	Is Record PG&E's Source Record?	Information in Record Contained in Summary Record/Analytic Tool?	Purpose of Record	Record Location	Typically Accessed By	Typically Accessed For	How Accessed	Relation to GIS
<p>system (if installed as part of job)</p> <p>Original design class location</p> <p>Manufacturing mill test records (for large jobs)</p> <p>Construction standards and specifications (for contractors)</p> <p>Permitting and environmental records</p>								
Welding personnel qualification records	Yes (hard copy)	Welder Qualifications Database (MS Access)	To record PHMSA subpart (E) welding personnel qualification information	Maintained in PG&E's San Ramon offices by the System Support Process Group	Division and district supervisors and superintendents Transmission Specialists	To monitor and verify qualification of welders	Through an electronic tracking system or hard copy	Not related
MAOP List	Yes	No	To record and update MAOP and MOP and future design pressure information for gas transmission lines	Maintained in PG&E's Walnut Creek offices	<p>Risk and integrity management personnel</p> <p>Pipeline Engineers (PLEs)</p> <p>Other engineers</p> <p>Gas system operators</p> <p>Mappers</p> <p>Estimators</p> <p>Design drafters</p>	<p>To safely operate the transmission system</p> <p>Risk and integrity management and system planning purposes</p>	In hardcopy format and electronically on a shared drive	There is no link between the MAOP list and GIS. The GIS MAOP information is listed by segment, rather than by pipeline

Record Type	Is Record PG&E's Source Record?	Information in Record Contained in Summary Record/Analytic Tool?	Purpose of Record	Record Location	Typically Accessed By	Typically Accessed For	How Accessed	Relation to GIS
Records Associated with Operation of Gas Transmission Pipelines⁹								
Supervisory Control and Data Acquisition (SCADA) records	Yes	Citect (SCADA software application)	To remotely monitor and/or control major transmission stations and other gas pipeline equipment in real time To access historical SCADA data to support engineering and operations analysis	System Gas Control	Gas Control, gas technicians, maintenance and construction personnel, and engineers Design engineers Mappers Estimators Historical SCADA data are used by gas engineers and gas planners Historical data are also used by Integrity Management	To operate gas pipelines in real time In connection with maintenance work To plan for infrastructure upgrades To forecast gas inventory needs and reliability impacts To calculate risk for integrity management using historical data To assist with design To assist with technician troubleshooting of equipment	Electronically, including through a secure SCADA Web Server	Began adding SCADA Points into GIS (Map Guide) _{in 2006}
System Gas Control Room logs	Yes	No	To record operations or actions taken by System Gas Control	System Gas Control	System Gas Control supervisors	To conduct Gas Control operations For incident investigations and root cause analyses	Electronically	Not related
Clearance records	Yes	No	To ensure the safety of the general public, company	For clearances that have the potential to affect the overall gas transmission system,	Gas technicians and maintenance personnel System Gas Control	For safe execution of transmission work	Electronically in Gas Control, in hardcopy format locally	Not related

⁹ This group of records generally corresponds to “operating history of the pipe” in Legal Division’s PHC statement.

Record Type	Is Record PG&E's Source Record?	Information in Record Contained in Summary Record/Analytic Tool?	Purpose of Record	Record Location	Typically Accessed By	Typically Accessed For	How Accessed	Relation to GIS
			personnel, and pipeline assets during work that will affect pressure, the flow of gas, and/or the quality of the line, or the ability to monitor these factors	clearance forms are sent to System Gas Control and also maintained locally For other clearances, clearance forms are maintained locally	Transmission and Regulation (T&R) personnel			
Current class location and HCA records	Yes	Yes	To record current class location and HCA information	GIS	PLEs and other engineers Integrity Management Maintenance schedulers Mappers	In connection with repair or replacement work In connection with PG&E's Integrity Management Program	GIS	GIS is used as the source record
USA one-call tickets	Yes	Yes	To record information from third parties through the USA one-call number	Maintained electronically in the IRTNNet system	Mark and Locate personnel PLEs Damage Prevention personnel Damage prevention process owner (Integrity Management Department)	To perform Mark and Locate work To monitor anything out of the ordinary on a pipeline To identify construction areas and construction activities in connection with risk assessment To assess effectiveness of Damage Prevention program	Electronically through IRTNNet	Not related

Record Type	Is Record PG&E's Source Record?	Information in Record Contained in Summary Record/Analytic Tool?	Purpose of Record	Record Location	Typically Accessed By	Typically Accessed For	How Accessed	Relation to GIS
Station and Operating Maps & Diagrams	No	Operating Maps & Diagrams are summary tools SCADA	To display station and piping configuration	System Gas Control Gas transmission compressor and regulator stations and terminals Local districts and divisions Gas Transmission Mapping Walnut Creek Records Center	System Gas Control Operators Maintenance personnel Engineers Mappers	To operate stations and valves To process clearances To conduct maintenance activities Design modifications	Electronically in System Gas Control Electronically in Gas Transmission Mapping In hardcopy format in the local divisions, districts, Mapping, and Walnut Creek Records Center Available to PG&E employees via Intranet	Links to E-file are contained in GIS
Station Equipment Manuals	Yes	No	Manufacturer instructions for operation and maintenance of equipment	Compressor and regulator stations and terminals Walnut Creek Engineering Records	Maintenance personnel Station engineers Transmission Specialists	To operate and maintain equipment	In hardcopy format	Not related
Corrosion Control Records	Yes	SAP and PipeLine Maintenance (PLM) program	To measure and monitor the performance of cathodic protection systems	For backbone transmission pipelines maintained by districts, data are entered directly into PLM database For local transmission lines, data are maintained in local divisions in	Corrosion mechanics and technicians Transmission and Regulation (T&R) supervisors and district superintendents Corrosion engineers Integrity	To monitor cathodic protection systems Used in Integrity Management to aid in assessing the condition of the pipe, and to validate assessments	Through PLM in the transmission districts In hardcopy format (CPA files) in divisions unless division has transitioned to SAP	Not related

Record Type	Is Record PG&E's Source Record?	Information in Record Contained in Summary Record/Analytic Tool?	Purpose of Record	Record Location	Typically Accessed By	Typically Accessed For	How Accessed	Relation to GIS
				Cathodic Protection Area (CPA) files, arranged geographically	Management engineers (ECDA and ILI groups in particular) Corrosion Control process owner (Integrity Management Department)			
Records Associated with Maintenance of Gas Transmission Pipeline ¹⁰								
Leak repair records ("A Forms")	Yes	Integrated Gas Information System (IGIS) PC Leaks legacy system (contains historic data) Selected fields from the A form are manually recorded on leak log	To record information regarding leaks and leak repairs To record information regarding the condition of pipeline that is exposed (e.g., when a leak repair is made)	A Forms are stored in the divisions, typically organized by map number / plat number / block number For backbone transmission pipe, A forms are forwarded to Gas Transmission mapping for input into IGIS/GIS For Local Transmission pipe, A Form information is recorded in IGIS by local mappers and input into GIS by Gas Transmission Mappers	Maintenance personnel Engineers Integrity Management Mappers Regulatory Support & Analysis personnel Leak process owner (Integrity Management Department)	To perform maintenance work To conduct leak repairs To calculate risk for integrity management using historical data	In hardcopy format in the divisions and districts Electronically through the IGIS system Selected data are available electronically through GIS system	Selected data from A Forms are manually entered into GIS by mappers.

¹⁰ This group of records generally corresponds to "maintenance and repair history" in Legal Division's PHC statement.

Record Type	Is Record PG&E's Source Record?	Information in Record Contained in Summary Record/Analytic Tool?	Purpose of Record	Record Location	Typically Accessed By	Typically Accessed For	How Accessed	Relation to GIS
				A Form may reside in job file if created in connection with a specific project				
Leak logs	Yes	Information from leak log is entered into IGIS, which initiates further action	To record information on leaks and potential leaks observed during a leak survey	For local transmission, leak logs are maintained in local division offices	Maintenance personnel (leak surveyors) Maintenance supervisors and superintendents	To perform and track leak survey work	In hardcopy format in the divisions	Leak log information is input into IGIS, and key data are periodically transferred to GIS
Valve and regulator maintenance records	Yes	Transmission records are summarized in PLM Local transmission records are summarized in Gas Facility Maintenance (Gas FM) program	To record manufacturer specification information, serial numbers, and to document that maintenance work is performed according to maintenance schedules and intervals	Backbone transmission records are located in transmission districts Local transmission records are located in local division offices	Maintenance field and supervisory personnel Valve and Regulator process owner (Integrity Management Department) Operations Specialists Local engineers	In connection with maintenance work and for audit and compliance	In hardcopy format Summary information accessed through PLM and/or Gas FM	Not related
Patrol records	Yes	None	To document patrols of pipelines and the findings	For backbone transmission the patrol records are located in the transmission districts	Mappers Maintenance personnel PLEs Integrity	To ensure the integrity and safe operation of the pipeline	In hardcopy format	Not related

Record Type	Is Record PG&E's Source Record?	Information in Record Contained in Summary Record/Analytic Tool?	Purpose of Record	Record Location	Typically Accessed By	Typically Accessed For	How Accessed	Relation to GIS
				For local transmission the patrol records are located in the local division offices Aerial patrol schedules are maintained in PG&E's Walnut Creek offices	Management			
Operator qualification (OQ) records	Yes	Selected fields entered into OQ Database	To record personnel qualification information consistent with regulatory standards in PHMSA Subpart N	Created by OQ evaluator, the original is transmitted to PG&E's San Ramon facility where it is entered into the OQ database and a copy is kept by the local evaluator	Front-line supervisors OQ process owner (Integrity Management Department) Qualified employees PG&E Academy personnel	To ensure the qualification of pipeline personnel and to document regulatory compliance	In hardcopy format and in OQ database	Not related
Records Associated with Integrity Management of Gas Transmission Pipelines¹¹								
Documents associated with Risk Management Procedure (RMP) compliance, including: ECDA findings SCDA findings	Yes (for integrity management purposes)	LTIMP summary	To conduct PG&E's Integrity Management analyses and to promote pipeline safety and	PG&E's Walnut Creek offices	Integrity Management personnel Pipeline engineers	To conduct PG&E's Integrity Management Program To ensure a safe and reliable gas transmission system To provide background information in connection	In hardcopy format and electronically on shared drives	Not directly related, however the integrity management process may help to validate data

¹¹ This group of records generally corresponds to "risk assessments" in Legal Division's PHC statement.

Record Type	Is Record PG&E's Source Record?	Information in Record Contained in Summary Record/Analytic Tool?	Purpose of Record	Record Location	Typically Accessed By	Typically Accessed For	How Accessed	Relation to GIS
ILI findings Risk committee notes Risk rankings Other pipeline assessment records			integrity			with project development, design and construction		

1 Table 2A-3 distinguishes between source records and summary records
2 or analytical tools. For example, job files are the original source records for
3 design and engineering data for gas transmission pipelines. PG&E's
4 Geographic Information System (GIS) is an electronic tool that contains,
5 among other things, design and construction data, including data drawn
6 from job files. The GIS design and construction data are stored in electronic
7 form and can be accessed virtually instantaneously by gas personnel. GIS
8 assists pipeline engineers and other personnel to access pipeline data.¹²

9 For example in the case of a Pipeline Engineer (PLE) consulting GIS,
10 the tool is a "portal" to some of the underlying source records and
11 information, and can help orient the PLE. The PLE may find all the
12 information he or she needs by consulting GIS, or the PLE may also need to
13 consult job files for additional, or more detailed, design and construction
14 information (for example in connection with performing an In-Line
15 Inspection). In other cases, all the relevant information from paper records
16 (for example, "A" Forms used to record leaks) is input into an electronic
17 system (IGIS), which is accessible system-wide.

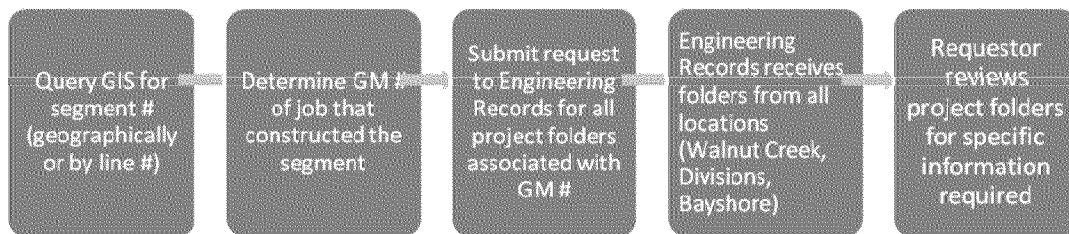
18 However, even in cases where an electronic system is populated with all
19 data from hardcopy files, the hardcopy files remain the source record for
20 most purposes. By source record, PG&E means the record that captures
21 original information. GIS is generally not a source record; it presents data
22 for summary purposes or for use as an analytic tool. There are two primary
23 instances where electronic data systems have emerged as source records:
24 the IRTHNet system, which is used to access USA one-call ticket
25 information, and GIS itself – but only to the limited extent that GIS is used (i)

12 One advantage of PG&E's GIS is that it is searchable electronically, allowing gas pipeline information to be efficiently identified, accessed and retrieved by PG&E's pipeline engineers and other personnel regardless of their office location. The gas transmission GIS contains data for pipelines (pipe design characteristics), stations, and main line valves, and also provides links to pipeline operating maps and facility operating diagrams. Over several hundred types of data are tracked in one or more of the layers of GIS. GIS contains information about each of the approximately 20,000 unique pipeline segments that comprise PG&E's gas transmission system.

1 to calculate High Consequence Areas (HCAs) (geographic areas) and (ii) to
2 prepare pipeline risk rankings for integrity management purposes.

3 In cases where job files need to be retrieved, GIS also facilitates that
4 retrieval, because job file numbers are linked in GIS to pipeline segments.
5 Figure 2A-1 is a simplified flowchart that illustrates how GIS can be used for
6 this purpose.

**FIGURE 2A-1
PACIFIC GAS AND ELECTRIC COMPANY
ACCESSING JOB FILES ASSOCIATED WITH A PARTICULAR GAS TRANSMISSION PIPELINE
SEGMENT**



7

8 A more detailed schematic of how GIS facilitates job file access and
9 retrieval, and how PG&E manages its recordkeeping and information flow in
10 connection with new gas transmission pipeline projects, can be found in
11 Attachment P2-1457 (Gas T&D Custom Pipeline Design Process Map
12 (Level 3) [Applicable to Capital Projects > \$1.0 million]).

13 The Electronic Document Management Systems organization
14 manages a suite of software applications used by PG&E personnel. One
15 application is the Electronic Library Search (ELS). ELS allows any PG&E
16 employee with access to the PG&E intranet to pull the latest version of a
17 drawing for Stations, as well as the archived Pipeline drawings prior to the
18 existence of GIS (Plat Sheets, Construction drawings, Plan and Profile
19 drawings, etc.). Another tool is the IBM DB2 Station Drawing Repository.
20 IBM DB2 contains the vectorized (CAD) files that are utilized to create the
21 construction drawings for issuance to the field. IBM DB2 has revision
22 controls, Check In/Check Out controls, and archival functionality. In

1 contrast, the drawings in ELS are a non-editable read-only file of the
2 vectorized drawings located in IBM DB2.

3 Finally, Table 2A-3 provides some detail about PG&E's gas
4 transmission analysis tools, most particularly about GIS. There are several
5 electronic data management tools used by PG&E. IGIS is the enterprise-
6 wide computer system used by PG&E to track leaks and leak information. A
7 Form (leak) information is input into the IGIS system for the purpose of
8 scheduling and tracking leak repairs. IGIS' historical development is
9 described above in Table 2A-2. PLM is the PipeLine Maintenance program.
10 It is used by PG&E's gas transmission group to schedule and track
11 maintenance work on gas transmission pipelines. Gas FM is the Gas
12 Facility Maintenance program. It is used to schedule and track distribution
13 and local transmission pipeline maintenance work. Finally, SAP (a third
14 party software product) is an asset management system utilized by PG&E.
15 Among other things, it issues "tickets" for certain local transmission pipeline
16 maintenance work, and records certain information concerning the
17 maintenance that needs to be performed.

18 **E. Conclusion**

19 As illustrated above in Tables 2A-2 and 2A-3, PG&E's recordkeeping and
20 retrieval capabilities have significantly evolved over the past 55 years,
21 responding to changing operational needs, engineering judgment, and
22 recordkeeping requirements. PG&E's current recordkeeping and retrieval
23 systems need to be improved in order to more comprehensively and effectively
24 evaluate the integrity of our gas transmission pipelines, as contemplated by the
25 Integrity Management Requirements in Subpart O. PG&E is committed to this
26 improvement, and has begun to implement an improved GIS system.