Pacific Gas and Electric Company®

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August 11, 2014

Mr. Paul Clanon
Executive Director
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, Ca 94102

**RE: Response to the June 13, 2014 Hazard Analysis and Mitigation Report on Polyethylene Aldyl A Natural Gas Pipelines.**

Dear Mr. Clanon:

PG&E respectfully submits its comments on the recent report of the Safety and Enforcement Division (SED) entitled "Hazard Analysis & Mitigation Report On Aldyl A Polyethylene Gas Pipelines in California." We appreciate the effort SED put into researching and summarizing the operational issues around Aldyl-A pipe. PG&E agrees that the replacement of Aldyl-A pipe is best managed through a risk informed prioritization process as there are many factors beyond the material itself that need to be considered in addressing risk.

In 1984, PG&E initiated a risk-informed decision making program for pipeline replacement identified as the Gas Pipeline Replacement Program (GPRP) for our steel and cast iron systems; this approach, updated by our experience, remains in use today. As part of this program, PG&E will have replaced all 2,243 miles of cast iron gas distribution pipe by the end of 2014. In the last several years, PG&E has expended considerable effort in establishing a similar program for Aldyl-A pipe. We began by developing an inventory of Aldyl-A pipe and conducting laboratory testing of field samples to build a basis for the risk model we use to prioritize replacement. While there are some uncertainties associated with modeling activities, we are confident we will be able to reduce these over time – similar to our experience with our GPRP.

PG&E recommends that SED allow for additional utility review and comment prior to finalizing the report.

The report makes seven recommendations and requests our response to three specific questions. Our comments are as follows:

**Response to Report Recommendations**

R1. **Operators should develop a more robust asset knowledge and material traceability program on their gas distribution assets**.

We agree with this recommendation. PG&E is monitoring industry-sponsored pilot programs designed to enable materials traceability. One such project, "Development of Standardized Algorithms and Identifiers for Enhanced Material Tracking and Traceability", is focused on developing a standardized classification system to characterize various components within a gas distribution system, which is an enhancement to the ASTM F2897-11 standard. The project resulted in a change in the ASTM standard to require material manufacturers to use a unique alphanumeric code to track the materials throughout their entire supply chain.
Implementing a robust and comprehensive materials traceability process requires several key enablers, such as a Geographic Information System (GIS) to map assets and associated material properties and a mobile work management platform to enable data collection in the field. PG&E is currently implementing projects in both of these areas.

As part of the asset knowledge process, the following are examples of attributes for gas mains and services currently being captured by division mappers in GIS:

- Diameter – nominal pipe size
- Plastic Type – Aldyl-A, TR-418, PE2406 (Orange), etc.
- Pressure Class – Low, Semi-high, High
- Joint Trench – Yes or No
- Locating Wire – Yes or No
- Job Order – Installation order number
- Install Date – Date of installation of facility

Once these foundational asset management information system projects are in place, we will continue to assess our ability to implement materials traceability.

R2**. Operators should develop a strategy for better integrating supply chain information (e.g. resin type, manufacturing date, lot number, and other manufacturing data that are typically available during the purchase of materials).**

We agree. Please see our response to recommendation 1.

R3. **Where feasible, operators should make use of opportunistic identification to determine whether an exposed pipe segment is of Aldyl A or some other materials and, if it is Aldyl A, whether the pipe has LDIW characteristics whenever sections are cut out.**

As part of PG&E's Distribution Integrity Management Plan that addresses system knowledge (Subpart P, 49 CFR §192.1007(a)), PG&E uses existing processes to capture pipe specifications whenever pipe is exposed during leak repair. Some of the information that is captured in the repair and inspection form is material plastic type (Aldyl-A, PE 2406 (orange), PE 2406/2708 (yellow), PE 3408 (black), PE 4710 (black), other (explain)), diameter, manufacturer and installation date, leak cause (i.e., plastic cracking, plastic embrittlement), soil type, and leak source (i.e., body of pipe, fitting, etc.).

PG&E's Aldyl-A pipe replacement model makes a conservative assumption that all pipe installed during the dates that LDIW was manufactured, and two years following, is LDIW. In addition, PG&E follows Utility Standard TD-4801S – *Service Replacement Criteria.* This Utility Standard provides guidance for determining when to replace gas services for reconstruction

projects, leak response or service relocations. One of the criteria listed is to replace all Aldyl-A plastic services regardless of vintage. Due to PG&E's conservative practices for both main and service replacement, we believe testing for LDIW is unnecessary.

R4. **Operators should react expeditiously to manufacturer warnings and PHMSA safety advisories.**

PG&E agrees. As part of PG&E's Distribution Integrity Management Program (DIMP) that addresses threat identification (Subpart P, 49 CFR §192.1007(b)), PG&E reviews PHMSA advisories and bulletins along with NTSB accident reports for known and potential threats for all PG&E distribution assets. PG&E evaluates these reports for learning opportunities and for consideration under the DIMP.

In addition, PG&E's Regulatory Compliance group follows Utility Procedure TD-4012P-01 - *Identifying New and Changing Gas Operations Requirements*, which is attached. The procedure establishes the process for reviewing, assigning and tracking both transmission and distribution notices from state and federal regulatory agencies. The Regulatory Compliance group also routinely monitors new PHMSA advisories and NTSB recommendations and communicates those advisories to the appropriate department for evaluation and action.

R5. **Operators should re-examine their risk assessment and mitigation strategies to ensure they will be replacing the at-risk pipes at a sufficient rate to mitigate the risk associated with LDIW Aldyl A pipes due to squeeze-offs and to pre-1983 non-LDIW pipes due to rock impingement.**

PG&E is using a pipeline replacement prioritization approach that, in part, utilizes a reliability model developed by Jana Labs[1] for PG&E. PG&E contracted with Jana Labs to perform testing on Aldyl-A pipe from PG&E's system to help build a predictive likelihood of failure model. The general process utilized by Jana involved (1) characterization of slow crack growth (SCG) resistance for the specific plastic pipe materials (including grades 5040, 5043LDIW, 5043 non-LDIW), (2) development of models for forecasting the performance of the pipe and pipe with rock impingement, deflection stresses and squeeze-offs, (3) development of an overall forecast model, and (4) tuning and confirmation of the models based on actual field leak data. We believe our pipe replacement program takes into account the inherent likelihood of failure associated with LDIW Aldyl-A as well as risk associated with LDIW Aldyl-A pipes due to squeeze-offs and to pre-1983 non-LDIW pipes due to rock impingement. This model also considers the consequence of failure including type of Aldyl-A pipe and proximity to population density and areas of public assembly as part of the prioritization methodology. For the years 2012 and 2013, PG&E has replaced approximately 64 miles of Aldyl-A main and associated services and is targeting approximately 35 miles of Aldyl-A main and associated services replacement for 2014.

[1] Jana Laboratories Inc. is an ISO 17025 accredited laboratory with over 300,000,000 hours of test data developed in their laboratory, specializing in the mechanistic properties of piping systems.

R6. **Operators should, if not already doing so, explicitly consider the impacts of at-risk Aldyl A pipes in their next risk assessment and mitigation strategies provided to the Commission.**

The efforts to identify and replace Aldyl-A pipe were discussed and our replacement program was proposed in PG&E's 2014 General Rate Case filing. We expect that we will continue with our Aldyl-A replacement program and provide updates in future rate cases.

R7. **When acquiring systems, operators should ensure relevant pipeline records are transferred as a condition for final acquisition of a system.**

We agree.

The need for record transfer applies to both new system acquisitions and to applicant installed construction. For applicant installed systems, PG&E requires that the design be approved by PG&E and the as-built documentation be transferred to PG&E at the completion of the project, following the same requirements as work performed by PG&E.

When acquiring a system, due diligence includes an assessment of the adequacy of records. If records are determined to be inadequate, then additional actions, such as field inspections, may be warranted to validate the as-built condition.

**Response to SED Questions**

**Q1. What actions will the operator take to remedy the historical deficiencies in asset knowledge with respect to Aldyl A pipes highlighted in this paper?**

PG&E has – and continues to – employ considerable effort in the identification of Aldyl-A pipe. We have reviewed purchasing history to determine when the various types of Aldyl-A pipe were installed in each of its operating divisions. PG&E used the date range of 1965 to 1991 for years of Aldyl-A main installation, which resulted in approximately 5,450 miles of main identified. All gas distribution system maps were then reviewed to determine Aldyl-A pipe segments based on material type and year of construction and division specific Aldyl-A installation years. PG&E developed GIS features for the entire Aldyl-A pipe population in the PG&E system that captured size, job number, installation year and spatial location. Where we identified data uncertainties, PG&E used engineering-based conservative assumptions.

Additionally, during the scoping of any replacement job, the original construction as-built records are reviewed to validate if the material is Aldyl- A.

**Q2. What actions will the operator take to address the different waves of expected failures on Aldyl A pipes due to the different stress intensifiers acting on the different vintages of pipes given the historical deficiencies in asset knowledge? The operators should not limit themselves to only the intensifiers we highlighted in this report.**

PG&E initiated an Aldyl-A pipe replacement program in 2011. The risk model that was developed for the replacement prioritization approach utilizes an Aldyl-A reliability model developed by Jana Labs (see response to R5). PG&E's DIMP Engineering team will work with

AGA to benchmark other operators on methodologies being used in risk assessment focused on Aldyl-A. DIMP will evaluate the results for learning opportunities and for consideration in potential updates to the Aldyl-A risk model.

In addition to utilizing the Jana Labs model, the risk model developed by PG&E accounts for leaks resulting from cracks (indicating lower ductility material), earthquake fault lines, and unstable soil, and considers the impact of these leaks based on population density and areas of public assembly. The risk model is updated on a periodic basis to account for recent leaks that have occurred on the PG&E system.

In addition, PG&E monitors Aldyl-A pipe that has had a history of leaks, and conducts special leak surveys on an annual basis in those locations. During these surveys, if a leak is found on a service that has been identified as Aldyl-A material, it will be replaced per Utility Standard TD-4801S – *Service Replacement Criteria.*

**Q3. In what forum (e.g. a general rate case or a separate application) will each operator intend to address the mitigation of the potential hazards posed by early vintage Aldyl A pipes?**

PG&E's Aldyl-A replacement program was included in its 2014 General Rate Case which is currently in the process of CPUC review and approval, and we will continue to address Aldyl-A risk assessment and replacement plans in future rate case filings.

Sincerely,

*/s/ Sumeet Singh*

Sumeet Singh

Vice President, Asset and Risk Management

cc: Denise Tyrrell, SED Division Director
Elizaveta Malashenko, SED Deputy Director
Michael Colvin, SED Risk Assessment and Enforcement Section Supervisor
Steven Haine, SED Risk Assessment and Enforcement Section
All parties listed on A.13-11-003 and R.11-02-019.

Enclosures:
PG&E procedure TD-4012P-01

# Identifying New and Changing Gas Operations Requirements

**Summary**

This utility procedure establishes the process for achieving the following objectives:

- Reviewing, assigning, and tracking all gas transmission and distribution-related notices of new or changing requirements from state and federal regulatory agencies in a timely manner. These include all bulletins and requirements affecting engineering, construction, operations, maintenance, and emergency response activities or procedures.
- Ensuring that any actions or changes needed to address the requirements are identified and completed in a timely manner.
- Ensuring that new or changing requirements that may affect other lines of business (LOBs) are communicated to affected LOBs and corporate compliance and ethics personnel.
- Ensuring gas operations complies with Utility Standard RISK-4103S, "Identifying New and Changing Requirements Standard."

Level of Use: Informational Use

**Target Audience**

Gas engineering and operations engineering personnel.

**Safety**

NA

**Before You Start**

NA

**Table of Contents**

# Identifying New and Changing Gas Operations Requirements

## Procedure Steps

### 1 Notify Regulatory Compliance of New or Changing Requirements

1.1 Gas operations personnel who become aware of regulatory notices of new or changing requirements that potentially affect gas operations must ensure that regulatory compliance personnel are aware of the notices.

1. Regulatory compliance personnel may be contacted at the following email address: Gas Ops S&P Regulatory Compliance.

2. Regulatory notices may include those defined in Table 1, "Governmental Communication Type."

**NOTE**

For a list of governmental agencies monitored by gas operations regulatory compliance, see Table 2 "Governmental Agencies Monitored by Gas Operations."

**Table 1. Governmental Communication Type**

| Communication | Definition |
|---|---|
| Advisory Bulletin | An announcement issued by PHMSA to inform affected pipeline operators and federal and state pipeline safety personnel of matters that have the potential to become safety or environmental risks. |
| Order Instituting Rulemaking (OIR) | An official announcement by a government regulatory agency (e.g., California Public Utility Commission) to propose changes to regulations in order to obtain public comments. |
| Advanced Notice of Proposed Rulemaking (ANPRM) | An official announcement by a government regulatory agency (e.g, PHMSA) to propose changes to regulations in order to obtain public comments. |
| Notice of Proposed Rulemaking (NPRM) | An official announcement by a government regulatory agency (e.g, PHMSA) to propose changes to regulations and obtain public comments. Issued after an ANPRM (if issued) on the topic and before a final rule. |
| Final Rulemaking | An official announcement by a government regulatory agency of changes to regulations. |

**Table 2. Governmental Agencies Monitored by Gas Operations**

| Governmental Agency | Agency Functions |
|---|---|
| California Public Utilities Commission (CPUC) | The state regulatory body responsible for the oversight and implementation of the minimum safety standards for the transportation of natural gas pipelines through its Utilities Safety and Reliability Branch (USRB). |
| California Department of Conservation, Division of Oil, Gas, and Geothermal Resources | The state agency that regulates the construction, operation and closure of oil, gas, and geothermal wells. |
| California Office of the State Fire Marshal | The state agency chartered with protecting life and property through the development and application of fire prevention engineering, education, and enforcement. Adopts requirements in the California Fire Code. |
| U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) | The regulatory agency responsible for the oversight and implementation of the minimum safety standards for the transportation of hazardous materials, including natural gas, to industry and consumers by all transportation modes, including the nation's pipelines. Responsible for issuing Title 49 of the Code of Federal Regulations (CFR) Parts 178-199. |
| U.S. Federal Energy Regulatory Commission (FERC) | The U.S. federal agency with jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, and natural gas pricing. Gas Operations monitors and ensures compliance with quarterly reporting (FERC Form 549D) and other gas-related requirements, including filing for new rate authority. |
| U.S. Environmental Protection Agency (EPA) | The U.S. federal agency responsible for the oversight and implementation of environmental protection rules. Gas Operations ensures compliance with the Greenhouse Gas Mandatory Reporting Requirements per 40 CFR Part 98. |
| California Air Resources Board (CARB) | The California governing board responsible for attaining and maintaining healthy air quality. Gas Operations ensures compliance with the Greenhouse Gas Mandatory Reporting Requirements per Title 17 of the California Code of Regulations Sections 95100 - 95158. |

## 2 Regulatory Compliance Review

2.1 At least once every quarter, regulatory compliance personnel review the spreadsheet, “Governmental Agencies Monitored by Gas Operations” (http://wssuo/gtdregsupportanalysis/Tracking%20PHMSA%20Advisory%20Bulletins%20%20Proposed%20Rulema/Governmental%20Agencies%20Monitored.xlsx) and ensure that the information (including points of contact, sources, and SMEs) is up-to date.

2.2 Upon receipt of a regulatory notice, regulatory compliance personnel perform the following tasks:

1. Log the notice into the gas regulatory notice tracking system.

2. Review the notice to determine whether the requirement impacts gas operations and/or other Company LOBs (if needed, consult a subject matter expert [SME]).

2.2 (continued)

3. IF the requirement could potentially impact other Company LOBs

   THEN consult with appropriate SMEs, such as the Compliance Champion of the affected LOBs, Corporate Compliance and Ethics, or Company attorneys to coordinate necessary actions with LOBs who share the requirement, in accordance with Utility Standard RISK-4103S, "Identifying New and Changing Requirements Standard."

4. IF the requirement has the potential to impact gas operations,

   THEN go to Section 3 below.

   OTHERWISE, document and log it as not applicable to gas operations and not requiring gas operations review in the gas regulatory notice tracking system.

## 3 Determine Appropriate Responses and Actions

3.1 Within 5 business days, regulatory compliance personnel must assign appropriate gas operations SMEs and stakeholders to review the requirement notice.

1. For each assignment, include an appropriate due date and method of response (e.g., response may be documented on Attachment 1, Form TD-4012P-01-F01, "Governmental Notice and Bulletin Review Form").

2. If necessary, coordinate communication between multiple stakeholders and SMEs through meetings or e-mails.

3.2 The assigned SMEs or stakeholders must review the requirement notice to determine expected impacts to gas operations and the appropriate responses to the requirement notice.

1. Appropriate responses may include interpretation of the requirement, comments to regulatory agencies, and action plans to ensure compliance.

3.3 By the assigned due date, the SMEs or stakeholders must submit proposed responses to regulatory compliance personnel.

3.4 Regulatory compliance personnel must ensure director-level approval of proposed responses.

## 4 Complete Responses and Actions

4.1 Within 5 business days after receiving approved proposed responses, regulatory compliance personnel must assign necessary action items to responsible SMEs and stakeholders, specifying the appropriate due dates for the action items.

4.2 IF the requirement notice requires a response to regulatory agencies,

THEN regulatory compliance personnel will prepare and submit the response to appropriate regulatory agencies.

4.3 IF the requirement notice represents a new, changed, or discontinued requirement,

THEN regulatory compliance personnel will update the regulatory requirements matrix accordingly.

4.4 IF the requirement notice requires changes to gas operations guidance documents,

THEN regulatory compliance personnel will coordinate with standards and procedures personnel to update the regulatory requirements matrix, and to revise and develop the appropriate guidance documents, in accordance with Utility Standard TD-4001S, "Gas Standards Documentation Requirements."

4.5 SMEs and stakeholders must notify regulatory compliance personnel when the action items have been completed.

4.6 Regulatory compliance personnel must log and track the action items, including any agreed upon revisions and additional assignments, to completion using the gas regulatory notice tracking system.

**END of Instructions**

**Definitions**

**Compliance champion:** Representative who is responsible for coordinating and managing compliance activities within his or her LOB. The compliance champion also participates on the compliance champion committee, which meets on a regular basis.

**Regulatory notice tracking system:** A compliance database/software solution that manages compliance tracking within a LOB. For gas operations, the system consists of ECTS or its successor.

**Requirement:** A legal or regulatory requirement with which PG&E must comply by either doing or refraining from doing a certain thing. Failure to comply with the requirement may result in the imposition of fines, penalties, or other legal or regulatory action.

**Stakeholder:** A person or technical team whose work is directly affected by the regulatory requirement notice.

**Implementation Responsibilities**

Gas operations regulatory compliance personnel maintain overall responsibility for implementing this procedure.

Gas engineering and operations managers and directors ensure personnel understand and follow this procedure and take the appropriate actions based on

potential regulatory decisions.

**Governing Document**

Utility Standard TD-4012S, "Gas Legal Requirements, Government Commitments and Planned Activity Reporting"

**Compliance Requirement/ Regulatory Commitment**

Code of Federal Regulations (CFR) Title 49: Transportation, Part 192—Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards, Subpart A—General, Section (§) 192.13, "What general requirements apply to pipelines regulated under this part?"

**Reference Documents**

**Developmental References**:

Utility Standard RISK-4103S, "Identifying New and Changing Requirements Standard"

Utility Standard TD-4001S, "Gas Standards Documentation Requirements"

**Supplemental References**:

NA

**Appendices**

NA

**Attachments**

Attachment 1, Form TD-4012P-01-F01, "Gas Operations Regulatory Notice Review Form"

Attachment 2, "Procedure Flow Diagram"

**Document Recision**

NA

**Approved By**

Frances Yee
Manager

# Identifying New and Changing Gas Operations Requirements

**Document Owner** Brian Leary
Manager

**Document Contact** Charles Chang
Engineer

**Revision Notes**

| Where? | What Changed? |
|---|---|
| Title | Changed from "Regulatory Advisory Bulletin and Proposed Rulemaking Review Process" to "Identifying New and Changing Gas Operations Requirements." |
| Summary | Added two points:<br>• Ensuring that new or changing requirements that may affect other Lines of Business (LOBs) are communicated to affected LOBs and Corporate Compliance & Ethics.<br>• Ensuring gas operations complies with Utility Standard RISK-4103S, "Identifying New and Changing Requirements Standard." |
| Section 2.1 | Removed Figure 1. Sample Tracking Log. |
| Section 2.1 | Added requirement for Regulatory Compliance to keep "Governmental Agencies Monitored by Gas Operations" spreadsheet up-to-date. |
| Appendices | Removed Appendix, "Summary of Procedure Roles, Responsibilities, and Steps." |
| Attachments | Added Attachment 2, "Procedure Flow Diagram." |
| Table 2 | Added US FERC and CARB descriptions. |
| Section 2.2 | Added guidance for Regulatory Compliance to notify other LOBs, Compliance Champions, or Compliance & Ethics, if necessary. |
| Definitions | Removed definitions of Reviewer and WinDOT. Added definitions for Champion, Regulatory Notice Tracking System, and Requirement. Also revised definitions for EPA, PHMSA, and State Fire Marshal. |
| Supplemental References | Removed references to Title 49 of Code of Federal Regulations. |
| Governing Document | Updated governing document from TD-4001S to TD-4012S. |
| Entire Document | Replaced specific regulatory communication type language (e.g., Advisory Bulletin, Notice of Proposed Rulemaking, etc) with more general "regulatory notice of requirement." |

# Identifying New and Changing Gas Operations Requirements

| Where? | What Changed? |
|---|---|
| Entire Document | Reorganized procedure steps by action chronology instead of by action owners. |

Pacific Gas and Electric Company

# Gas Operations Regulatory Notice Review Form

Gas T&D
TD-4012P-01-F01
11/2013
Rev: 1

**Instructions:** Please review the regulatory notice you have been assigned to review, and provide the information requested below, to the best of your knowledge. When completed, please return the form to Regulatory Compliance (e-mail: Gas Ops S&P Regulatory Compliance).

## Notice Information

**Notice #:** **Notice Type:** **Issue Date:** mm/dd/yyyy

**Notice Title:**

**Issuing Agency:**

**Regulations Affected:**

| **Gas Operations Reviewer:** | **Response Deadline:** mm/dd/yyyy |
|---|---|

## 1. Affected Groups/Personnel

Does the notice affect the work of any PG&E Gas Operations groups or personnel? ☐Yes ☐No

If yes, list the groups or personnel and briefly describe how they are affected by the regulatory notice.

## 2. Affected Guidance Documents/Processes

Does the notice affect any PG&E Gas Operations processes or guidance documents (standards, procedures, bulletins, etc.)? ☐Yes ☐No

If yes, list the processes/documents and briefly describe how they are affected by the regulatory notice.

## 3. Comments

If appropriate (e.g., for proposed rulemakings or requests for comments), please provide comments. Comments should explain any impacts to Gas Operations, areas needing clarification, and/or suggestions to improve the proposed requirement. If you have no comments to provide, state “No comments.”

## 4. Recommended Actions

Please describe any actions that should be taken by Gas Operations personnel in response to the notice. Be as specific as possible.