



**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

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Application of Pacific Gas and Electric
Company to Update Pipeline Safety
Enhancement Plan

(U 39 G)

Application No. 13-10-017
(Filed October 29, 2013)

**JOINT MOTION OF SETTLING PARTIES TO PUT DOCUMENTS
RELATED TO SED REPORT IN THE RECORD**

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Dated: September 25, 2014

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I. INTRODUCTION

Pursuant to Rule 11.1 of the Commission's Rules of Practice and Procedure, Pacific Gas and Electric Company ("PG&E"), the Office of Ratepayer Advocates ("ORA"), and The Utility Reform Network ("TURN") (hereinafter collectively referred to as the "Settling Parties") move to include the following three documents into the record for this proceeding: (1) the report of the Commission's Safety and Enforcement Division ("SED") dated April 25, 2014 entitled "Safety Review Report of PG&E's PSEP Update Application" ("SED Report"); (2) PG&E's response to the SED Report, dated May 22, 2014 ("PG&E Response"); and (3) ORA's letter dated June 4, 2014 to Liza Malashenko and served on the service list to this proceeding articulating ORA's concerns regarding certain conclusions in the SED Report ("ORA Response"). The documents are attached as Exhibits 1 through 3, respectively. This motion is made to satisfy Section 4.7(a) of the PSEP Update Settlement Agreement Among PG&E, ORA, and TURN ("Agreement"), which was submitted for Commission approval on July 25, 2014 in the above-captioned proceeding.

II. BACKGROUND

PG&E filed the PSEP Update Application on October 29, 2013, pursuant to Ordering Paragraph 11 of Decision ("D.") 12-12-030. SED conducted an audit of PG&E's MAOP Validation Project and the PSEP Update Application in 2013 and 2014. On March 3, 2014, an

initial Prehearing Conference was held. The Administrative Law Judge (“ALJ”) and the parties agreed that a schedule for hearings and briefs should not be established until SED prepared and circulated its report to the parties in the proceeding. SED served the SED Report on the service list for this proceeding on April 25, 2014. On May 5, 2014, SED held a workshop summarizing the findings in the SED Report, in which PG&E, ORA and TURN actively participated. On May 22, 2014, PG&E served the PG&E Response on the service list. On June 4, 2014, ORA sent the ORA Response to Liza Malashenko of the SED articulating ORA’s concerns regarding certain conclusions in the SED Report.

On May 23, 2014, a second Prehearing Conference was held wherein, among other things, the Settling Parties represented to the presiding ALJ that it was appropriate to explore the possibility of settlement. In response to the Settling Parties’ representations at the May 23, 2014 Prehearing Conference, the ALJ established a schedule for the proceeding which provided time for settlement discussions, with a status report scheduled for July 8, 2014, intervenor testimony due on July 11, 2014, rebuttal testimony due on July 30, 2014, and hearings (if needed) on August 6-8, 2014. The ALJ requested that the parties include in their July 8, 2014 status report an indication of how the SED Report and any response might be incorporated into the record.

The Settling Parties reached an agreement to resolve the PSEP Update Application, and filed a Joint Motion for Approval of PSEP Update Application Settlement Agreement on July 25, 2014.

Section 4.7 of the Agreement provides that: (a) the Settling Parties agree that the SED Report, PG&E Response, and ORA Response should be included in the record of this proceeding and will separately present a joint motion to enter these documents into the record of this proceeding; and (b) PG&E confirms that it is performing the activities identified as “Action Items” in the PG&E Response to the SED Report.

III. REQUEST TO INCLUDE THE SED REPORT, PG&E RESPONSE, AND ORA RESPONSE IN THE RECORD FOR THIS PROCEEDING

The Settling Parties agree that it would be helpful to the Commission’s determination of the reasonableness of the PSEP Update Application Settlement Agreement to include as part of the record the SED Report, the PG&E Response, and the ORA Response. In addition, because PG&E also confirmed as part of the Agreement that it is performing the activities identified as “Action Items” in the PG&E Response to the SED Report, having these documents in the record will provide parties with ready access to the documents that detail those “Action Items.”

IV. CONCLUSION

For the foregoing reasons, the Settling Parties respectfully request that the Commission include the SED Report, PG&E Response, and ORA Response in the record for this proceeding.

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EXHIBIT 1

CALIFORNIA PUBLIC UTILITIES COMMISSION

Safety Review Report of PG&E's PSEP Update Application

A.13-10-017

Safety and Enforcement Division

April 25, 2014

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Appendix B – Safety Review Results: PSEP Update

Safety Review of PG&E's MAOP Validation and PSEP Update

Executive Summary

Pursuant to Decision (D.) 12-12-30, Pacific Gas & Electric (PG&E) filed Application (A.) 13-10-017 on October 29, 2013 (PSEP Update Application), to update the scope of its Pipeline Safety Enhancement Plan (PSEP) based on the results of the Maximum Allowable Operating Pressure (MAOP) Validation Project.

In accordance with its Quality Review Plan for oversight of PG&E's PSEP implementation, the Safety and Enforcement Division (SED) of the California Public Utilities Commission (CPUC) conducted a safety review of PG&E's MAOP Validation project and of the updated scope of the PSEP program to ensure its alignment with regulatory requirements, mandates, and expectations.

Aside from the exceptions detailed in this report, SED learned that PG&E's validation of MAOP was generally consistent with the CPUC's requirements under D.11-06-017, D.12-12-030, and Resolution (R.) L- 410. However, the Pipeline Feature Lists utilized to validate MAOP are not a perfect product. PG&E does not have traceable, verifiable and complete records for every pipeline component in its transmission system nor has every component in its system been pressure tested. The MAOP Validation Project results in a substantial improvement over the previous system of record by providing a level of detail not previously available. Much work still remains to ensure the continued improvement of the data quality gathered through the MAOP Validation project.

In terms of the PSEP Update scope, SED also learned that the workpapers supporting the PSEP Update Application are not error-free and that the scope update is not entirely consistent with SED's expectations. However, no imminent safety concerns arose from SED's review. SED's observations should not delay the continuation of the PSEP program especially considering the that the first Phase of this program is set to conclude at the end of 2014. Attention must be focused on PG&E's 2015 Gas Transmission and Storage Rate Case, currently before the CPUC, to ensure PG&E's continued progress towards complying with the CPUC's and Sate of California order ending historic exemptions from pressure testing for natural gas transmission pipeline.

Part 1: MAOP Validation Project

Background

Following the tragic explosion of PG&E's transmission pipeline in San Bruno, the National Transportation and Safety Board (NTSB) issued a set of recommendations driven, in part, by its discovery that the operator's records of the ruptured pipeline were inaccurate and contained discrepancies. Acting on its concern of widespread record inaccuracies the NTSB issued a set of recommendations later ratified by the CPUC through Res. L-410, including:

(P-10-2) "Aggressively and diligently search for all as-built drawings, alignment sheets, and specifications, and all design, construction, inspection, testing, maintenance, and other related records, including those records in locations controlled by personnel or firms other than Pacific Gas and Electric Company, relating to pipeline system components, such as pipe segments, valves, fittings, and weld seams for Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing. These records should be traceable, verifiable, and complete."

(P-10-3) "Use the traceable, verifiable, and complete records located by implementation of Safety Recommendation P-10-2 (Urgent) to determine the valid maximum allowable operating pressure, based on the weakest section of the pipeline or component to ensure safe operation, of Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing." (P-10-3) (Urgent)

By D. 11-06-017, issued June 9, 2011, the CPUC required PG&E and other operators to file an implementation plan to pressure test or replace all untested transmission pipeline and to establish an MAOP based on pressure testing. This requirement effectively eliminated what is often referred to as the "Grandfathering¹" clause contained in the federal regulations. By the following Ordering Paragraphs (O.P.s) D.11-06-017 further directed PG&E to:

(O.P.1)" complete its Maximum Allowable Operating Pressure determination based on pipeline features and may use engineering-based assumptions for pipeline components where complete records are not available. Such assumptions must be

¹ Title 49 Code of Federal Regulations (CFR) § 192.619(c)

clearly identified, based on sound engineering principles, and, where ambiguities arise, the assumption allowing the greatest safety margin must be adopted. The calculated values must be used for interim pressure reductions and to prioritize segments for subsequent pressure testing.”

(O.P.3) “A pressure test record must include all elements required by the regulations in effect when the test was conducted. For pressure tests conducted prior to the effective date of General Order 112, one hour is the minimum acceptable duration for a pressure test”

Ultimately, by D.12-12-030, the CPUC approved PG&E’s implementation plan, commonly referred to as the PSEP, submitted on August 11, 2011, and requiring PG&E to:

(O.P. 11) “... file an application within 30 days after the completion of its Maximum Allowable Operating Pressure validation and records search to present the results of those efforts and update its Implementation Plan authorized revenue requirements and related budgets, consistent with this decision.”

In response to the mandates described above, PG&E conducted a massive effort to search its records and validate the MAOP of its transmission pipeline. This effort is described under Chapter 1 “MAOP Validation Project” of the testimony filed in support of A. 13-10-017 to update the PSEP program scope (PSEP Update Testimony). The updated scope is based on incorporation of the MAOP Validation Project results as required by O.P.11 of D.12-12-030. SED’s review of the updated scope is discussed later in this report.

PG&E Implementation

PG&E completed MAOP Validation of its transmission pipeline system, comprised of approximately 6,750 miles, on July 1, 2013. As described in Chapter 1 “MAOP Validation Project” of the PSEP Update Testimony, the MAOP Validation project was conducted in three Parts:

- Part 1- Record search.
- Part 2 – MAOP Validation of priority mileage²
- Part 3 –MAOP Validation of remaining transmission pipeline.

² Priority mileage refers to Class 3 and 4 Locations and Class 1 and 2 High Consequence Areas (HCA).

The main components of the process used by PG&E to validate MAOP were comprised of:

1. Record search and retrieval efforts³.
2. Building of Pipeline Feature Lists.
3. MAOP Engineering and Validation.

Pipeline Feature Lists

After conducting the record search and retrieval PG&E built Pipeline Feature Lists (PFLs) of its transmission system. A PFL is a “detailed list of all pipeline components such as pipe and fittings (e.g., elbows, valves and tees) and their associated characteristics such as pressure rating, diameter, wall thickness, grade of steel, and seam weld types”⁴.

PG&E developed two hierarchical document quality criteria that classify the confidence and reliability of its records in support of its characterization of traceable, verifiable, and complete (TVC) records for its transmission pipeline system. These quality criteria assigned supporting records a “quality code”. The two different tiered quality criteria were developed based on the type of data used to calculate MAOP, as follows:

1. Material Specifications of Pipe, Fittings, Welded components: these specifications are used to calculate an MAOP based on design criteria⁵ (MAOP of Design).
 - a. Quality Codes range from Q1-Q7, Q1 being the highest quality.
 - b. Definition of TVC records:
 - i. Single document for Q1-Q3 records.
 - ii. Supporting document necessary for Q4-Q6.
 - iii. Q7 and Q8 are not TVC.
2. Pressure Test specifications: these specifications are used to calculate an MAOP based on pressure testing (MAOP of Test)
 - a. Quality Codes range from Q1-Q13, Q1 being the highest quality.
 - b. Implementation of TVC records:
 - i. Q1-Q7.
 - ii. Q8 through Q13 are not considered TVC records.

To maintain traceability from pipeline specifications in the PFL to the source documents used to support the specifications, an important characteristic of the PFLs, PG&E used

³ PSEP Update Testimony Chapter 1, Section C.1. “Records Retrieval” pg. 1-4 through 1-5.

⁴ PSEP Update Testimony Chapter 1, “MAOP Validation Project”, footnote 2.

⁵ Title 49 CFR § 192.619(a) and 192.105.

markings with feature numbers to identify components in the source documents that were used and attached them to the PFL.

MAOP Engineering and Validation

This component of the MAOP Validation effort applied an engineering-based review to the data extracted from records by the PFL build process, following certain established methods to resolve unknown specification, and calculate and establish MAOP for the component and the PFL, as follows:

- Validated data entered in the PFL build process.
 - Resolved unknowns by:
 - Applying conservative engineering-based assumptions.
 - Using the Procedure for Resolution of Unknown Pipeline Features (PRUPF, TD-4199-P-01).
 - Applying Sound Engineering Judgment.
 - Field verification of unknown specifications critical to calculating MAOP.⁶
 - Finding additional documents not previously retrieved.
- Determine the component MAOP by:
 - Comparing and selecting the lower of the following three MAOP's, referred to as the "limiting" MAOP:
 - MAOP of Design based on Title 49 CFR §§ 192.619(a) and 192.105.
 - MAOP of Test based on valid⁷ pressure test records.
 - MAOP of Record. This is the current MAOP based on Document 086868⁸ or operating diagrams.

An MAOP for the PFL was selected based on the weakest component in the PFL, and pressure reductions were conducted as required.

PG&E's characterizes its implementation of MAOP Validation as follows:

"1 – MAOP establishment by Strength Test

⁶ PG&E explained that this method was primarily used when the MAOP of Design did not support the MAOP of Record and the operator was fairly certain that field verification would result in confirming stronger component specifications. The PRUPF lays out the guidelines employed for field verifications.

⁷ Valid test definition based on PG&E's Draft Utility Procedure TD-4125P-Attachment B "Historical Pressure Test Evaluation" March 10, 2013 and pressure test records with quality codes Q1-Q7, as described in the "instructions" tab of each PFL.

⁸ Document 086868 is PG&E's document of record containing actual MAOPs for its transmission system.

2 - MAOP validation by design calculations as an interim safety measure for all un-tested pipelines and eventually conduct pressure tests for all un-tested pipelines in accordance with the CPUC order, D.11-01-017”

PG&E conducted Quality Assurance and Quality Control (QA/QC) efforts to assure the quality of the data as described in Chapter 3 of the PSEP Update Testimony.

SED Safety Review

Scope

SED reviewed the MAOP Validation project with the intent to gain a thorough understanding of the criteria, implementation, records, and data used by the operator to validate the MAOP of its transmission system and confirm its alignment with regulatory requirements and expectations.

SED scoped its review to ensure that:

- The MAOP for transmission pipeline components was established and supported by complete pressure test records in compliance with historical regulatory requirements and best practices.
- Material specifications critical to calculating MAOP of pipeline components were supported by existing records – referred to in this report as record-based specifications.
- Conservative engineering-based assumptions were used when those critical material specifications were unsupported by records - referred to in this report as “unknowns” or assumption-based specifications.
- MAOP Validation was conducted in accordance with regulatory requirements and mandates:
 - NTSB Recommendations P-10-02, P-10-3.
 - State Mandates and requirements: D.11-06-017; D.12-12-030, General Order 112-E.
 - Federal Regulations: Title 49, CFR §192.105 (calculation of MAOP); Subpart J, and other applicable requirements, as necessary.
- TVC criteria has been implemented for records supporting validated MAOP.

The main components of SED’s review are addressed in Chapter 1 “MAOP Validation Project” of PSEP Update Testimony, under sections:

- C2: PFL Build
- C3: MAOP Engineering and Validation
 - Resolution of Unknown Specifications
 - MAOP Validation

The methods used to perform the review included:

- Review of applicable proceeding testimony.
- Review of procedures, policies, and supporting records.
- Participation in focused presentations/workshops held by PG&E for SED staff (Staff) on the MAOP Validation Project and its corresponding QA/QC efforts.
- Discussions and interviews with PG&E's MAOP Validation project management and engineers.
- On-site inspection and review of PFLs and supporting documents. Review was conducted at PG&E's facilities.
- Data Requests.

The on-site inspection represents a large portion of SEDs review efforts, which was further complemented by the remaining activities mentioned above. It is important to highlight that this review was not intended to provide a statistically significant assessment of data accuracy of the MAOP Validation project as a whole, but was instead purposed at providing SED with valuable insight on implementation of the process PG&E used to validate MAOP, to identify potential safety issues with that process and its results, if any, and to ensure its alignment with safety-related regulatory mandates and expectations. Finally this review provided SED with a solid foundational understanding of the data used to update the PSEP scope.

On-Site Review

The PFLs represent the work product of the MAOP Validation project. These contain the component-level material and pressure testing specifications of PG&E's transmission pipeline system critical to establishing the pipeline's MAOP. SED's onsite inspection focused on reviewing a sample of these PFLs and their supporting documents.

On March 21, 2013, PG&E held an all-day workshop to provide Staff with an overview of the MAOP Validation project and its implementation, which was subsequently followed in November by a focused session on the processes and guidelines PG&E employed to build the PFLs, validate MAOP, and undertake the related QA/QC efforts for the project. Beginning on November 12, 2013, a team of six SED engineers conducted a 2-week

inspection of the PFLs at PG&E's facilities. PG&E personnel involved with creating, maintaining, and managing the PFLs and validating MAOP was available to provide clarification and answer SED Staff questions, as necessary. Throughout the inspection PG&E held focused presentations on different subject areas of interest to Staff.

To perform its inspection, Staff used applicable portions of PG&E's PFL Build Quality Assurance procedure⁹, PG&E's MAOP Validation procedures and guidelines, and the applicable state and federal regulations to inspect and evaluate the PFLs:

Specifically, SED evaluated the PFLs for:

- 1) Accuracy of data critical to calculating MAOP of Design, referred to here as "critical¹⁰ material specifications" and TVC of supporting records for:
 - a) Record-based specifications.
 - i) Verified that pipeline feature's critical material specifications entered into the PFL are accurately captured and supported by and traceable to supporting records.
 - ii) Checked that the quality code¹¹ structure developed by PG&E to represent the level of reliability and TVC of records supporting critical material specifications is accurately captured and implemented in the PFL.
 - b) Assumption-based specifications.
 - i) Verified that critical material specifications which are unknown/do not have supporting records are resolved based on conservative engineering assumptions using one of the three procedures employed by PG&E:
 - (1) Using the Procedure for Resolution of Unknown Pipeline Features (PRUPF, TD-4199-P-01)
 - (2) Using sound engineering judgment.
 - (3) Field verification to ascertain specification properties.
 - ii) Checked that the rationale of these assumptions was traceable and properly documented.
- 2) Accuracy of critical strength testing specifications and validity of supporting test records used to establish MAOP.
 - a) Verified that strength testing data critical¹² to establish MAOP was accurately captured and supported by strength testing records.

⁹ PSEP Update Testimony, Attachment 3B "Quality Assurance Plan for PFL Build" Version 6, dated May 29, 2012.

¹⁰ PSEP Update Testimony, Attachment 3B "Quality Assurance Plan for PFL Build" Version 6, Appendix 1 "Specification Ranking and QA/QC Tolerances" critical material specifications.

¹¹ Data Source Quality Tiers for Pipe, Fittings, Welded Components, PFL "Instructions" Tab.

- b) Checked that the quality code¹³ structure developed by PG&E to represent the level of confidence and TVC of the records it used to support critical strength testing specifications was accurately captured and applied.
- 3) Validation of MAOP consistent with Federal and State regulatory requirements and mandates.
 - a) Verified MAOP calculation for PFL components.
 - i) Checked that the MAOP of Test was calculated based on valid strength test records that met historical pressure test requirements and/or standards in place at the time the test was conducted¹⁴, as applicable, in addition to PG&E's TVC criteria¹⁵.
 - ii) Verified that MAOP based on material specifications was calculated per current federal and state requirements (Title 49 CFR 49 Part 192 Section 105).
 - b) Confirmed that the MAOP of Record established for the PFL component does not exceed the MAOP supported by existing pressure test records (MAOP of Test) or the MAOP based on material specifications (MAOP of Design) for the component.
 - c) Confirmed that the MAOP of the PFL inspected is based on the weakest component.

Staff inspected twenty PFLs during the 2-week period. These were, with some limited exceptions, either randomly selected or targeted for containing segments with cancelled PSEP projects per the PSEP Update Application, but which were not included in PG&E's QA Sample ¹⁶. The exception was a couple of PFLs that were in fact selected for being part of PG&E's QA sample. Considering that many of the PFLs inspected by Staff contained up to several thousand features each, Staff selected several features from large PFLs that represented the weakest and/or more vintage components within the route.

¹² PSEP Update Testimony, Attachment 3B "Quality Assurance Plan for PFL Build" Version 6, Appendix 1 "Specification Ranking and QA/QC Tolerances" critical STPR specifications.

¹³ Data Source Quality Tiers for Strength Test Pressure Reports, PFL "Instructions" Tab.

¹⁴ As documented in PG&E's Draft Utility Procedure TD-4125P-AttachmentB "Historical Pressure Test Evaluation" March 10, 2013.

¹⁵ Per PG&E TVC criteria consists of STPR records corresponding to a quality code value of Q7 or higher.

¹⁶ PG&E's QA consultant tested a sample of 1,474 PFLs using Attachment 3B "Quality Assurance Plan for PFL Build" Version 6, Appendix 1.

Results of On-Site Inspection

Similar to the categorization of defects PG&E developed for its QA process¹⁷, Staff classified the errors found in the PFLs based on their effect on the calculation of MAOP. These were classified from Type 2 -5 errors, with Type 4 and 5 representing errors that have a negative impact on the MAOP, i.e. cause the MAOP to be less conservative which is a value higher than it would be if the correct value had been used. Type 5 errors will not only cause calculation of an MAOP that is less conservative, but affect the limiting MAOP of the component causing a less conservative MAOP to be established for the PFL. Error types and the number of PFLs inspected by Staff with errors are summarized in the table below.

Table 1: PFLs containing Errors.

Error Type	Description	No. of PFLs
Type 2	Does not affect the MAOP calculation for feature or PFL	9
Type 3	The error affects MAOP, but the input value is more conservative than the correct value	0
Type 4	The error affects MAOP, and the input value is less conservative than the correct value.	7
Type 5	Causes an incorrect feature MAOP that is less conservative than the correct feature MAOP, and causes an incorrect MAOP for the entire PFL.	1*

* PFL not part of original MAOP Validation on-site inspection review. Error discovered through the PSEP on-site inspection conducted by SED and included herein due to its relevance to the MAOP Validation Project.

Refer to Appendix A for details on the individual errors found.

Of the 20 PFLs reviewed by SED at the on-site inspection, 11 contained at least one error type. Of those 11 PFLs over half consisted of Type 2 errors which have no impact on the MAOP. After the on-site inspection Staff discovered a Type 5 error in another PFL not originally inspected on-site. This PFL error was discovered in connection with Staff's review of the updated PSEP project workbooks conducted on January, 2014. Although that portion of the review is discussed later in this report, due to the Type 5 error's relevance to the MAOP Validation Project, it is included and discussed here.

Type 4 and 5 errors

As described earlier, these errors have some level of impact on the MAOP and result in calculating an MAOP (of Record, of Test, and/or of Design) that is less conservative.

¹⁷ Updated PSEP Testimony Attachment B "QA Assurance plan for PFL Build" p. 3-12.

Although Type 4 errors have an impact on MAOP, the error does not actually impact the MAOP of the PFL because it does not affect the limiting¹⁸ MAOP. Seven of the PFLs inspected by Staff contained Type 4 errors. These errors varied from entering incorrect values from supporting records (Results No. 1 and 12, Appendix A), misapplication of the Unknown Pipeline Features (PRUPF) (Results No. 2, 10, and 11 Appendix A– see Findings and Recommendations section), selection of a less conservative value from supporting documents containing conflicting information (Results No. 6 and 14 Appendix A), and utilizing low quality (Q8 and Q12) pressure test documents to support an MAOP of Test (Results No. 1 and 20, Appendix A - see Findings and Recommendations section). These errors resulted in a less conservative MAOP based on design or pressure test information, but did not affect the limiting MAOP for the component nor the MAOP for the PFL. See Appendix A for individual error details.

Only Type 5 errors result in an MAOP for the PFL that is less conservative. Through its review of the updated PSEP application project workbooks Staff discovered one PFL containing such an error (Error 19, Appendix A). In this case the MAOP established for part of the PFL and denoted as the MAOP of Record therein was not the actual MAOP of Record as reflected in Document 086868, PG&E’s official record of its Transmission system’s MAOPs and operating pressures. PG&E investigated the error and has lowered the MAOP of the line and corrected the PFL. SED is currently reviewing the corrected PFL and supporting documentation.

Type 2 errors

Based on PG&E’s own guidelines, traceability is a very important characteristic of PFLs, and Staff agrees. The Type 2 errors found were primarily due to issues dealing with the traceability of feature data to source documents within the PFL, and traceability of the rationale behind the resolution of unknown data.

Although these errors do not affect MAOP, the traceability of data both to the source documents or the rationale behind selection of values is a critical characteristic of the PFLs, one that PG&E appears to have placed a significant emphasis on when creating the PFLs.

¹⁸ As described earlier, the limiting MAOP is the lower of the MAOP of Design, of Test, or of Record.

Findings and Recommendations

Below are some of SEDs observations on the process and implementation of the MAOP Validation Project. Refer to Appendix A for individual recommendations on errors found during the on-site inspection.

1. General Observations:

- Based on PG&E's own definition, the operator lacks traceable, verifiable and complete records for all components in its transmission system.
- PG&E's transmission system lacks valid pressure testing records to establish an MAOP based on pressure testing for all of the components in its system.
- PFLs have not yet been built for regulator stations and their MAOP not yet validated. PG&E asserts undertaking this effort at present time.
- PG&E excluded taps from calculating MAOP.

2. Compliance

2.1. Pipeline Segments Operating "One Class out" 49 CFR 192.611 to Validate MAOP

The MAOP of over 8 miles of pipeline corresponding to approximately 150 features contained in eight of the PFLs inspected by SED was validated by operating "one class out" under 49 CFR 192.611. PG&E's method for validating the MAOP systematically relies on using this section of the code to apply a lower factor of safety for those instances where a feature's MAOP of Design does not support the MAOP of Record and the class location, as installed, is unknown.

This section of the federal regulations allows a pipeline segment that has experienced a class location change to operate "one class out" provided that certain strength test and pipe condition criteria have been met. In those circumstances the pipeline segment may be operated using a lower margin of safety as applicable to one class lower. However, application of 49 CFR 192.611 is premised on occurrence of an actual class location change. PG&E applies that section of the code to validate MAOP when its pipeline component specifications do not support the MAOP of Record irrespective of whether a class location change actually occurred. Such practice also contradicts PG&E's own policy that operating one-class out "does not apply if we discover different pipe specifications or miss aligned pipelines that shift data such that the pipeline is operating out of class"¹⁹.

¹⁹ Draft Utility Procedure TD-4125P-Attachment B "Historical Pressure Test Evaluation" March 10, 2013.

Recommendation: PG&E may not validate MAOP based on operating one-class-out absent proof and determination of an actual class location change. Other than as a method of prioritizing work, PG&E must demonstrate that a class location change has occurred in order to validate MAOP based on operating one-class out under 49 CFR 192.611. SED’s efforts to address matters related to PG&E’s pipeline that is operating out-of- class are being orchestrated in coordination with other forums outside of PSEP Update Application proceeding, such as the CPUC’s own Order Instituting Investigation (I).11-11-009 on PG&E’s Class Location issues.

2.2. Post-1970 Pipeline lacking pressure test records

PG&E lacks pressure testing records for some of its pipeline components installed post-1970’s. Example of such an instance, as encountered by SED, include:

PFL	Compliance Finding	Comments
173_MP0.0000-17.5600_02Aug12	Features installed after 1970 with no pressure test data: Feature 153.1 (yr 1986), 318.0 (1974), 322.0 (1974), 324.0 (1974), 326.0 (1974), 355.0 (1974), 357.0 (1974), 359.0 (1974), 361.0 (1974), 1104.0 (1987).	These are not in PSEP. 153.1 - 1 ft of pipe, 318 (3 ft of pipe), 322 (11ft of pipe). 324 (45 ft of pipe),

Recommendation: PG&E must ensure that all transmission pipeline is hydrotested and demonstrate a reasonable plan to achieve doing so.

3. Engineering Assumptions to Resolve Unknowns

3.1. Evolution of the PRUPF

PRUPF guidelines have evolved since the inception of the MAOP validation project and several different iterations of the procedure have been used to resolve unknowns. The PFLs have not all been revised to reflect the updates to the PRUPF procedure and assumptions based on that guideline are not all entirely consistent across PFLs. In certain instances, PFLs reflect a less conservative iteration of the PRUPF, as Staff found with Results No. 2, 10, and 11 under Appendix A.

PG&E has indicated that it plans to build the PRUPF into eGIS in order to conduct a systematic update of assumptions that are based on the PRUPF and ensure they are consistently based on the most recent and future revisions to that procedure.

Recommendation: PG&E must update all component assumptions based on the latest and future iterations of the PRUPF to ensure consistency of these assumptions. Building the PRUPF into eGIS and conducting a systematic update appears to be a reasonable and more efficient means of updating

the component's assumptions. PG&E should provide SED with an estimated timeline and plan for implementation and completion of this effort along with updates of the progress, its completion, and results.

3.2. Assumptions for "Joint Ventures"

The PRUPF lays out a procedure to determine assumptions for unknown specifications based on either 1 -historical practices and standards employed by PG&E for pipeline installed by the operator; or 2- application of "absolute minimums" of commercially available components for pipeline purchased from other companies. The PRUPF applies the absolute minimums to components purchased from other companies due to "lack of evidence to support that other operators adhered to Company standards and practices"²⁰. "Joint ventures" are a special case where joint ownership of a pipeline exists and, because of this joint ownership, design and installation of the pipeline are less certain to have been performed in adherence to PG&E's historical standards and practices. Such joint ventures include Standard Pacific Gas Lines Inc (StanPac), which is a joint ownership pipeline with Chevron Pipe Line Company and comprised of approximately 54.6 miles of pipeline. Although PG&E today controls the majority interest of StanPac (six-sevenths) this was not always the case, and in times past, PG&E did not have control over the design and installation of the pipeline. In these cases PG&E appears to have relied on institutional knowledge of historical ownership to determine which assumption method to apply – whether installed by PG&E or purchased from other company - for resolution of unknown specifications.

Recommendation: PG&E should ensure to document any general institutional knowledge used and guidelines provided to determine ownership of joint ventures that may have been used to determine which method would be applied to resolve unknowns. Any other guidance related to institutional knowledge of these pipelines used to determine feature specification should be documented.

3.3. Unknown Fitting Specifications

The PRUPF specifies that assumptions for unknown fitting specifications should be selected so they "are suitable for the intended pressure at the time of installation"²¹. This approach is premised on the assumption that historical standards and practices for design of components in effect at the time were adhered to and that installation pressures are also known. PG&E conducted a couple of studies to compare field verified feature

²⁰ TD-4199P-01 "PRUPF" Section 2.1 "Pipe in Systems Purchased from Other Operators" p. 8.

²¹ TD-4199P-01 "PRUPF" Section 1.6, 1.7 and 5 "Unknown Weld Fitting Specifications"

specifications against PRUPF assumptions and actual records. The aforementioned studies did not specifically address fittings or the judiciousness of this assumption approach.

Recommendation: PG&E should obtain some indication on the level of confidence that this standard practice was historically adhered to in order to ensure that the application of these assumptions do in fact reflect a conservative approach. Considering PG&E's database of field verified data is continually growing, the operator should engage in a focused effort to validate unknown fitting specification assumptions that will provide a greater insight on the level of confidence of PG&E's historical adherence to its own historical standards practices.

4. Traceable, Verifiable, and Complete

4.1. TVC of material specifications for components lacking pressure tests.

PG&E does not require that pipeline specifications gathered from historical records for calculation of MAOP of Design meet its definition of traceable, verifiable, and complete, unlike its policy for strength test records used to establish an MAOP of Test.

- PG&E's testimony suggest that only documents of "sufficiently high quality" were used to build the PFL²², however, PG&E's policy only suggests *consideration* for not using low quality documents to obtain critical material specifications, but does not advise against nor prohibit their use²³.
- SED learned that highest quality documents *available* were used, meaning that low quality documents were used in support of material specifications if these were the only records available. For example, features 218.3-218.6 in PFL 173_MP0.0000-1717.5600_02Aug12 rely on a Q7 document, the lowest quality of record as these "represent early design intent" without an indication of completeness, i.e. design documents.
- It is important that accurate data based on traceable, verifiable, and complete records or the most conservative assumptions be applied, at a minimum, for features without an MAOP established by valid pressure testing records, as an interim safety measure, while testing of all transmission pipelines is completed. This is also critical to design and conduct a safe pressure test.

Recommendation: PG&E should enforce the use of accurate material specification data based on traceable, verifiable, and complete records or application of conservative assumptions, as an interim

²² Chapter 1 "MAOP Validation Project" (line 17 p. 1-6),

²³ PG&E has responded that these policies reside within tailboard documents conducted with team members of the MAOP Validation Project on a weekly basis.

safety measure, for components that lack a valid pressure testing record. This approach should be adopted instead of the current practice of relying on data gathered from low quality documents to validate the MAOP for pipeline components that lack a valid pressure test record.

4.2. Type of data and document quality codes.

PG&E's hierarchical categorization of document quality is a significant step towards characterizing and understanding the historical traceability, verifiability, and completeness of its records. However, the quality codes are based on the document type and do not consider the type of data that is being taken from the document. Higher quality documents may not be reliable for certain data types.

Recommendation: PG&E should consider capturing the reliability of documents based on the type of data as well as type of document.

4.3. MAOP to be established based on TVC records.

PG&E's policy enforces its definition of traceable, verifiable, and complete records, based on the hierarchical quality code categorization it developed for supporting strength test documents, to establish an MAOP supported by pressure test. This means it will only use pressure test records to validate MAOP if such records have a quality code of Q1-Q7 (highest quality code being Q1). By discovery of Results No. 4 and 20, Appendix A, SED learned that the program tool PG&E used to ensure that PFL's calculate a test supported MAOP based only on Q1-Q7 pressure test records was not implemented from the inception of the program and it is possible that other PFLs are calculating an MAOP of Test based on low quality records, contrary to PG&E's policy. PFLs are not consistently considering the quality code of pressure test document to determine if a valid test exists in order to calculate an MAOP supported by strength test pressure records.

Recommendation: PG&E must ensure to undertake a specific effort to correct this inconsistency and ensure correct application of its criteria across all PFLs.

4.4. Traceability of Rationale

Rationale behind selection of material specifications for each feature is at times untraceable in the PFL for both record-based and assumed specifications. Although PG&E has general

guidelines governing the process, the level of comment detail specific to each feature in the PFL was inconsistently applied and often insufficient to trace the logic behind selection of material specifications.

Recommendation - Considering the high level of engineering judgment that has been applied on a case-by-case basis, and in the absence of “hard and fast” rules, a more robust and consistent documentation of rationale should have been required and enforced in the PFL. If comments are kept outside of the PFL, it is strongly recommended that these be maintained with the PFL.

5. Continued Improvement

5.1. H-Forms

H-forms are generally considered a high quality document; however, PG&E has learned that these forms may be historically unreliable for specification of diameters or seamtype. SED encountered such instance for feature’s 200.09 & 200.94 in Line 147 for which the H-Form referenced in the PFL stated a pipe diameter and seamtype found to be incorrect by more recent field verifications.

Recommendation: PG&E should ensure to review all such specifications gathered from historical H-forms and re-evaluate the accuracy of the data in question.

5.2. MAOP of Record discrepancies

PG&E’s use of different databases, such as Document 086868 for MAOP of Record and PFLs to validate the MAOP can create inconsistencies in data, as was found through the Type 5 error discovered by SED (Result No. 19 Appendix A).

Recommendation: As part of its continued improvement of data quality PG&E must develop a method to systematically query the system/PFLs and identify other potentially similar data discrepancies between MAOP of Record in Document 086868 and the MAOP of Record used in the PFLs.

Recommendation: PG&E should diligently engage in continued efforts to improve the quality of pipeline data gathered through the PFLs by identifying potential types of data discrepancies and performing systematic corrective actions. PG&E indicated that it has commenced such efforts through its “Data Quality Management” program.

Part 2 - Updated PSEP Program Scope

Background

On August 26, 2011, PG&E filed its original PSEP containing its implementation plan to comply with D.11-06-017 requirements that all in-service natural gas transmission pipeline in California be pressure tested in accordance with Title 49 CFR §192.619, excluding subsection c) in Title 49, CFR §192.619.

The implementation plan was comprised of two major programs:

1. Pipeline Records Integration Program. (A subset of this program is the MAOP Validation Project addressed earlier in this report).
2. Pipeline Modernization Program.

Pipeline Modernization Program:

This program was developed by PG&E to comply with the CPUC's requirement that all California natural gas transmission pipeline be pressure tested or replaced. PG&E proposed to carry out the required pressure testing and replacement in two Phases by prioritizing eligible pipeline based on population density, vintage, operating pressures, and construction methods. The prioritization is laid out in the form of a Decision Tree²⁴ which also includes a methodology to identify and determine the recommended actions to address pipeline segments (pressure test or replace, conduct in-line inspections, reduce operating pressures) based on certain threat categories: manufacturing threats, fabrication and construction threats, and corrosion and latent mechanical damage threats. Other activities were proposed under the Pipeline Modernization Program including automation of shut-off valves and retrofitting for in-line inspections.

Phase 1 of the program was estimated to conclude by the end of 2014.

By D.12-12-030, issued on December 20, 2012, the CPUC approved PG&E's PSEP and ordered the operator to:

(O.P.11) " ... file an application within 30 days after the completion of its Maximum Allowable Operating Pressure validation and records search to present the results of those efforts and update its Implementation Plan authorized revenue requirements and related budgets, consistent with this decision."

²⁴ PSEP Update Testimony Attachment 2A "Pipeline Modernization Program Decision Tree"

Following PG&E's request for a time extension and the CPUC's subsequent approval, pursuant to the above order, PG&E filed the PSEP Update Application on October 29, 2013.

PG&E Implementation

PG&E's Data Validation Workbooks (project workbooks), submitted in support of its PSEP Update Application, contain the validated pipeline segment attributes based on the MAOP Validation project results, and the decision-making process utilized to determine the updated scope of projects and the pipeline segments to be addressed as part of the PSEP program. The pipeline segment data was validated based on the MAOP Validation project results. PG&E's approach is detailed under Chapter 2 "Gas Transmission Pipeline Modernization Program Update" of the PSEP Update Testimony.

Unlike the August 2011 PSEP filing, which relied on a database of PG&E's transmission system (original PSEP Database²⁵) to identify untested pipeline segments, the PSEP project workbooks are the primary tool used to update the PSEP scope. The original PSEP Database was only used as a baseline to create the project workbooks. The scope of each project workbook is primarily based on the projects and segments addressed by each project as originally identified in the August 2011 PSEP filing. The segment data within each project workbook was then validated using the applicable PFL route generated from the MAOP Validation Project, and most current Class location and HCA data contained in GIS 2.0²⁶. The validated segment data was re-run through the decision tree to obtain an updated decision tree outcome. PG&E then categorizes the differences between the new decision tree outcome and its proposed action by using a set of 20 different "Deviations"²⁷.

The PSEP Update Application workpapers and project narratives were generated from the validated project workbook information. The step-by-step process PG&E followed to create the workbooks is detailed in Attachment 2B "Updated Filing Workpapers Preparation".

PG&E also performed a QA/QC initiative for the PSEP scope update as detailed in Chapter 3: "Quality Assurance" of its PSEP Update Testimony.

²⁵ Generated from January 2011 snapshot of data taken from the GIS 1.0.

²⁶ GIS 2.0 contains the most recent HCA and Class location data from the Class Location study performed in 2011 and 2012.

²⁷ PSEP Update Testimony Chap. 2 "Deviations Due to Engineering Judgment" p. 2-12 – p.2-18

SED Safety Review

SED reviewed certain safety-related aspects of PG&E's PSEP Update application. These pertain to the incorporation of MAOP Validation Project results, referred to as "PSEP Data Validation" by PG&E, and adequate application of the approved PSEP Decision Tree to the validated data in order to determine the updated scope of the PSEP program. An Overview of this process, as reviewed by SED, is contained in PG&E's PSEP Update Testimony Chapter 2 "Gas Transmission Pipeline Modernization Program Update" under Sections A-D (excluding Change Management Process).

The 4 major components of SED's review were:

1. Integrity of critical pipeline data used to determine PSEP project scope.
2. Pressure testing criteria and its application.
3. Application of PSEP decision tree to determine project actions and PSEP scope.
4. Deviations from Decision Tree Outcome based on Engineering Judgment, as described in Chapter 2, Section D4, of PG&E's testimony.

The methods used to perform the review included:

- Review of applicable proceeding testimony.
- Review of procedures, policies, and records.
- Participation in focused presentations/workshops by PG&E on update PSEP Scoping, Decision Tree Application, and QA/QC.
- Discussions and interviews with PG&E's PSEP management and engineers.
- On-site inspection and review of project "Workbooks"²⁸, and supporting documents. Review was conducted at PG&E's facilities.
- Data Requests.

As with the MAOP Validation Project review, the on-site inspection represents a large portion of SED's efforts for this review, and is complemented by the other activities listed above. Similarly, it is important to highlight that this review was not intended to provide a statistically significant assessment of data accuracy supporting the updated application, but was instead purposed at providing valuable insight on implementation of the processes PG&E used to update the PSEP scope, the potential issues with that process impacting PSEP scope and safety, its alignment with regulatory mandates and expectations, and to

²⁸ Included with Workpapers Supporting PG&E's Testimony Chapter 2, Gas Transmission Pipeline Modernization Program Update.

provide a greater level of context to the data presented in support of the updated PSEP application.

On-Site Review

Beginning January 21, 2014, six SED engineers conducted a two-week on-site inspection of the project Workbooks and their supporting documentation. PG&E personnel responsible for creating and managing the Workbooks were available to provide clarification and answer Staff questions, as necessary. Leading up to and throughout the inspection PG&E held focused presentations on the workbook development and quality assurance processes.

The inspection consisted of 1- performing tests of critical steps in the process used to create the project workbooks; 2-reviewing the rationale behind the “deviations due to engineering judgment”; and 3- Identifying potential issues with the process that may have an adverse impact on the updated scope. In SEDs view adverse impact refers to unreasonable exclusion of high priority segments from the PSEP program.

The critical steps tested by Staff, described in detail by the Quality Assurance process contained in Chapter 3 of the testimony, include:

- Test 1 – Incorporation of Baseline Data from Original PSEP Database (QA-3 in Testimony)
- Test 2 - Segment Splits based on PFL pipeline attributes (QA-4 in Testimony)
- Test 3 – Incorporation of PFL Data (QA-4 in Testimony)
- Test 4 – Application of valid PSEP pressure test criteria (QA-4 in Testimony)
- Test 5 – Application of Decision Tree and Outcomes (QA-5 in Testimony)

While not part of PG&E’s QA plan, for each segment addressed under Test 5 Staff also reviewed the corresponding deviations, if any were applied, to ensure these were consistent with PG&E’s categorization description, were justified and reasonable considering their impact on safety and PG&E’s previous commitment to the PSEP program. This last review required a case-by-case assessment of sound engineering judgment employed by PG&E.

A sample of workbooks with revised scope based on cancelled projects and/or containing deviations that represented mileage reductions was selected as the focus of the review.

Staff spot checked supporting documents, such as hydrotest records, PSRS orders, Document 086868 (PG&E’s MAOP document of record), as-builts, and other documentation, as necessary, to verify data used to ascertain decisions. Staff also spot

checked project workbook summaries and descriptions for consistency with the project workbooks.

Staff performed the review by applying PG&E's own procedures and guidelines which permitted Staff with the opportunity to, not only identify errors in execution of the process, but more importantly to understand the impact that PG&E's approach has on the updated scope outcome and the potential safety related issues related to that approach.

Staff noted all perceived discrepancies and potential process issues and considered their ultimate impact on the PSEP scope.

Test 1(T1) – Confirm that data integrity was preserved when importing the original database segment information into the workbooks. This data served as the basis of the project workbook build.

- Staff verified that pipeline segments and the corresponding specifications from the original PSEP database that affect decision tree outcome were properly imported into the project workbook and consistent with PG&E's process, as outlined in the PSEP Update Testimony Attachment 2B "PSEP Update Filing Workpapers Preparation" process.
 - Staff compared inclusion of route segments and their critical data fields in the workbooks against the original PSEP database.
 - Critical data fields evaluated:
 - ROUTE, SEGMENT_NO, OD, JOB_NO, YR_OF_INSTALL, FOOTAGE, JOINTEFF, GIRTH_WELD, LONG_SEAM, JOINT_TYPE, SMYS, W_THICKNESS, TEST_JOB, TEST_DATE, TEST_PRESSURE, TEST_MEDIUM, TETS_DUR, MAOP, SMYS MOP, CLASSESENT, and HCA.

Test 2(T2) – Confirm that segments were properly split based on the different component specifications imported from PFLs and check that the segment lengths and splits lengths add up to the total length represented in the PFLs.

- Staff checked that the length listed for each segment and split contained in the project workbooks is equal to the sum of the length of the corresponding set of features in the PFL that make up the segment or split.

Test 3 (T3) – Ensure that integrity of pipeline data critical to determine PSEP Decision Tree Outcome imported from the PFLs and Gas Map/Gas View 2.0 was preserved and that the data is accurately represented in the project workbook:

- Staff checked that pipeline specifications in the data validation workbook matched the source:
 - PFLs
 - SEGMENT_NO, OD, JOB_NO, YR_INSTALL, FOOTAGE, JNTEFF, GIRTH_WELD, LONG_SEAM, JOINT_TYPE, SMYS, W_THICK, TEST_JOB, TEST_DATE, TEST_PRESSURE, TEST_MEDIUM, TEST_DUR,
 - GasMap/GasView 2.0
 - HCA and Class Location.
 - 086868 Document
 - MOP
- For Workbooks containing a large number of segments and splits a sample size of these was tested using the sample methodology and calculator described in Section 5.3.3.5 (2) and (3).

Test 4 (T4) – Confirm that the PSEP and historical test code criteria for a valid test have been properly applied.

- Based on the workbook data validation tab, Staff verified that PSEP criteria and historical test criteria, as defined in Section 1.4 of the “Update Filing Workpapers Preparation” process, PSEP Update testimony, Appendix 2B, was correctly applied to the data produced by the process reviewed under Test 3.

Test 5 (T5) – Confirm that the approved Decision Tree has been correctly applied to define the updated outcome.

- Staff verified that the Decision Tree contained in Chapter 2 Appendix A “Pipeline Modernization Program Decision Tree” is correctly applied to validated segment data and splits contained in the project workbooks.

Deviations – If deviations were encountered through performing Test 5 these were reviewed for 1- reasonableness based on sound engineering judgment, considering the decision tree outcome, the safety impact of the deviation, PG&E’s commitment to the PSEP program, and the program’s intent; and 2- accuracy to ensure the deviation was properly categorized as described in PSEP Update Testimony Table 2-1 “Deviations due to Engineering Judgment”.

Results of On-site Inspection

Errors found by SED were categorized based on their effect on Decision Tree Outcome, as follows:

Table 2: Project Workbooks containing Errors.

		<u>Test 2</u>	<u>Test 3</u>	<u>Test 4</u>	<u>Test 5</u>
Type 1	Error utilized a more conservative value. No impact on Decision Tree outcome.	3		2	
Type 2	Error utilized a less conservative value. No impact to Decision Tree outcome.	2	3		
Type 3	Error affects Decision Tree outcome. Error results in a more conservative project outcome.		2	1	
Type 4	Error affects Decision Tree outcome. Error results in a less conservative project outcome for projects requiring Phase 2 action.		1	1	2
Type 5	Error affects Decision Tree outcome. Error results in a less conservative project outcome for projects requiring Phase 1 action.	1*	1		1

* Potential Type 5.

See Appendix B for detailed results. Type 4 and 5 errors have the most significant effect by resulting in a less conservative Decision Tree outcome. As Type 4 errors address errors affecting Phase 2 segments, which are currently not proposed as part of the current updated application, the discussion below is limited to Type 5 errors.

TYPE 5 ERRORS - (affect Decision Tree Outcome, resulting in a less conservative project outcome for Phase 1)

PSEP Workbook - DFM-1816-01 2 TEST 9.17MI MP 8.44-18.25 PH1:

Type 5 Error²⁹ - Segment 234.3-1: The SMYS entered in the PSEP workbook does not match and is less conservative than the SMYS listed in the PFL for this segment. In turn the correct %SMYS = 35 instead of %SMYS =28 as listed in the workbook. Correcting the error results in a segment operating at over 30% SMYS and a PSEP decision tree code = M2 “Reduce Pressure and Strength Test in Phase 1” instead of M2 “Reduce Pressure and Strength Test in Phase 1” as entered in the PSEP workbook. The workbook indicates that this segment is scheduled for testing in 2014.

²⁹ Appendix B: PSEP Safety Review Results, T3 Data Assurance - Error No. 9 (Segment 234.3-1)

Recommendation: The PFL indicates this pipeline segment was purchased from another company and installed in 1946 under Job MIR1122. PG&E should review all pipeline installed under Job MIR1122 and re-asses those segments currently scheduled for testing in 2014 for replacement instead of testing. Per the project workbook this segment is currently scheduled for testing in 2014. Breakdown of mileage installed under MIR1122 is as follows:

	57,664	ft
Total mileage installed under job MIR1122	10.9	miles
Tested in 2012 T-096-12 (PSRS 25890)	14,498	ft
	2.7	miles
To be tested in 2014 (T-95-12 and T-94-12)	44,459.39	ft
	8.4	miles

PSEP WORKBOOK - TAPS-REPL MI PH1: (Route: DREG4872)

Unknown /Potential Type 5 Error³⁰: The validated PSEP workbook footage for route DREG4872 appears to be missing 50ft of pipeline from the footage reflected in the PFL. The project workbook indicates that different segments under this route were either replaced in 2011, downrated to distribution, will be replaced in 2014, or require Phase 2 action.

Recommendation: It is unclear to SED the reason behind this footage discrepancy. Due to the significant difference in validated footage this discrepancy should be addressed and resolved immediately and segments Decision Tree outcomes re-evaluated and addressed accordingly.

PSEP WORKBOOK - L-300A 1 TEST 58.46MI MP 0.29-502.24 PH1:

Type 4/5³¹: The Decision Tree code reflected in the PFL is incorrect. Although these segments are located in a Class 3, the PSEP workbook incorrectly answered “no” to the question 3B of the Decision Tree “HCA or Class 2-4?” resulting in Decision Tree code C1 “Strength Test & CIS or ILI & CIS Phase 2” instead of the correct C2 Decision Tree code “Reduce Pressure and Strength Test in Phase 1. ILI, or Replace Phase 2”. Because the corrected Decision Tree code provides for Phase 1 or 2 action, this error was categorized as Type 4/5.

However, Staff also found an error³² with the pressure test duration entered in the workbook for these segments, which resulted in a more conservative Decision Tree code

³⁰ Appendix B: PSEP Safety Review Results, T2 Segment Split - Error No. 12

³¹ Appendix B: PSEP Safety Review Results, T5 Decision Tree - Error No. 2 (Segments 369.051, 369.052, 369.053)

³² Appendix B: PSEP Safety Review Results, T5 Decision Tree - Error No. 2 (Segments 369.051, 369.052, 369.053)

than the information in the PFL would require. These two errors cancelled each other out resulting in the same Decision Tree code as originally entered.

It is unclear why PG&E designated these segments with a deviation code of “other” commenting that they were “Moved to Ph2 - further engineering assessment necessary”.

Recommendation: PG&E should provide SED with more detail on the additional engineering assessment being performed on these segments.

Other observations:

Unable to determine Decision Tree outcome for segments tested in 2011 and 2012. SED had difficulty reviewing PSEP workbooks for segments that had been hydrotested in 2011 and 2012. In order to determine correct Decision Tree results for those segments, it was necessary to use the pre-2011 pressure test information validated by the MAOP Validation Project. However, in many instances the workbooks reflected post-2011 hydrotest information and used that data to run the segments through the decision tree, resulting in an inaccurate Decision Tree. It is unclear how PG&E intended to reflect pipeline replacement and hydrotest information that occurred in 2011 and after. Although this inconsistency obscures actual Decision Tree outcome, it is not considered an operational safety issue as these segments were tested or replaced.

Adjusted test pressures - The PSEP workbooks often failed to use the adjusted test pressure when such data was available in the PFL. The adjusted test pressures must be used as these have been adjusted to account for elevation differences in the tested pipeline and represent the minimum pressure experienced at any point in the pipeline. Adjusted pressures are fundamentally lower than the unadjusted pressure and affect determination of whether a test is valid as outlined in Attachment 2B Chapter 2, PSEP Update Filing Workpapers Preparation (Section 1.4 – Pressure Test Requirements).³³ In addition to other criteria, a valid test pressure must be sufficiently high to meet requirements based on class location and MAOP of the segment.

The adjusted pressure vs. test pressure differences found by Staff ranged from 3psi to 100psi³⁴, but did not affect the validity of the test. However, these type discrepancies could have an effect on test validity for segments running with test pressures that are very close or equal to the minimum test pressure requirement.

³³ PSEP Update Filing Attachment 2B “Workpapers Preparation” Section 1.4, Chart describes the requirements for valid pressure tests based on class location and pressure test data.

³⁴ Appendix B: PSEP Safety Review Results, T3 Data Assurance - Error No. 4 and Error No. 1 Segment 218.6-1.

Route BD143 and DRIP10897- "Historical Test Met Code Only" Deviation incorrectly applied.

This deviation code was generally used by PG&E to defer certain segments beyond Phase 1 due to the existing pressure test records meeting historical test requirements even though PSEP test requirements were not met³⁵. In PG&E's view, these are lower priority segments.

For the segments and routes listed in the table below, PG&E incorrectly applied the "Historical Test Met Code Only" Deviation based on the premise that the existing pressure test records met historical test code. However, the Updated PSEP database indicates that these segments have no hydrotest records at all. Although the validated phase for these segments indicates C3 Decision Tree code action "Strength Test and CIS or ILI and CIS in Phase 2" the validation comments in the Updated PSEP database indicate that at some point it was decided that these segments would be in Phase 2.

ROUTE	SEGMENT_NO	DV_TESTJOB	T_MET_CODE	DV_PHASE_D
BD143	601-1	NO RECORD	N/A	HISTORICAL TEST MET CODE ONLY
BD143	601-2	NO RECORD	N/A	HISTORICAL TEST MET CODE ONLY
DRIP10987	601	NO RECORD	N/A	HISTORICAL TEST MET CODE ONLY
DRIP10987	602	NO RECORD	N/A	HISTORICAL TEST MET CODE ONLY

Recommendation: PG&E may not defer the segments referenced above based on the deviation category it applied and must demonstrate precisely when and how Phase 2 will address these segments.

Findings and Recommendations:

1. PSEP Scope Update:

- 1.1. PG&E limited the scope of the Updated PSEP Application to only the segments identified in the original filing.

With limited exceptions, the MAOP Validation results were evaluated and incorporated into the PSEP program only for pipeline segments that were part of the original PSEP proposal.

As the MAOP Validation Project has been completed, it is possible that segments exist in PG&E's transmission system which have not been included in the updated application, but that lack valid pressure testing records and potentially met Phase 1 PSEP criteria. PG&E has

³⁵ Chapter 2, Table 2-1 "Deviations Due to Engineering Judgment", item 9, PG&E Updated PSEP Testimony

explained that it considers those segments as outside of PSEP scope and indicated that in its 2015 GTS application PG&E is proposing a new set of decision trees to address the pipeline hydrotesting and replacement priorities based on a more holistic risk assessment approach to prioritizing that will not plan PSEP work separately from Base work³⁶.

At SED’s request PG&E conducted a preliminary query of the MAOP validation results which indicate that the following miles of pipeline potentially do not have valid test records and are not currently in the Updated PSEP Application:

CL 3&4 and HCA CL 1&2	Miles
1. All segments >30pct SMYS	40.9
2. All segments 20>=SMYS>=30pct <1.0JF	2.2
3. All segments >=20pct SMYS	62.1

Non-PSEP potential Phase 1 = M4 Decision Tree Code (Replacement)	Miles
1.a) Pre 1970's Segments >30pct SMYS<1.0JF	11.4

Ideally, as the MAOP Validation Project evolved, PG&E should have been continually updating its PSEP database to incorporate and re-prioritize all priority Phase 1 segments.

For example, instead of replacing certain segments in Phase 1 which did not require Phase 1 action or PSEP action at all, such as the segments listed in the table below for Route 1607-01, for which the updated PSEP database indicate valid pressure records exist and comments indicate that Phase 1 replacement was recommended to increase capacity.

ROUTE	SEGMENT_NO
1607-01	104.2-1
1607-01	104.3
1607-01	104.8-1
1607-01	104.8-2
1607-01	104.8-3
1607-01	104.8-4
1607-01	105.2-2

Recommendation: PG&E should be required to demonstrate how and when it plans to address those potential Phase 1 segments included in the tables above. The scope and prioritization of the new programs proposed in the 2015 GTS rate case must be equivalent or more conservative than the one already authorized through the PSEP Decision Tree.

³⁶ Base work refers to work included and authorized through the Gas Transmission and Storage Rate Cases.

1.2. Phase 2 of PSEP will be incorporated into the 2015 GT&S Rate Case.

Pipeline segments requiring Phase 2 action have been rolled into the 2015 GTS rate case filing. PG&E has indicated that it has developed new prioritization criteria and will not be using the approved PSEP Decision Tree for Phase 2 segments.

Recommendation: As with Phase 1 segments not currently addressed by PSEP, the new prioritization proposed in the 2015 GT&S rate case must be comparable or more conservative than that approved for the PSEP Phase 2 filing.

2. Decision Tree Implementation

2.1. PG&E's application of the Decision Tree, as presented in the workbooks, appears to have eliminated a branch of the tree under the Fabrication and Construction Threats outcome.

Decision Tree point 2B was intended to identify the presence of non-standard fittings³⁷ on pipeline segments, which following an engineering evaluation, could require pipeline replacement in Phase 1 or 2 of PSEP (Decision Tree code F1). PG&E's process for determining PSEP scope assumes that no such pipe fittings exist in its system by systematically answering "no" to point 2F, effectively eliminating the entire branch from PSEP scope.

Recommendation: PG&E should be required to justify this elimination and to demonstrate how it has and how it will continue to address segments that would have fallen under that PSEP outcome. This must be aligned with the approved PSEP Decision Tree.

3. Valid Pressure Test

3.1. The PSEP criteria PG&E developed to validate pressure test records is inconsistent with and in some regards less conservative than that applied for MAOP Validation purposes.

Although PG&E's PSEP criteria³⁸ for a valid pressure test appears to be more stringent than meeting the historical code requirements at the time that the test was conducted, primarily due to requiring a witness for pre-1970's tests, the criteria fails to consider the quality codes assigned to records by the MAOP Validation Project. The quality codes developed and assigned to test records by the MAOP Validation project did not indicate whether test records meet its definition of traceable, verifiable, and complete.

³⁷ "Wrinkle Bends, Miter > 3 degrees, Dresser Couplings, Expansion Joints, Non-Standard Fittings, Excessive Pups" Decision Tree point 2B.

³⁸ Section 1.4 "Pressure Test Requirements", Attachment B, PG&E Updated PSEP Testimony

For example, records with an assigned quality code of Q13 only represent design intent and do not indicate whether a test was actually performed. These documents should not be considered valid pressure tests.

PG&E description of Q13 records:

Q13	Design Packages, Approved for construction	Represents remote or obscure observation
-----	--	--

Example: Workbook WPZ_TAPS-REPL PN PH1 - Route DFDS3638:

- 24.5ft of pipeline installed in 1968, Class 3 location, with Q13 Strength Test Pressure Report indicating that test met historical code.
- Workbook indicates that projects addressing segments 103-1 and 104-1 were cancelled due to these segments meeting historical code under the “HISTORICAL TEST MET CODE ONLY”³⁹ deviation.
- Intent to conduct a pressure test does NOT mean that a test was conducted.

PG&E Updated PSEP database for DFDS3638 Segments 102-1,103-1, & 104-1:

ROUTE	SEGMENT	DV_TEST	TEST_PREMEDIUM_R	TEST_DUF	WITNESS	Q_CODE	T_MET	CODIT	MET_PSEP
DFDS3638	102-1	12/5/1968	1175	WATER	24.3	YES	Q13	YES	NO
DFDS3638	103-1	12/5/1968	1175	WATER	24.3	YES	Q13	YES	NO
DFDS3638	104-1	12/5/1968	1175	WATER	24.3	YES	Q13	YES	NO

Recommendation: PG&E should consider document quality in its criteria for validating pressure tests. Low quality documents that do not represent an actual performed test and should not be used as valid test documents (i.e. documents representing intent - design packages). Tests must at a minimum, meet the traceable, verifiable, and complete criteria adopted for validation of MAOP.

4. Deviations

4.1. SED was unable to confirm proposed PSEP Downrates.

In order to reduce the scope of the updated PSEP application, PG&E selected to downrate approximately 14 miles of PSEP covered segments by reducing their pressure to under 60 psi and reclassifying as distribution pipeline⁴⁰. SED did not have the adequate information available to verify the status of these downrates and confirm that these have been performed.

³⁹ PSEP Update Testimony Chapter 2, Table 2-1 "Deviations Due to Engineering Judgment"

⁴⁰ PSEP Update Testimony, Chapter 2 p.2-18.

Recommendation: PG&E should be required to provide valid documentation verifying the status of all the PSEP transmission pipeline downrates, as indicated in the Updated PSEP database, and to provide a schedule of the downrates it has yet to perform.

Conclusion

SED reviewed the MAOP Validation Project with the intent to gain an intimate understanding of the criteria, process, implementation, records, and data used by the operator to validate the MAOP of its transmission system and confirm its alignment with regulatory requirements and expectations. This review exposed SED to whole new level of understanding of the massive effort behind PG&E's MAOP Validation efforts, and in turn also gained an in depth understanding of the data used to update the PSEP scope.

Aside from the exceptions detailed in this report, SED learned that PG&E's validation of MAOP was generally consistent with the CPUC's requirements under D.11-11-017, D.12-12-030, and Res L- 410. However, SED has also confirmed that:

- the PFLs utilized to validate MAOP are not a perfect product;
- PG&E does not have traceable, verifiable and complete records for every pipeline component in its transmission system; and
- not every component in PG&E's transmission system has been pressure tested or has records of a valid pressure test, including pipeline installed post-1970's.

These findings come are not surprising, as these have been previously acknowledged by the operator, and as expected by the natural gas pipeline industry and experts, "it is not uncommon for operators to have incomplete or inaccurate data about attributes of portions of their pipeline system particularly for systems built prior to 1970⁴¹". However, PG&E's search and review of over 3.5 million records to support the MAOP of its transmission system and account for almost half a million features contained in over 12,000 PFLs is an unprecedented effort resulting in a substantial improvement over the previous system of record. This effort provides a level of detail not previously available and much can be learned from it. The opportunity for deeper understanding of PG&E's transmission system can greatly contribute towards improved decision-making impacting the safety and integrity of the system beyond validation of the MAOP.

⁴¹ "Pressure testing and recordkeeping: reconciling historic pipeline practices with new requirements", by Michael J Rosenfeld, Kiefner & Associates, Worthington, OH, USA, and Rick W Gailing, Sempra Utilities, Los Angeles, CA, USA, February

That said, much work still remains to ensure the continued improvement of the data quality gathered through the PFLs to ensure that it accurately reflects the transmission system in the ground. PG&E should diligently engage in continued efforts to improve the quality of pipeline data gathered through the PFLs and ensure the judiciousness of the conservative assumptions applied as an interim measure. SED intends to maintain its close involvement with the process.

In terms of the Updated PSEP scope, SED also learned that:

- the workpapers supporting the application are not error-free;
- updating of the PSEP scope is not entirely consistent with SED expectations; and
- there is Phase 1 PSEP work that has been deferred beyond 2014 by the operator.

However, no imminent safety concerns arose from SED's review. SED's observations should not delay the continuation of the PSEP program especially considering that the program's first Phase is set to conclude at the end of 2014.

Ultimately, there is still a lot work ahead beyond the first phase of PSEP and PG&E must continue working towards operating a transmission system that has been fully pressure tested as mandated by regulation. Much attention must be paid to PG&E's 2015 Gas Transmission and Storage Rate Case, currently before the CPUC, to ensure PG&E's continued progress towards complying with the CPUC and State of California's order ending historic exemptions from pressure testing for natural gas transmission pipeline is consistent with all applicable regulatory requirements and expectations. SED intends to continue its close oversight of the progress and implementation, and expects that PG&E will continue its full cooperation with Staff to ensure a continued safe and efficient implementation of the mandates.

Appendix A - Revised 4/29/2014
SED Safety Review Results: MAOP Validation Project

Result No.	PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact	Recommendation
1	150_MP4.700-18.09--_16May13	499	Pipe	Test Pressure value was entered incorrectly. STPR documents indicate strength test pressure of 96 psig instead of the 960 psig entered in the PFL. STPR is qualified as Q12 and the PFL considered this record a valid test.	Incorrect Input (test pressure) Incorrect Test Validation	Type 4	PFL must be revised to reflect the corrected test pressure and recalculate the test supported MAOP. STPR was qualified as Q12 which does not meet PG&Es criteria for a valid test and should not be used to validate MAOP, thus error did not affect MAOP. This may raise issues for PSEP.
2	U_DRIP_201202270825_R150_15APR13	15	Pipe	FVE assumed a WT = 0.22" which is less conservative than the assumption of WT = 0.188" that would result from using the PRUPF.	PRUPF Missapplication	Type 4	PG&E asserts that this was based on an old iteration of the PRUPF which suggested a less conservative value. The PRUPF has undergone several iterations and the PFLs have not been updated to reflect changes. PG&E must ensure to update all of the pipeline features in its system based on the latest PRUPF
3	100_MP138.43-150.13_9May13	13863	Field Bend	Source document used to establish seamtype not referenced for this feature. Seamtype was taken from H-form referenced in adjacent feature, which is more conservative.	Untraceable	Type 2	In order to maintain traceability, all documents used to establish feature characteristics must be referenced and included in the PFL.
4		13925	Pipe	Source document used to establish seamtype not referenced for this feature.	Untraceable	Type 2	Seamtype selected is more conservative. In order to maintain traceability, all documents used to establish feature characteristics must be referenced.
5		44	Drip-Ext Tap	FVE incorrectly references certain source documents to establish WT and seam type for feature. WT and seam type are not specified in that document.	Untraceable	Type 2	PG&E has indicated that it did not consider taps as part of MAOP validation.
6	200A-2_MPO.0000-1.0001_15Jun13	49	Pipe	Conflicting documents. A less conservative seam type (seamless) selected although conflicting documents indicated the potential for SSAW. FVE for adjacent feature (No. 47), installed under the same job, identified the document conflict and applied the more conservative seamtype, however, FVE failed to follow the more conservative seamtype selection for this feature.	Conflicting documents - Less conservative value	Type 4	PG&E must ensure to review and select the conservative feature specification, consistent with the remaining features.

Appendix A - Revised 4/29/2014
SED Safety Review Results: MAOP Validation Project

Result No.	PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact	Recommendation	
7	SP3_MP167.28 02- 198.6800_201 2-09-22	2413	Pipe	Installation date is untraceable to supporting documents referenced for these features.	Untraceable	Type 2	Although installation date is not considered a "critical" feature attribute by PG&E, PRUPF assumptions are fundamentally based on these dates and the traceability of the values is equally critical to other data affecting MAOP calculations. PG&E should designate this a "critical" attribute.	
		2414	Mfg Bend					
		2415	Pipe					
8		2416	Pipe	Features contain record-supported WT = 0.26" and OD =26". The minimum recommended wall thickness for 26" pipe suggested by Table 5 of the PRUPF is WT = .281" which is less conservative than the actual WT for these features, indicating that the PRUPF's suggested assumptions for 26" pipe are not sufficiently conservative.	Incomplete PRUPF	Other	PG&E must revise its PRUPF to incorporate consideration of this instance of WT, and thoroughly review its records to ensure all actual minimum values are incorporated into its suggested assumptions.	
		2417	Field Bend					
		2418	Pipe					
		2420	Pipe					
9			2297	Tee	(1) Conflicting, untraceable, and unsupported resolution of unknowns. FVE rationale indicates that WT and SMYS are based on assumptions (designated by a "1" under SMYS and WT rat'nl columns) but FVE later contradicts this rationale by stating that the values are record-supported and not assumption based (indicated by "FSD"/Found Supporting Documents under the FVE "category" column). The records referenced do not support the values established by FVE nor does the PRUPF. (2) Column AW indicates that this component was "purchased from other Company" and installed by Stanpac. The SMYS value of 52,000 psig established for this feature is considerably less conservative than the PRUPF suggested value which, per subsection 2 "pipe in system purchased from others" of the procedure, requires the "absolute minimum value" of 24,000 psi be assumed or that a field assessment be conducted.	Untraceable resolution of unknowns. Less conservative value - resolution of unknowns.	TBD	"FVE must categorize each assumption that is made" (PGE PFL Build QA procedure). SED believes that is an important element to maintain traceability. PG&E must reconcile assumption category and document the rationale used to resolve the unknown specifications of this feature and all other like features in this PFL with untraceable FVE assumptions. PG&E must also ensure that adequate and traceable documentation of the feature-specific rationale is included in the PFLs. PG&E should have required more robust explanation of the feature specific logic behind establishing critical information, for both assumptions and record-based specifications. This is particularly important considering PG&E's "case-by-case" approach to evaluating unknowns that deviate from suggested values contained in the PRUPF, particularly its treatment of pipeline it considers "Joint Ventures" such as Stanpac lines.
10		0618-05_MPO.0000-MP1.4000_RX6926_06JAN12	9	Pipe in Road	FVE assumed a WT = 0.188" which is less conservative than the assumption of WT = 0.156" that would result from using the PRUPF.	PRUPF Missapplication	Type 4	PG&E asserts that this was based on an old iteration of the PRUPF which suggested a less conservative value, explaining that PRUPF has undergone several iterations and the PFLs have not been updated to reflect them. PG&E must ensure to update all of the pipeline features in its system based on the latest PRUPF.
11			11	Pipe in Road				

Appendix A - Revised 4/29/2014
SED Safety Review Results: MAOP Validation Project

Result No.	PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact	Recommendation
12	021F_MP0.000 0- 21.1600_23SE P12	1028.6	Pipe	PFL lists incorrect OD = 12.75". Records support an OD = 16" (41600067s6_DRWG-BOM_30895613_021F.pdf)	Incorrect Input (diameter)	Type 4	PFL must be revised to incorporate the correct OD =16" for this feature and any other feature impacted by that correction. PFL and MAOP per design should be reduced from 1272 psig to 1014 psig. MAOP of R is 500 psig so no impact to validated MAOP is expected.
13		57	Mfg Bend	Feature not called out in supporting STPR documents	Diminished Traceability	Type 2	PG&E should add feature call-out to ensure and maintain traceability of features consistent with its own traceability policy.
14		65	Pipe	Source documents depict conflicting information for SMYS . Less conservative SMYS based on Mtrl Code was selected. Requisition description (1) says 42000 SMYS, design criteria on drawing (2) says 42000, plat map (3) adjoining pipe says 42000 SMYS, but material code spec on the requisition says 52000 SMYS. PFL builder chose 52000, rather than being conservative and using 42000. (1)MAOP03085831.JPG (Q3); (2)386171s4 (Q4) (3)MAOP03085846.JPG (Q3);	Conflicting documents - Less conservative value	Type 4	PG&E should revise PFL to incorporate the more conservative SMYS value of 42,000 psig for this feature and for any other feature where the same less conservative rationale was applied to establish SMYS based on these documents. This is consistent with PG&Es own general policy to select the most conservative value when conflicting documents of same quality exist and guideline 1.9 of AKM-MAOP-415G "Use of Material Historical Material Codes" for conflict between material code and material description in construction drawings. New DP@100% SMYS = 1,647 psi, MAOP-D = 824. No reduction in MAOP necessary as MAOP of R = 500.
		67	Pipe				
		69	Pipe				
	71	Pipe					
73	Pipe						
15	420_MP0.0000 0.0273_27DEC 11	1.0	Pipe	Image B-MAOP00190344, incorporated as part of the STPR package referenced for this feature, corresponds to a different pressure test not applicable to this feature.	Incorrect Source Documents	Type 2	PG&E must ensure to remove the incorrect document and include the correct STPR image for this feature.
16	050A_MP2.55 00- 45.0500_07SE P12	274.4	Type B Sleeve	FVE validated MAOP based on documentation ("Hform MP 6.27") that is not included/referenced for this feature. Approximately 790 features in this PFL validate MAOP based on this missing supporting document.	Untraceable	Type 2	PG&E must ensure that document traceability is maintained throughout the P Affects 791 features.

Appendix A - Revised 4/29/2014
SED Safety Review Results: MAOP Validation Project

Result No.	PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact	Recommendation
17	050A-1_MPO.0000-2.8700_06Feb12	20.5	Pipe	The PFL says 0.322 WT, but the reference document says .250 WT. It appears that the call out box for Feature 20.5 incorrectly points to Item No 1 instead of Item No 2.	Diminished Traceability	Type 2	In order to maintain traceability, all documents used to establish feature characteristics be correctly referenced.
18		87	Pipe	Unable to trace WT denoted as "record-based" to a supporting document. PG&E explained that "in the notes" outside of the PFL the builder assumed that this pipe was a transition to the bends. This rationale is not traceable in the PFL.	Untraceable	Type 2	In order to maintain traceability of specifications critical to establishing MAOP, the rationale and assumptions must be clear in the PFL.
		95	Pipe				
		97	Pipe				
100	Pipe						
19	181B_MPO-10.8492_9May12	65	Pipe	Incorrect MAOP of R and Class location Strength Test Factor. MAOP of R (400 psi) does not match and is less than the actual MAOP of R for this line based on PGE's document of record for MAOP (Document 086868). Class location Strength Test Factor used (1.5) is greater than the code required factor at the time (1.25). Based on correct MAOP of R and strength test factor the MAOP of 500psi cannot be validated and must be reduced to 418 psi.	Incorrect Input (MAOP of R and Class Location Strength test factor)	Type 5	PG&E must reduce the MAOP for this feature and any other feature affected to the limiting MAOP, and revise the PFL in question. PG&E has reduced the MAOP for this portion of Line 181-B, and SED is currently reviewing the pressure reduction, revised PFL, and supporting documentation for the new MAOP. Test Factor also incorrect (more conservative)
20	1013-02_MPO.0000-0.0000_10JUL12	2.0		Q12 STPR was used to establish an STPR supported MAOP of 400 psi (Column EH). Consistent with PG&E policy, these poor quality documents (Q8 and below) are not valid and may not be used to establish MAOP. STPR supported MAOP should be "N/A"	Incorrect Test Validation	Type 4	PFL should be revised to reflect that the STPR is not valid to support MAOP, indicated by should be "N/A" for STPR supported MAOP.
		3.0					
		4.0					

Appendix B

SED Safety Review Results - PSEP Update

Error Summary

Summary of errors T2 - Segment		Summary of errors T3 - Data Assurance		Summary of errors T4 - Pressure Tests		Summary of errors T5 - Decision Tree	
Splits	No.	Assurance	No.		No.		No.
Type 1	3	Type 1	0	Type 1	2	Type 1	0
Type 2	2	Type 2	3	Type 2	0	Type 2	0
Type 3	0	Type 3	2	Type 3	1	Type 3	0
Type 4	0	Type 4	1	Type 4	1	Type 4	2
Type 5 (potential to be confirmed)	1	Type 5	1	Type 5	0	Type 4/5	1
Unknown	2						
Total	8	Total	7	Total	4	Total	3
Type 4 and 5	1	Type 4 and 5	2	Type 4 and 5	1	Type 4 and 5	3

Error No.	PSEP Project	T2 (Segment Split) Error	T3 (Data Assurance) Error	T4 (Hydrotest) Error	T5 (Decision Tree) Error
1	L-300A_2 TEST 21.67MI MP 230.32-490.59 PH1		Did not use Adjusted Test Pressures from PFL (Segs 218.1, 218.6-1, 220.5-1, 250.5-1, 395.31)	Test information (Validated TEST JOB, PRESSURE TEST_DATE, MEDIUM, TEST_DURATION) between the workbook and PFL don't match. (Seg 395.6-1)	
2	L-300A_1 TEST 58.46MI MP 0.29-502.24 PH1		Workbook Hydrotest duration (6.1hrs) does not match PFL (8.1 hrs). (Segs 369.051, 369.052, 369.053)		Incorrect DT Code. Should be C2 instead of C1. C2 may be Phase 1 or 2 action. (Segs 369.051, 369.052, 369.053)
3	L-300B_1 TEST 59.49MI MP 0.00-502.64 PH1	Footage doesn't match with PFL (PSEP DV = 65' rather than PFL (feature # 24207) = 74.3'). As a result total footage doesn't match. Total PSEP = 169' rather than Total PFL = 178.3'. (Segs 258.1-3)			Incorrect DT Code. Should be C4 instead of C7. (Segs 258.6, 258.7, 258.9, 260.12-1, 264.2, 264.4)
4	L-131_1 TEST 4.41MI MP 42.35-57.47 PH1	The footage doesn't match with PFL (PFL = 691.2' rather PSEP DV = 690'), as a result the total footage doesn't match (Total PFL = 760.4' rather than Total PSEP DV = 759.2')	Test Pressure: PFL = 911 psi PSEP = 914. PSEP did not use adjusted test pressures. (Segs 182-2, 182-5, 192.9, 186.3, 187.7, 190.5)		
5	L-118A TEST 1.30MI MP 0.00-58.74 PH1	4 additional splits are necessary due to SMYS and WT differences (Segment 126-2). Unable to determine consequence of error.		Length on PSEP workbook does not match PFL, is 2 feet section untested (Segs 200.4)	Incorrect DT Code. Should be C5 instead of C6. (Segs 101.507, 200.4, 201.2)
6				Marked as validated test in workbook when should not have been. (Segs 200.8, 201.3, 201.6-1, 201.9, 202-1, 202-2).	

Appendix B

SED Safety Review Results - PSEP Update

Error No.	PSEP Project	T2 (Segment Split) Error		T3 (Data Assurance) Error		T4 (Hydrotest) Error		T5 (Decision Tree) Error
7	L-153_1 TEST 17.35MI MP 0.00-22.87PH1	3 additional splits are necessary because of different SMYS (35k & 50k). Unable to determine consequence of error.(Seg 135.6-4).	Unknown	Validated TEST_DUR_R mismatch between workbook and PFL. Segments tested in 2011 hydrotest.(Segs122.6; 123; 123.2; 123.4; 123.6; 124).	Unknown	Workbook shows this test as having a valid witness but PFL indicates no valid witness. (Segs 142.3-1, 142.3-2, 142.6, 142.9)	Type 4	
8				Incorrectly shows test as meeting code and PSEP criteria. (Segs 123.2; 123.4)	Type 4			
9	DFM-1816-01_2 TEST 9.17MI MP 8.44-18.25 PH1			SMYS doesn't match PFL. (% SMYS PFL=35 but %SMYS PSEP=28). PSEP DT should be = M2 instead of M4. (Seg 234.3-1)	Type 5			
10	L-021F REPL 4.24MI MP 0.00-21.16 PH1	Unnecessary split (Segs101.3-1 & 101.3-2; 150.7-3 & 150.7-4)	Type 1					
11	L-191 REPL 1.97MI MP 0.07-6.47 PH1	12 ft is missed in PSEP as a split by itself, rather included with Seg 130.5. Appears to be a cut out from 2011 Hydrotest (new pipeline). Not a safety concern. (Seg. 130.2-1)	Type 1					
12	TAPS-REPL MI PH1	DREG4872: The footage doesn't match with PFL (PFL=99.5' but PSEP DV=49.5'), hence total length in PSEP is off by 50'. (Total PFL=115.4' & Total PSEP DV=64.5'). Unable to determine the consequence of this error.	Unknown/ Potential Type 5					
13	L-109_2 REPL 4.65MI MP 0.49-16.93 PH1	Unnecessary split (Segs133.6-1 and 133.6-2)	Type 1					
14	L-191-1 TEST 10.07MI MP 9.59-35.83 PH1			PFL lists test pressure as 1041 psi. PSEP lists as 1059 psi. PSEP Did not use adjusted test pressure. (Seg.106)	Type 2			

EXHIBIT 2



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May 22, 2014

Ms. Liza Malashenko
Safety and Enforcement Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Re: State of California – Public Utilities Commission
Safety Review Report of PG&E’s PSEP Update Application (A.13-10-017)

Dear Ms. Malashenko:

Pursuant to Decision (D.) 12-12-30, the Safety and Enforcement Division (SED) of the CPUC conducted a safety review of PG&E’s Maximum Allowable Operating Pressure (MAOP) Validation project and PG&E’s Pipeline Safety Enhancement Plan (PSEP), in November 2013 and in January 2014, respectively. On April 25, 2014, the SED submitted their safety report, identifying various findings and recommendations.

PG&E would like to thank the SED for its thorough review and for hosting a workshop to review the report findings on May 5, 2014. Attached is PG&E’s response to the CPUC safety report, containing PG&E’s reply to the findings and proposed actions moving forward. The format of PG&E’s response reflects the structure of SED’s Safety Review Report: the first section details PG&E’s response to the MAOP findings and the second section details PG&E’s response to the PSEP Update findings.

Please contact Larry Deniston at (925) 328-5756 or LCD1@pge.com for any questions you may have regarding this response.

Sincerely,

/S/
Sumeet Singh

cc: Dennis Lee, CPUC
Ken Bruno, CPUC
Carolina Contreras, CPUC
Traci Bone, CPUC
Nathaniel Skinner, CPUC
Pearlie Sabino, CPUC
Tom Roberts, CPUC
Bill Gibson, PG&E
Frances Yee, PG&E
Larry Deniston, PG&E

Attachments

Executive Summary

Pacific Gas and Electric Company's Pipeline Safety Enhancement Plan (PSEP) is an essential part of the company's commitment to rigorous safety standards, improved operations, and better service for its customers and the public. PG&E is working with the CPUC on our plan to meet new, stronger safety standards and welcomes the Commission's feedback on how to improve.

PG&E presents its response to the Safety Enforcement Division's (SED) Safety Review Report evaluating PG&E's Maximum Allowable Operating Pressure (MAOP) validation practices and its Pipeline Safety Enhancement Plan (PSEP) Update Application. Overall, the findings were encouraging but also identified opportunities for continued improvements:

- "The MAOP Validation Project results in a substantial improvement over the previous system of record by providing a level of detail not previously available." (Page 2 executive summary of the report) ... "PG&E should diligently engage in continued efforts to improve the quality of pipeline data gathered through the PFLs..." (Page 33 Conclusion of the report)
- "No imminent safety concerns arose from SED's review." (Page 2 executive summary of the report)
- "SED's recommendations should not delay the continuation of the PSEP program..." (Page 2 executive summary of the report)

Although the report references PG&E's progress associated with the transmission pipeline records as an unprecedented effort, SED also identified areas for improvements. In the response that follows, PG&E largely agrees with the findings in some instances, has provided new or updated information in other instances, and presented a different opinion on certain engineering assumptions made by SED in a limited number of instances. We recognize there is always room for continuous improvement in records validation, and PG&E is diligently working to improve its records every day and will continue to do so on a going forward basis. Last year, PG&E met the National Transportation Safety Board's (NTSB's) recommendation to validate the safe operating pressure for all transmission pipelines in densely populated areas using traceable, verifiable and complete records.

Below are key items identified by SED and PG&E's response:

MAOP:

- Pipeline Segments Operating "One Class out" under 49 CFR 192.611 to Validate MAOP: Since the fall of 2013, PG&E has reviewed all features operating one class out and performed a historical Class Location study to determine if and when the Class Location changed. PG&E presented the results of the Class Location study to the SED in April 2014. PG&E is continuing to provide SED with the updates on progress associated with this issue.
- PG&E excluded taps from calculating MAOP: Taps are single features that connect a mainline to a branching "short." In situations where this feature was a two inch or less service tee, the service tee was reprioritized as part of the initial MAOP Validation process. PG&E is currently performing Maximum Allowable Operating Pressure (MAOP) calculations on these service tees and taking appropriate action if, or when, required.
- Evolution of the Procedure for the Resolution of Unknown Pipeline Features (PRUPF): When operational by the end of Quarter 3, 2014, PG&E's Gas Transmission Geospatial Information System (GT-GIS) will be able to update assumed values using the latest version of PRUPF (TD-4199P-01).

- MAOP to be established based on traceable, verifiable and complete (TVC) records: PG&E will strength test or replace all pipelines that do not have TVC records of a test, regardless of whether or not an MAOP per test exists in the PFL. Tests with non-TVC records may have been used to prioritize work, but not to determine scope. Additionally, in GT-GIS, MAOP per Test will only be calculated for strength tests with TVC records.
- MAOP of Record discrepancies: The MAOP catalog (Document 086868) is the "system of record" for the MAOP of Record. Moving forward, PG&E will keep the MAOP of Record in SAP. GT-GIS will be integrated with SAP such that automated validation of MAOP can be performed within one consolidated system, minimizing the possibility for error in the future.

PSEP:

- 62.11 segment miles identified as untested, class 3/4 or HCA not being addressed as part of PSEP Phase 1: These identified segment miles were outside the scope of Phase 1, but will be prioritized during PG&E's 2015 GT&S Rate Case period.
- Footage discrepancies: Footage discrepancies do not have an impact on the PSEP Decision Tree outcome.
- Not consistently using the adjusted test pressure: As a general practice, PG&E does use adjusted test pressure as a part of its procedure. These instances of not using the adjusted test pressure did not impact the Decision Tree outcome, as the focus of PSEP Phase I was on previously untested pipelines.
- Non-standard fittings: Decision Point 2B (i.e., non-standard fittings) was not eliminated from the Decision Tree, but due to the lack of available features information as part of the 2011 filing PG&E had to assume all outputs from Decision Tree action were "No." However, PG&E now has visibility into the location of known features, as a result of completing the MAOP validation PFLs, as a result of the MAOP Validation work and PG&E will address non-standard features as a part of work conducted during the 2015 GT&S Rate Case period. However, PG&E implemented a new program to remove all known remaining dresser couplings, type of non-standard fitting, as part of PSEP Phase I.
- Criteria differences between MAOP and PSEP: PG&E acknowledges that it did not use the strength test pressure reports (STPR) quality codes in the PFL to validate pressure tests for purposes of prioritizing work done under PSEP. However, for the purposes of prioritizing work under PSEP, pipeline segments without documented strength tests were prioritized before pipeline segments with at least some documentation of a strength test. PG&E will strength test all pipelines without TVC strength test records.

PG&E has made great progress since PSEP began and we will not waiver on our commitment to be the safest, most reliable gas company in the United States. Highlights of our work from the inception of PSEP to March 31, 2014 include:

- Completed the records collection and MAOP validation of PG&E's entire 6,750 mile transmission pipeline system
- Completed 541 miles of strength testing
- Replaced 105 miles of pipeline
- Upgraded 201 miles of pipeline to accept In-Line Inspection (ILI) technology, of which 90 miles have already been in-line inspected
- Automated 141 valves

Our detailed response to the SED Safety Report findings follows. The format of PG&E's response reflects the structure of SED's Safety Review Report: the first section details PG&E's response to the MAOP findings and the second section details PG&E's response to the PSEP Update findings.

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MAOP RESPONSE

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SED’s Findings and Recommendations on the MAOP Validation Project

I. SED’s General Observations

- | |
|--|
| <p>A. Based on PG&E’s own definition, the operator lacks traceable, verifiable and complete records for all components in its transmission system.</p> <p>B. PG&E’s transmission system lacks valid pressure testing records to establish an MAOP based on pressure testing for all of the components in its system.</p> <p>C. PFLs have not yet been built for regulator stations and their MAOP not yet validated. PG&E asserts undertaking this effort at present time.</p> <p>D. PG&E excluded taps from calculating MAOP.</p> |
|--|

1.0 CPUC’s Recommendation

(No recommendation provided)

1.0 PG&E’s Response

<p>In response to points A, B, C above: PG&E agrees with the Safety and Enforcement Division’s (SED) observations. Where traceable, verifiable and complete (TVC) records are not available, conservative engineering assumptions are used in accordance with the approved CPUC decision. These observations are consistent with the Pipeline and Hazardous Materials Safety Administration’s (PHMSA) draft Integrity Verification Process and our communications to the CPUC. Concerning point C, the stations effort was commenced in 2013 and is an on-going project as identified in PG&E’s Gas Transmission and Storage (GT&S) Rate Case.</p>
--

<p>In response to point D above, taps are single features that connect a mainline to a branching “short.” In situations where this feature was a two inch or less service tee, the service tee was reprioritized as part of the initial MAOP Validation process. PG&E is currently performing Maximum Allowable Operating Pressure (MAOP) calculations on these service tees and taking appropriate action if, or when, required.</p>

1.0 Attachment(s)

No attachments accompany the above response.

1.0 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Validate MAOP of service tees.	2014, End of Quarter 2	Data Delivery & Quantitative Analysis (DDQA)

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2. Compliance

2.1 Pipeline Segments Operating “One Class out” 49 CFR 192.611 to Validate MAOP

The MAOP of over 8 miles of pipeline corresponding to approximately 150 features contained in eight of the PFLs inspected by SED was validated by operating “one class out” under 49 CFR 192.611. PG&E’s method for validating the MAOP systematically relies on using this section of the code to apply a lower factor of safety for those instances where a feature’s MAOP of Design does not support the MAOP of Record and the class location, as installed, is unknown.

2.1 CPUC’s Recommendation

PG&E may not validate MAOP based on operating one-class-out absent proof and determination of an actual class location change. Other than as a method of prioritizing work, PG&E must demonstrate that a class location change has occurred in order to validate MAOP based on operating one-class out under 49 CFR 192.611. SED’s efforts to address matters related to PG&E’s pipeline that is operating out-of-class are being orchestrated in coordination with other forums outside of PSEP Update application proceeding, such as the CPUC’s own Order Instituting Investigation (I).11-11-009 on PG&E’s Class Location issues.

2.1 PG&E’s Response

During MAOP Validation, PG&E did not have historical Class Location records. As a result, PG&E assumed that the Class Location had changed in the past if the feature’s hoop stress was non-commensurate with the current Class Location, and all other requirements of 49 CFR 192.611 were met to operate “one class out.”

Since the fall of 2013, PG&E has reviewed all features operating one class out and performed a historical Class Location study to determine if and when the Class Location changed. PG&E presented the results of the Class Location study to the Safety and Enforcement Division (SED) in April 2014. PG&E is continuing to provide SED with the updates on progress associated with this issue.

In the Safety Review Report, SED did not specifically reference features and sections of pipelines that were allegedly operating out of class. PG&E located less than 4.5 miles of pipe in 4 PFLs that were potentially operating out of class in the PFLs reviewed by SED. This mileage was included as part of the historical class location study referenced above and was determined that the pipe is appropriately operating one class out, or in class, in accordance with the regulations as a result of a historical change in class location or validation of pipe specifications using H-forms or TVC documents that replace the conservative assumptions.

2.1 Attachment(s)

No attachments accompany the above response.

2.1 Next Steps

No further action required.

2.2 Post-1970 Pipeline lacking pressure test records

PG&E lacks pressure testing records for some of its pipeline components installed post-1970’s. Example of such an instance, as encountered by SED, include: 173_MP0.0000- 17.5600_02Aug12

2.2 CPUC’s Recommendation

PG&E must ensure that all transmission pipeline is hydrotested and demonstrate a reasonable plan to achieve doing so.

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2.2 PG&E's Response

PG&E recognizes that it lacks pressure test records for some gas transmission pipelines consistent with prior CPUC communications. Therefore, in accordance with Commission Decision 11-06-017, PG&E has committed to strength testing or replacing all transmission pipelines that do not have TVC records of a strength test. (Regarding prioritization, please see PG&E's response to CPUC's finding "4.3 MAOP to be established based on TVC records.")

2.2 Attachment(s)

No attachments accompany the above response.

2.2 Next Steps

No further action required.

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3. Engineering Assumptions to Resolve Unknowns

3.1 Evolution of the PRUPF

The PFLs have not all been revised to reflect the updates to the PRUPF procedure and assumptions based on that guideline are not all entirely consistent across PFLs. In certain instances, PFLs reflect a less conservative iteration of the PRUPF, as Staff found with Results No. 2, 10, and 11 under Appendix A.

3.1 CPUC's Recommendation

PG&E must update all component assumptions based on the latest and future iterations of the PRUPF to ensure consistency of these assumptions. Building the PRUPF into eGIS and conducting a systematic update appears to be a reasonable and more efficient means of updating - 15 - the component's assumptions. PG&E should provide SED with an estimated timeline and plan for implementation and completion of this effort along with updates of the progress, its completion, and results.

3.1 PG&E's Response

PG&E is developing its new Gas Transmission Geospatial Information System (GT-GIS) and expects it to be fully operational by end of Quarter 3, 2014. One of the requirements in GT-GIS is to be able to update assumed values using the latest version of TD-4199P-01, the "Procedure for the Resolution Of Unknown Pipeline Features (PRUPF)." This update will be completed within GT-GIS as it allows the ability to make updates on a system-wide basis in a streamlined manner.

3.1 Attachment(s)

No attachments accompany the above response.

3.1 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update assumptions in GT-GIS based on latest version of TD-4199P-01.	2014, End of Quarter 4	Data Delivery & Quantitative Analysis (DDQA)

3.2 Assumptions for "Joint Ventures"

In these cases [where PG&E did not have control of the design and installation of a pipeline, e.g. Stanpac] PG&E appears to have relied on institutional knowledge of historical ownership to determine which assumption method to apply – whether installed by PG&E or purchased from other company - for resolution of unknown specifications.

3.2 CPUC's Recommendation

PG&E should ensure to document any general institutional knowledge used and guidelines provided to determine ownership of joint ventures that may have been used to determine which method would be applied to resolve unknowns. Any other guidance related to institutional knowledge of these pipelines used to determine feature specification should be documented.

3.2 PG&E's Response

Stanpac pipelines were not purchased from an operator. They were originally built by PG&E in a joint venture with Standard Oil (Chevron). PG&E owns 6/7th of Stanpac and Chevron owns 1/7th. Stanpac is the only joint venture operated by PG&E. PG&E is also responsible for the operations and maintenance of these pipelines. As a result of PG&E's substantial involvement, the "Pipe in Systems Purchased from Other Operators" section of TD-4199P-01 (PRUPF) does not apply to these pipelines. PG&E was involved in all of the design and construction of the Stanpac facilities and has records of these projects.

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The joint venture is exceptional in PG&E's transmission system and as such, the MAOP Engineering work does not follow the process in TD-4199P-01 for purchased pipeline. While the history and the evolution of the Stanpac pipelines are well-documented and understood, it is true that TD-4199P-01 does not explicitly address these pipelines. PG&E intends to revise the procedure to include a section that addresses this matter.

3.2 Attachment(s)

No attachments accompany the above response.

3.2 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Revise TD-4199P-01 to include explicit guidance related to Stanpac pipelines	2014, End of Quarter 2	Data Delivery & Quantitative Analysis (DDQA)

3.3 Unknown Fitting Specifications

PG&E conducted a couple of studies to compare field verified feature specifications against PRUPF assumptions and actual records. The aforementioned studies did not specifically address fittings or the judiciousness of this assumption approach.

3.3 CPUC's Recommendation

PG&E should obtain some indication on the level of confidence that this standard practice was historically adhered to in order to ensure that the application of these assumptions do in fact reflect a conservative approach. Considering PG&E's database of field verified data is continually growing, the operator should engage in a focused effort to validate unknown fitting specification assumptions that will provide a greater insight on the level of confidence of PG&E's historical adherence to its own historical standards practices.

3.3 PG&E's Response

PG&E concurs with the SED's recommendation above. PG&E will develop a plan to validate fitting assumptions, and will also update the existing studies mentioned above.

3.3 Attachment(s)

No attachments accompany the above response.

3.3 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Develop a plan to validate fitting assumptions	2014, End of Quarter 4	Data Delivery & Quantitative Analysis (DDQA)
Develop a plan to update existing studies to validate PRUPF assumptions and records	2014, End of Quarter 4	Data Delivery & Quantitative Analysis (DDQA)

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4. Traceable, Verifiable, and Complete

4.1 TVC of material specifications for components lacking pressure tests.

PG&E does not require that pipeline specifications gathered from historical records for calculation of MAOP of Design meet its definition of traceable, verifiable, and complete, unlike its policy for strength test records used to establish an MAOP of Test.

4.1 CPUC's Recommendation

PG&E should enforce the use of accurate material specification data based on traceable, verifiable, and complete records or application of conservative assumptions, as an interim safety measure, for components that lack a valid pressure testing record. This approach should be adopted instead of the current practice of relying on data gathered from low quality documents to validate the MAOP for pipeline components that lack a valid pressure test record.

4.1 PG&E's Response

PG&E used the best available information when validating the MAOP of the respective pipeline components. The objective of MAOP validation is an interim safety measure until all untested pipelines can be strength tested or replaced. Testing is the ultimate safety measure. TVC records are not always available for pipeline specifications. Lower quality documents are generally used in context with other information and engineering judgment. PG&E will compare specifications from lower quality records to conservative engineering assumptions and use these assumptions, where appropriate.

4.1 Attachment(s)

No attachments accompany the above response.

4.1 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Compare specifications from lower quality records to conservative engineering assumptions and take the appropriate action, where required.	2014, End of Quarter 3	Data Delivery & Quantitative Analysis (DDQA)

4.2 Type of data and document quality codes.

The quality codes are based on the document type and do not consider the type of data that is being taken from the document. Higher quality documents may not be reliable for certain data types.

4.2 CPUC's Recommendation

PG&E should consider capturing the reliability of documents based on the type of data as well as type of document.

4.2 PG&E's Response

Early on, during the MAOP Validation effort, PG&E considered capturing the reliability of documents based on the type of data (i.e., specifications) as well as type of document. This method turned out to be too complicated and did not provide additional value, in part because the quality code was too subjective.

As a result, as part of the MAOP Validation project, documents are assigned quality codes to reflect the level of confidence in the document. The quality codes for documents are good indicators of the quality of the data that is extracted from it. Therefore, PG&E decided to rely on the quality of the document.

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4.2 Attachment(s)

No attachments accompany the above response.

4.2 Next Steps

No further action required.

4.3 MAOP to be established based on TVC records.

By discovery of Results No. 4 and 20, Appendix A, SED learned that the program tool PG&E used to ensure that PFL's calculate a test supported MAOP based only on Q1-Q7 pressure test records was not implemented from the inception of the program and it is possible that other PFLs are calculating an MAOP of Test based on low quality records, contrary to PG&E's policy. PFLs are not consistently considering the quality code of pressure test document to determine if a valid test exists in order to calculate an MAOP supported by strength test pressure records.

4.3 CPUC's Recommendation

PG&E must ensure to undertake a specific effort to correct this inconsistency and ensure correct application of its criteria across all PFLs.

4.3 PG&E's Response

PG&E will strength test or replace all pipelines that do not have TVC records of a test, regardless of whether or not an MAOP per test exists in the PFL. PG&E does not rely on the MAOP per Test to determine if pipelines requires a test in accordance with D.11-06-017. If there are no TVC records of a valid strength test, the pipeline will require a test. Tests with non-TVC records may have been used to prioritize work, but not to determine scope. Additionally, in Gas Transmission Geospatial Information System (GT-GIS), MAOP per Test will only be calculated for strength tests with TVC records.

4.3 Attachment(s)

No attachments accompany the above response.

4.3 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Reconfirm the entire system within the new GT-GIS with the proper logic based on strength test quality code when calculating MAOP per test.	2014, End of Quarter 4	Data Delivery & Quantitative Analysis (DDQA)/ Foundational Asset Knowledge (FAK)

4.4 Traceability of Rationale

The level of comment detail specific to each feature in the PFL was inconsistently applied and often insufficient to trace the logic behind selection of material specifications.

4.4 CPUC's Recommendation

Considering the high level of engineering judgment that has been applied on a case-by-case basis, and in the absence of "hard and fast" rules, a more robust and consistent documentation of rationale should have been required and enforced in the PFL. If comments are kept outside of the PFL, it is strongly recommended that these be maintained with the PFL.

4.4 PG&E's Response

PG&E concurs that the consistency in documenting engineering decisions made in PFLs can be more

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robust. PG&E considers this an opportunity for improvement. PG&E will develop a continuous improvement plan to address this issue moving forward.

4.4 Attachment(s)

No attachments accompany the above response.

4.4 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Develop and implement a continuous improvement plan to address consistency of documentation associated with decisions.	2014, End of Quarter 3	Production Mapping

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5. Continued Improvement

5.1 H-forms

H-forms are generally considered a high quality document; however, PG&E has learned that these forms may be historically unreliable for specification of diameters or seamtype. SED encountered such instance for feature's 200.09 & 200.94 in Line 147 for which the H-Form referenced in the PFL stated a pipe diameter and seamtype found to be incorrect by more recent field verifications.

5.1 CPUC's Recommendation

PG&E should ensure to review all such specifications gathered from historical H-forms and re-evaluate the accuracy of the data in question.

5.1 PG&E's Response

H-Form data as used in the PFLs required a qualified engineer to interpret the data and compare and place the data in context with other available records.

PG&E is currently modernizing the H-Inspection/H-Form process and including data validation, quality control and quality assurance measures to ensure that the collected data is accurate, accessible, and meets the TVC standards.

5.1 Attachment(s)

No attachments accompany the above response.

5.1 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Continue modernization of H-Inspection/H-Form process	2014, End of Quarter 3	Transmission Integrity Management Program (TIMP)

5.2 MAOP of Record discrepancies

PG&E's use of different databases, such as Document 086868 for MAOP of Record and PFLs to validate the MAOP can create inconsistencies in data, as was found through the Type 5 error discovered by SED (Result No. 19 Appendix A).

5.2 CPUC's Recommendation

1. As part of its continued improvement of data quality PG&E must develop a method to systematically query the system/PFLs and identify other potentially similar data discrepancies between MAOP of Record in Document 086868 and the MAOP of Record used in the PFLs.
2. PG&E should diligently engage in continued efforts to improve the quality of pipeline data gathered through the PFLs by identifying potential types of data discrepancies and performing systematic corrective actions. PG&E indicated that it has commenced such efforts through its "Data Quality Management" program.

5.2 PG&E's Response

The MAOP catalog (Document 086868) is the "system of record" for the MAOP of Record. Since validation occurs in the PFL, the MAOP of Record from Document 086868 must be transcribed into the PFL which led to the error in this specific case.

However, moving forward, PG&E will keep the MAOP of Record in SAP (enterprise work management system). The Gas Transmission Geospatial Information System (GT-GIS) will be integrated with SAP such that automated validation of MAOP can be performed within one consolidated system, minimizing

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the possibility for this type of error in the future.

5.2 Attachment(s)

No attachments accompany the above response.

5.2 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Continue with integration of SAP and GT-GIS as well as integration of MAOP catalog in SAP	2014, End of Quarter 3	Data Delivery & Quantitative Analysis (DDQA)/ Foundational Asset Knowledge (FAK)

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Appendix A:

SED Safety Review Results: MAOP Validation Project

Result No. 1

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
150_MP4.700-18.09--_16May13	499	Pipe	Test Pressure value was entered incorrectly. STPR documents indicate strength test pressure of 96 psig instead of the 960 psig entered in the PFL. STPR is qualified as Q12 and the PFL considered this record a valid test.	Incorrect Input (test pressure) Incorrect Test Validation	Type 4

Result No. 1 CPUC's Recommendation

PFL must be revised to reflect the corrected test pressure and recalculate the test supported MAOP. STPR was qualified as Q12 which does not meet PG&Es criteria for a valid test and should not be used to validate MAOP, thus error did not affect MAOP. This may raise issues for PSEP.

Result No. 1 PG&E's Response

The test is not a valid TVC test because the test records have a quality rating of Q12. Therefore, this section of the pipeline is considered not tested, irrespective of the test pressure or the fact that the PFL has an MAOP per test calculation. The calculation is a "working" calculation and is not a driver on deciding whether or not this pipeline requires a test.

The 960 psi test pressure listed in this PFL is an error. The correct pressure, as noted by SED, is 96 psi. The pressure chart (see Attachment 1) shows that the test pressure was 96 psi. This appears to be a leak test. The back of the chart (see Attachment 2) mentions testing the tie-in weld which indicates that the test was probably done with gas after the pipeline was welded. Attachment 2 contains a comment and the date of the test also suggest a leak test.

The PFL has been corrected to reflect the correct test pressure.

Although PSEP engineers did use the PFL value of 960 psi within the project workbook, it did not affect the PSEP decision tree (DT) outcome. The project workbook correctly showed that this test did not meet code requirements at the time of the test. The affected segments have a potential manufacturing threat, operating less than 30% SMYS, is untested and in a non-HCA class I area resulting in a PSEP Decision Tree of M5 (address in Phase 2).

Result No. 1 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it includes employee names.

No.	File Name
1	SED-SRR_Atch01_Result01
2	SED-SRR_Atch02_Result01_CONF

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Result No. 1 Next Steps

No further action required.

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Result No. 2

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
U_DRIP_20120 2270825_R150 _15APR13	15	Pipe	FVE assumed a WT = 0.22" which is less conservative than the assumption of WT =0.188" that would result from using the PRUPF.	PRUPF Missapplication	Type 4

Result No. 2 CPUC's Recommendation

PG&E asserts that this was based on an old iteration of the PRUPF which suggested a less conservative value. The PRUPF has undergone several iterations and the PFLs have not been updated to reflect changes. PG&E must ensure to update all of the pipeline features in its system based on the latest PRUPF

Result No. 2 PG&E's Response

The value of 0.22" WT was the suggested value at the time the PFL was analyzed. The value was suggested by the suggestion macro which is an automation of TD-4199P-01, the "Procedure for the Resolution Of Unknown Pipeline Features (PRUPF.)" Since that time, the PRUPF has been revised and the current suggested assumption for this particular case is 0.188" WT, as SED correctly points out. The PRUPF is continually updated based on data from field excavations and/or records to ensure the most conservative value is always identified in the procedure.

Data from the PFLs was used to update the PRUPF throughout the MAOP Validation project. The revised suggested assumptions have not yet been reapplied to the assumptions made in the PFLs. PG&E is developing Gas Transmission Geospatial Information System (GT-GIS) and expects it to be fully operational by end of Q3 2014. One of the requirements in GT-GIS is to be able to update assumed values using the latest version of TD-4199P-01, the "Procedure for the Resolution Of Unknown Pipeline Features (PRUPF.)" This update needs to be completed within GT-GIS as it allows the ability to make updates on a system-wide basis in a streamlined manner.

Result No. 2 Attachment(s)

No attachments accompany the above response.

Result No. 2 Next Steps

See Next Steps associated with item 3.I Evolution of the PRUPF.

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Result No. 3

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
100_MPI38.43-150.13_9May13	13863	Field Bend	Source document used to establish seamtype not referenced for this feature. Seamtype was taken from H-form referenced in adjacent feature, which is more conservative.	Untraceable	Type 2

Result No. 3 CPUC's Recommendation

In order to maintain traceability, all documents used to establish feature characteristics must be referenced and included in the PFL.

Result No. 3 PG&E's Response

PG&E has records on transmission plat sheets showing the pipe was seamless (see Attachment 3). This same information was used on the H-form. However, PG&E had previously found some unreliable data on H-forms associated with this pipeline.

In 2010, there was an ILI project that pigged the entire line as well as several excavations that confirmed the seam type throughout the entire line. The ILI data was correlated to the physical examination of the pipe and all pipe indicated in the ILI run as SSAW was marked as SSAW on the PFL. The specifications are correct. On Feature 13863, the reference document to the ILI report was not listed on the feature line, but it is included on both features on either side. The PFL has been revised to include the proper reference on Feature 13863. Additionally, a separate document describing the rationale has been created and included in the PFL.

Result No. 3 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it contains employee names.

No.	File Name
3	SED-SRR_Atch03_Result03_CONF.pdf

Result No. 3 Next Steps

No further action required. The PFL has been updated with the proper reference images.

**PSEP Update Application (A.13-10-017)
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Result No. 4

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
100_MPI38.43-150.13_9May13	13925	Pipe	Source document used to establish seamtype not referenced for this feature.	Untraceable	Type 2

Result No. 4 CPUC's Recommendation

Seamtype selected is more conservative. In order to maintain traceability, all documents used to establish feature characteristics must be referenced.

Result No. 4 PG&E's Response

Please see PGE's response to Result No. 3.

Result No. 4 Attachment(s)

No attachments accompany the above response.

Result No. 4 Next Steps

No further action required. The PFL has been updated with the proper reference images.

**PSEP Update Application (A.13-10-017)
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Result No. 5

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
200A-2_MP0.0000-1.0001_15Jun13	44	Drip-Ext Tap	FVE incorrectly references certain source documents to establish WT and seam type for feature. WT and seam type are not specified in that document.	Untraceable	Type 2

Result No. 5 CPUC's Recommendation

PG&E has indicated that it did not consider taps as part of MAOP validation.
--

Result No. 5 PG&E's Response

<p>The MAOP Engineer's comment in the PFL says: "SMYS per PRUPF (2.10.12a) table 3. WT and Seam per 180941.tif (standard dwg)." The section of Drawing 180941 referenced in the PFL (see Attachment 4) lists the "E.H" and Seamless for the 6 inch pipe. The "E.H." stands for Extra Heavy wall thickness and is a standard industry wall thickness. In some cases this may be called "Extra Strong." In the case of 6" pipe, E.H. WT is 0.432," which is the value listed in the PFL.</p> <p>Regarding taps, please refer to PG&E's response to I.0 Part D.</p>
--

Result No. 5 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it contains infrastructure data.

No.	File Name
4	SED-SRR_Atch04_Result05_CONF.pdf

Result No. 5 Next Steps

Refer to PG&E's response to Section I.0 Part D.

**PSEP Update Application (A.13-10-017)
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Result No. 6

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
200A-2_MPO.0000-1.0001_15Jun13	49	Pipe	Conflicting documents. A less conservative seam type (seamless) selected although conflicting documents indicated the potential for SSAW. FVE for adjacent feature (No. 47), installed under the same job, identified the document conflict and applied the more conservative seam-type, however, FVE failed to follow the more conservative seam-type selection for this feature.	Conflicting documents - Less conservative value	Type 4

Result No. 6 CPUC's Recommendation

PG&E must ensure to review and select the conservative feature specification, consistent with the remaining features.

Result No. 6 PG&E's Response

Attachment 5 is a 1942 as-built, depicting a seamless pipe, which is considered a high quality record since it is a first-hand witnessed document.

The field verification engineer saw the detail on the design section of a more recent job in 2006 that was adjacent to the 1942 vintage pipeline and made a decision to use the SSAW seam type to be more conservative (see Attachment 6). The note on the recent job is in the design section of the drawing, which is not considered a first hand witnessed document and a lower quality as compared to an as-built drawing. The PFL has since been revised to reflect seamless pipe on all appropriate features.

Result No. 6 Attachment(s)

Attachments to this response have been marked CONFIDENTIAL and are submitted pursuant to Section 583 of the Public Utilities Code because they include infrastructure data and/or employee names.

No.	File Name
5	SED-SRR_Atch05_Result06_CONF.pdf
6	SED-SRR_Atch06_Result06_CONF.pdf

Result No. 6 Next Steps

No further action required.

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Result No. 7

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
SP3_MPI67.28 02- 198.6800_201 2-09-22	2413	Pipe	Installation date is untraceable to supporting documents referenced for these features.	Untraceable	Type 2
	2414	Mfg Bend			
	2415	Pipe			

Result No. 7 CPUC's Recommendation

Although installation date is not considered a "critical" feature attribute by PG&E, PRUPF assumptions are fundamentally based on these dates and the traceability of the values is equally critical to other data affecting MAOP calculations. PG&E should designate this a "critical" attribute.

Result No. 7 PG&E's Response

These features (see Attachment 7) were installed on a Delivery and Charge job (D&C job) in response to an incident (i.e., an emergency job.) The as-builts include the work on the D&C job and indicates that the pipe (which was replaced) had been damaged by Kewit (a large construction company).

Because this is an emergency job, the crew was pulled from nearby Job 4006417 on the same pipeline, and used the same material on both jobs. This is detailed on the referenced Incident Report (see Attachment 8) All of these documents are related by the job numbers and the file folders that they came from.

The PFL has been revised to include records from Job 4006417 that show the date the pipeline was made operational. Notes within the PFL have also been included to explain these references.

Result No. 7 Attachment(s)

Attachments to this response have been marked CONFIDENTIAL and are submitted pursuant to Section 583 of the Public Utilities Code because they include infrastructure data and/or employee names.

No.	File Name
7	SED-SRR_Atch07_Result07_CONF.pdf
8	SED-SRR_Atch08_Result07_CONF.pdf

Result No. 7 Next Steps

No further action required. The PFL has been revised to include a reference document that indicates the date of job completion.

**PSEP Update Application (A.13-10-017)
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Result No. 8

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
SP3_MPI67.28 02- 198.6800_201 2-09-22	2416	Pipe	Features contain record-supported WT = 0.26" and OD =26". The minimum recommended wall thickness for 26" pipe suggested by Table 5 of the PRUPF is WT = .281" which is less conservative than the actual WT for these features, indicating that the PRUPF's suggested assumptions for 26" pipe are not sufficiently conservative.	Incomplete PRUPF	Other
	2417	Field Bend			
	2418	Pipe			
	2420	Pipe			

Result No. 8 CPUC's Recommendation

PG&E must revise its PRUPF to incorporate consideration of this instance of WT, and thoroughly review its records to ensure all actual minimum values are incorporated into its suggested assumptions.

Result No. 8 PG&E's Response

This is a Stanpac line and material was ordered on a Stanpac job number. Therefore, TD-4199P-01 (the Procedure for the Resolution Of Unknown Pipeline Features (PRUPF)) does not directly apply. The portion of the document (see Attachment 9) shows that this was ordered through Stanpac and the minimum wall thickness does not apply to other PG&E jobs. It is not appropriate to change the PRUPF. Line pipe is often ordered at custom wall thicknesses.

Note that PG&E will revise the PRUPF to include a section that explicitly refers to Stanpac pipelines.

Result No. 8 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it contains employee names.

No.	File Name
9	SED-SRR_Atch09_Result08_CONF.pdf

Result No. 8 Next Steps

No further action required. See response in Section 3.2 Joint Ventures above.

**PSEP Update Application (A.13-10-017)
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Result No. 9

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
SP3_MPI67.28 02- 198.6800_201 2-09-22	2297	tee	(1) Conflicting, untraceable, and unsupported resolution of unknowns. FVE rationale indicates that WT and SMYS are based on assumptions (designated by a "I" under SMYS and WT rat'nl columns) but FVE later contradicts this rationale by stating that the values are record-supported and not assumption based (indicated by "FSD"/Found Supporting Documents under the FVE "category" column) . The records referenced do not support the values established by FVE nor does the PRUPF. (2) Column AW indicates that this component was "purchased from other Company" and installed by Stanpac . The SMYS value of 52,000 psig established for this feature is considerably less conservative than the PRUPF suggested value which, per subsection 2 "pipe in system purchased from others" of the procedure, requires the "absolute minimum value" of 24,000 psi be assumed or that a field assessment be conducted.	Untraceable resolution of unknowns. Less conservative value - resolution of unknowns.	TBD

Result No. 9 CPUC's Recommendation

"FVE must categorize each assumption that is made" (PGE PFL Build QA procedure). SED believes that is an important element to maintain traceability. PG&E must reconcile assumption category and document the rationale used to resolve the unknown specifications of this feature and all other like features in this PFL with untraceable FVE assumptions. PG&E must also ensure that adequate and traceable documentation of the feature-specific rationale is included in the PFLs. PG&E should have required more robust explanation of the feature specific logic behind establishing critical information, for both assumptions and record -based specificatios. This is particularly important considering PG&E's "case-by-case" approach to evaluating unknowns that deviate from suggested values contained in the PRUPF, particularly its treatment of pipeline it considers "Joint Ventures" such as Stanpac lines.

**PSEP Update Application (A.13-10-017)
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Result No. 9 PG&E's Response

The notation in the bill of material is attached (see Attachment 10). Stanpac lines have been maintained for many years by PG&E. PG&E owns 6/7th of Stanpac and Chevron owns 1/7th. Stanpac is the only joint venture operated by PG&E. PG&E is involved in the engineering and construction of many of these jobs even though Stanpac was the actual owner. In this case, the job number is a PG&E job number and Stanpac was engineered and constructed consistent with other PG&E pipelines. A section will be added to TD-41199P-01 to provide explicit guidance to Stanpac pipelines.

In this case, the application of the PRUPF for a PG&E pipeline to Stanpac is appropriate and was appropriately utilized by the MAOP Engineer.

Result No. 9 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it contains employee names.

No.	File Name
10	SED-SRR_Atch10_Result09_CONF.pdf

Result No. 9 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
PG&E will add section to TD-41199P-01 to provide explicit guidance with respect to Stanpac pipelines	2014, End of Quarter 3	Data Delivery & Quantitative Analysis (DDQA)

**PSEP Update Application (A.13-10-017)
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Results No. 10 & 11

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
0618-05_MP0.0000-MPI.4000_RX6926_06JAN12	9	Pipe in Road	FVE assumed a WT = 0.188" which is less conservative than the assumption of WT = 0.156" that would result from using the PRUPF.	PRUPF Missaplication	Type 4
	11	Pipe in Road			

Results No. 10 & 11 CPUC's Recommendation

PG&E asserts that this was based on an old iteration of the PRUPF which suggested a less conservative value, explaining that PRUPF has undergone several iterations and the PFLs have not been updated to reflect them. PG&E must ensure to update all of the pipeline features in its system based on the latest PRUPF.

Results No. 10 & 11 PG&E's Response

The wall thickness of these features is not assumed. The note from the MAOP Engineer states: "SMYS and WT per MAOP16106194." The as-built construction drawing is attached (see Attachment 11) and it displays where the 0.156" wall thickness for the existing pipe was crossed out and the 0.188" wall thickness was written. This indicates that on this job, the existing pipe was inspected and the wall thickness was verified. This is standard process for red line markings on drawings. An item circled in red means it was verified, an item crossed out with a new value indicates the specification was verified and corrected. The MAOP Engineer correctly used the verified wall thickness of 0.188". There is no rationale code for the wall thickness, indicating that the specification was obtained from a record. Finally, the suggested wall thickness from the suggestion macro (automation of the PRUPF) is 0.188". The current version of TD-4199P-01 also suggests a WT of 0.188" for 6" pipe from 1951-1961. Features 9 and 11 are referenced in Section A of Attachment 11.

Results No. 10 & 11 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it contains employee names.

No.	File Name
11	SED-SRR_Atch11_Result10and11_CONF.pdf

Results No. 10 & 11 Next Steps

No further action required.

**PSEP Update Application (A.13-10-017)
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Result No. 12

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
021F_MP0.000 0- 21.1600_23SE P12	1028.6	Pipe	PFL lists incorrect OD = 12.75". Records support an OD = 16" (41600067s6_DRWGBOM_30895613_021F.pdf)	Incorrect Input (diameter)	Type 4

Result No. 12 CPUC's Recommendation

PFL must be revised to incorporate the correct OD = 16" for this feature and any other feature impacted by that correction. PFL and MAOP per design should be reduced from 1272 psig to 1014 psig. MAOP of R is 500 psig so no impact to validated MAOP is expected.

Result No. 12 PG&E's Response

Attachment 12 shows the corrected OD as 16" for this feature. An error was made in the PFL, which has since been corrected in the current version of this PFL. One of the queries that PG&E intends to run on the data after the implementation of the Gas Transmission Geospatial Information System (GT-GIS) will look for features where the outside diameter is different from that of neighboring features (excluding reducers, reducing tees and taps) to identify similar potential issues.

Result No. 12 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it contains employee names.

No.	File Name
12	SED-SRR_Atch12_Result12_CONF.pdf

Result No. 12 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Run query for discontinuous outside diameter and address any variances accordingly.	2014 , End of Quarter 4	Data Delivery & Quantitative Analysis (DDQA)/ Data Quality Management (DQM)

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Result No. 13

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
021F_MP0.000 0- 21.1600_23SE PI2	57	Mfg Bend	Feature not called out in supporting STPR documents	Diminished Traceability	Type 2

Result No. 13 CPUC's Recommendation

PG&E should add feature call-out to ensure and maintain traceability of features consistent with its own traceability policy.

Result No. 13 PG&E's Response

This feature is a manufactured bend installed in 1978. The strength test pressure reports have not traditionally identified all fittings. Historically, such reports have only identified the pipe feature in most cases. For strength test pressure reports in this era, the sketches or the description must be reviewed to determine if the fittings were included in the testing.

The sketch in the attachment clearly indicates that this section was tested as a whole and includes the fittings. The PFL correctly references this document (Attachment 13) as the STPR.

Additionally, the image was marked in green to indicate that this record applies to features 49-51 and 55-57.

Result No. 13 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it contains employee names.

No.	File Name
13	SED-SRR_Atch13_Result13_CONF.pdf

Result No. 13 Next Steps

No further action required.

**PSEP Update Application (A.13-10-017)
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Result No. 14

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
021F_MP0.000 0- 21.1600_23SE PI2	65	Pipe	Source documents depict conflicting information for SMYS . Less conservative SMYS based on Mtrl Code was selected. Requisition description (1) says 42000 SMYS, design criteria on drawing (2) says 42000, plat map (3) adjoining pipe says 42000 SMYS, but material code spec on the requisition says 52000 SMYS. PFL builder chose 52000, rather than being conservative and using 42000. (1)MAOP03085831.JPG (Q3); (2)386171s4 (Q4) (3)MAOP03085846.JPG (Q3);	Conflicting documents - Less conservative value	Type 4
	67	Pipe			
	69	Pipe			
	71	Pipe			
	73	Pipe			

Result No. 14 CPUC's Recommendation

PG&E should revise PFL to incorporate the more conservative SMYS value of 42,000 psig for this feature and for any other feature where the same less conservative rationale was applied to establish SMYS based on these documents. This is consistent with PG&E's own general policy to select the most conservative value when conflicting documents of same quality exist and guideline 1.9 of AKM-MAOP-415G "Use of Material Historical Material Codes" for conflict between material code and material description in construction drawings. New DP@100% SMYS = 1,647 psi, MAOP-D = 824. No reduction in MAOP necessary as MAOP of R = 500.

Result No. 14 PG&E's Response

The attached transmission plat sheet (see Attachment 14) shows a second person witness. It has been translated by other people and is not a first person witness document. Hence, it is considered a lower quality (Q4) than some of the other records.

The material requisition attached (Attachment 15) is signed as received and is considered a higher quality document as a Q3. It is a first person witness. In this case, the material requisition includes a description and a material code. The warehouse is working from the material code – that is how materials are tracked and supplied. Given that the warehouse is working from this material code, PG&E concluded that the specifications associated with this code are the proper specifications to use. It is also consistent with the guidance that was provided to PFL builders.

Result No. 14 Attachment(s)

Attachments to this response have been marked CONFIDENTIAL and are submitted pursuant to Section 583 of the Public Utilities Code because they include infrastructure data and/or employee names.

No.	File Name
14	SED-SRR_Atch14_Result14_CONF.pdf
15	SED-SRR_Atch15_Result14_CONF.pdf

Result No. 14 Next Steps

No further action required.

**PSEP Update Application (A.13-10-017)
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Result No. 15

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
420_MP0.0000-0.0273_27DEC 11	1.0	Pipe	Image B-MAOP00190344, incorporated as part of the STPR package referenced for this feature, corresponds to a different pressure test not applicable to this feature.	Incorrect Source Documents	Type 2

Result No. 15 CPUC's Recommendation

PG&E must ensure to remove the incorrect document and include the correct STPR image for this feature.

Result No. 15 PG&E's Response

The STPR data sheet that was referenced on the PFL is correct, along with the associated data recorded in the PFL, but the referenced chart is incorrect. The date on the chart does not match the STPR Data sheet (see Attachment 16). The center of the pressure chart (see Attachment 17) shows a date of September 21, 2006, and the STPR data sheet as referenced in Attachment 16 has a test date of September 12, 2006. PG&E is striving to minimize the occurrence of such situations by "packaging" all of the STPR related data into a single document. This groups the charts and logs with the correct STPR data sheet making this oversight less likely. The PFL has been revised to show the correct pressure chart.

Result No. 15 Attachment(s)

Attachments to this response have been marked CONFIDENTIAL and are submitted pursuant to Section 583 of the Public Utilities Code because they include infrastructure data and/or employee names.

No.	File Name
16	SED-SRR_Atch16_Result15_CONF.pdf
17	SED-SRR_Atch17_Result15_CONF.pdf

Result No. 15 Next Steps

No further action required. The PFL has been revised to reference the correct document.

**PSEP Update Application (A.13-10-017)
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Result No. 16

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
050A_MP2.55 00- 45.0500_07SE PI2	274.4	Type B Sleeve	FVE validated MAOP based on documentation ("H form MP 6.27") that is not included/referenced for this feature. Approximately 790 features in this PFL validate MAOP based on this missing supporting document.	Untraceable	Type 2

Result No. 16 CPUC's Recommendation

PG&E must ensure that document traceability is maintained throughout the P Affects 791 features.
--

Result No. 16 PG&E's Response

This feature is a sleeve. The PFL indicates 8 inch diameter 10 inch long, but no other information. Looking through the versions, PG&E cannot find a reference to the H-Form for this feature as noted by the SED. The MAOP Engineer's comment (see Attachment 18) is: "Based on Appendix N (no PG&E Guideline prior to 1945)." It is listed as SEJ or Sound Engineering Judgment for the specifications.

The sleeve is listed on the PFL as part of job 33749 installed in 10/23/1928. However, the PFL has the incorrect job number and sleeve installation date. These were installed on a later job, GM 125414 installed in 1955.

Per Attachment 19, there is a 5 foot piece of pipe with two sleeves. One of these sleeves is feature 274.4. The Material list shows a Sleeve 8 inches by 10 inches long. The invoice (see Attachment 20) indicates these sleeves are 5/16 inch wall thickness.

Attachment 20 is the invoice showing the wall thickness. The wall thickness assumed on the PFL is 0.25" wall which is more conservative than this now traceable value of 0.3125" wall thickness. The PFL has been revised with this new information.

Result No. 16 Attachment(s)

Attachments to this response have been marked CONFIDENTIAL and are submitted pursuant to Section 583 of the Public Utilities Code because they include infrastructure data and/or employee names.

No.	File Name
18	SED-SRR_Atch18_Result16_CONF.pdf
19	SED-SRR_Atch19_Result16_CONF.pdf
20	SED-SRR_Atch20_Result16_CONF.pdf

Result No. 16 Next Steps

No further action required. The PFL has been revised appropriately to include the correct specifications, job number, and date.

**PSEP Update Application (A.13-10-017)
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Result No. 17

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
050A- I_MP0.0000- 2.8700_06Feb 12	20.5	Pipe	The PFL says 0.322 WT, but the reference document says .250 WT. It appears that the call out box for Feature 20.5 incorrectly points to Item No 1 instead of Item No 2.	Diminished Traceability	Type 2

Result No. 17 CPUC's Recommendation

In order to maintain traceability, all documents used to establish feature characteristics be correctly referenced.

Result No. 17 PG&E's Response

The PFL shows a 0.322" wall thickness. Attachment 21 shows feature 20.5 pointing at new 8.625 inch 0.322" wall thickness pipe.

Attachment 21 also includes a section of the bubbled material list. This is incorrectly pointing to feature 20.5 with the 0.250" wall pipe. The bubble needs to be pointed to the correct feature specifications. The bubbled document has been revised to indicate the correct feature.

Result No. 17 Attachment(s)

*An attachment to this response has been marked **CONFIDENTIAL** and is submitted pursuant to Section 583 of the Public Utilities Code because it contains employee names.*

No.	File Name
21	SED-SRR_Atch21_Result17_CONF.pdf

Result No. 17 Next Steps

No further action required. The bubble sheet has been revised to indicate the correct feature.

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Result No. 18

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
050A- I_MP0.0000- 2.8700_06Feb 12	87	Pipe	Unable to trace WT denoted as "record-based" to a supporting document. PG&E explained that "in the notes" outside of the PFL the builder assumed that this pipe was a transition to the bends. This rationale is not traceable in the PFL.	Untraceable	Type 2
	95	Pipe			
	97	Pipe			
	100	Pipe			

Result No. 18 CPUC's Recommendation

In order to maintain traceability of specifications critical to establishing MAOP, the rationale and assumptions must be clear in the PFL.

Result No. 18 PG&E's Response

The detailed weld and stationing drawing (see Attachment 22), clearly shows "transition cans" between the thick wall elbows and the thin wall mainline pipe. The transition cans are used to weld adjacent pipe and/or fittings with significantly varying wall thicknesses and grades. The 0.250" wall thickness is shown as a redlined value on the drawings. See Features 87, 89, 91, and 93 in Attachment 22.

The plan and profile drawing (see Attachment 23) has notes about the unequal wall thickness. The bill of material on one of the plan and profile sheets lists the 8 inch, 0.281" wall thickness that is redlined to 0.250" wall thickness. There are design criteria stamps on each sheet that list the 8 inch 0.281" wall thickness.

Plan and profile bill of materials only list the material for each sheet, not the entire job. Due to the limited number of transition cans, it only has a small footage.

This is typical construction practice when installing thin-wall pipe and thicker wall fittings. The 0.250" wall is redlined on the as-built drawings from the original 0.281" wall thickness.

The detail on the transition cans (see Attachment 24) is on sheet 2 of 12. This clearly shows and identifies the need to install an intermediate wall thickness between the 0.188" wall mainline pipe and the 0.322" wall elbows.

The above records are all referenced in the PFL.

Result No. 18 Attachment(s)

Attachments to this response have been marked CONFIDENTIAL and are submitted pursuant to Section 583 of the Public Utilities Code because they include infrastructure data and/or employee names.

No.	File Name
22	SED-SRR_Atch22_Result18_CONF.pdf
23	SED-SRR_Atch23_Result18_CONF.pdf
24	SED-SRR_Atch24_Result18_CONF.pdf

Result No. 18 Next Steps

No further action required.

**PSEP Update Application (A.13-10-017)
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Result No. 19

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
181B_MP0-10.8492_9May12	65	Pipe	Incorrect MAOP of R and Class location Strength Test Factor. MAOP of R (400 psi) does not match and is less than the actual MAOP of R for this line based on PGE's document of record for MAOP (Document 086868). Class location Strength Test Factor used (1.5) is greater than the code required factor at the time (1.25). Based on correct MAOP of R and strength test factor the MAOP of 500psi cannot be validated and must be reduced to 418 psi.	Incorrect Input (MAOP of R and Class Location Strength test factor)	Type 5

Result No. 19 CPUC's Recommendation

PG&E must reduce the MAOP for this feature and any other feature affected to the limiting MAOP, and revise the PFL in question. PG&E has reduced the MAOP for this portion of Line 181-B, and SED is currently reviewing the pressure reduction, revised PFL, and supporting documentation for the new MAOP. Test Factor also incorrect (more conservative)

Result No. 19 PG&E's Response

See attached report (Attachment 25), previously provided to SED.

Result No. 19 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it contains employee names.

No.	File Name
25	SED-SRR_Atch25_Result19_CONF.pdf

Result No. 19 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Continue with integration of SAP and GT-GIS as well as integration of MAOP catalog in SAP	2014. End of Quarter 3	Data Delivery & Quantitative Analysis (DDQA)/ Foundational Asset Knowledge (FAK)

**PSEP Update Application (A.13-10-017)
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Result No. 20

PFL	Feature ID	Feature Type	Error Description/Comment	Category	PFL Impact
1013-02_MPO.0000-0.0000_10JULI 2	2.0		Q12 STPR was used to establish an STPR supported MAOP of 400 psi (Column EH). Consistent with PG&E policy, these poor quality documents (Q8 and below) are not valid and may not be used to establish MAOP. STPR supported MAOP should be "N/A"	Incorrect Test Validation	Type 4
	3.0				
	4.0				

Result No. 20 CPUC's Recommendation

PFL should be revised to reflect that the STPR is not valid to support MAOP, indicated by should be "N/A" for STPR supported MAOP.

Result No. 20 PG&E's Response

The Q12 test was not used on the final MAOP Validation Report. Attachment 26 is the PFL data showing the Q12 quality codes in the far right column.

Attachment 26 also contains the MAOP Engineering section of the PFL, which operates as a "working analysis" section of the pipeline features list. It should not be considered the final result; some of the columns represent intermediate results.

Although the far right column shows 400 as the STPR Supported MAOP, the final MAOP Validation Report correctly shows N/A for the invalid tests. This is the expected way for the data to display. Note that whether or not an MAOP per Test is calculated does not determine if a pipeline is tested.

The logic based on the quality code determines if pipelines have or TVC records of a strength test. Additionally, the Gas Transmission Geospatial Information System (GT-GIS) will have this logic and will not calculate MAOP per Test for non-TVC strength tests.

Result No. 20 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it contains employee names.

No.	File Name
26	SED-SRR_Atch26_Result19_CONF.xlsx

Result No. 20 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Include appropriate logic based on strength test quality code when calculating MAOP per test in GT-GIS	2014, End of Quarter 3	Data Delivery & Quantitative Analysis (DDQA)/ Foundational Asset Knowledge (FAK)

PSEP RESPONSE

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Results of SED's On-site Inspection

Type 5 Errors

PSEP Workbook - DFM-1816-01_2 TEST 9.17MI MP 8.44-18.25 PHI

Type 5 Error - Segment 234.3-1: The SMYS entered in the PSEP workbook does not match and is less conservative than the SMYS listed in the PFL for this segment. In turn the correct %SMYS = 35 instead of %SMYS = 28 as listed in the workbook. Correcting the error results in a segment operating at over 30% SMYS and a PSEP decision tree code = M2 "Reduce Pressure and Strength Test in Phase 1" instead of M2 "Reduce Pressure and Strength Test in Phase 1" as entered in the PSEP workbook. The workbook indicates that this segment is scheduled for testing in 2014.

CPUC's Recommendation

The PFL indicates this pipeline segment was purchased from another company and installed in 1946 under Job MIRI 122. PG&E should review all pipeline installed under Job MIRI 122 and re-assess those segments currently scheduled for testing in 2014 for replacement instead of testing. Per the project workbook this segment is currently scheduled for testing in 2014.

PG&E's Response

The August 2011 PSEP filing called for DFM 1816-01 (MP 8.44-18.25) to be strength tested based on PG&E's January 2011 GIS data (GIS 1.0). This data had made assumptions for the pipe installed in 1946 under job MIRI 122. For some segments, the assumption was that the pipe is Grade B (35,000 psi) ERW or SMLS with a wall thickness of 0.250 inch. These segments operate below 20% of SMYS and were assigned a decision code of C3 (strength test in Phase 2). For other segments installed in 1946, GIS assumed the pipe is 30,000 psi yield strength with a wall thickness of 0.188 inch. With this assumption, the pipe is operating at 28.6% of SMYS, assigned a decision code of M4 (strength test in Phase 1), and planned for testing in 2013. PG&E divided the strength testing of DFM 1816-01 into three tests: T-94 (MP 8.44-12.78), T-95 (MP 12.78-16.31) and T-96 (MP 16.31-18.25). Prior to the PFLs being completed for this line in 2013, PG&E tested T-96 in 2012. When the PFL was completed (July 1, 2013) for DFM 1816-01, the PFL team used a more conservative assumption than GIS for the unknown features for the 1946 installed pipe. The PFL version as of July 1, 2013, which was used in data validation and reviewed by the SED during the Safety Review, assumed a seam type of "Lap Weld," a Joint Efficiency Factor of 0.8 and yield strength of 28,000 psi. Based on these conservative assumptions, the PSEP Decision Tree code would change from M4 (Phase 1 test) to M2 (Phase 1 replace) because the % SMYS changes from 28.2% to 44.1%.

However, since July 1, 2013, the PFL for 1816-01 has been updated with the as-builts from the 2012 test of DFM 1816-01 (T-96) and an ECDA inspection conducted in October of 2013. This test inspected multiple sections of the 1946 pipe. The H-forms and pipe cut outs show this pipe to be Grade B (35,000 psi), seamless pipe with a 0.281 inch wall thickness (17% of SMYS). Based on this new information, the Decision Tree code becomes C3 (test in Phase 2) for the 1946 seamless pipe and the 4000 feet of 1963 ERW pipe would result in a decision tree code of M4 (test in Phase 1).

In this instance, the Safety Review Report correctly identified that PG&E's PFL, as of July 1, 2013, identified assumptions that require this pipeline to be replaced. PG&E's engineering team, being aware of the successful Strength Test T-96, continued to show the remaining mileage of DFM 1816-01 (T-94 and T-95) as a strength test—which was presented in PG&E's October 2013 PSEP Update Application. If the in-field finding of the pipeline's specifications had shown that the assumptions made in the July 1, 2013 version of the PFL were correct, then replacing the pipe would have been the correct result. But this was not the case. The current plan is to test 6,000 feet of T-94 (where the pipe is parallel with DFM 1817-01) and to defer the remaining pipe to be tested during the 2015-2017 rate case period, in

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accordance with the updated pipeline specifications.

Attachment(s)

Attachments to this response have been marked CONFIDENTIAL and are submitted pursuant to Section 583 of the Public Utilities Code because they include employee names.

No.	File Name
27	SED-SRR_Atch27_T5Error_1816-01_CONF.pdf
28	SED-SRR_Atch28_T5Error_1816-01_CONF.pdf

Next Steps

No further action required.

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PSEP Workbook - TAPS-REPL MI PHI: (Route: DREG4872)

Unknown/Potential Type 5 Error: The validated PSEP workbook footage for route DREG4872 appears to be missing 50ft of pipeline from the footage reflected in the PFL. The project workbook indicates that different segments under this route were either replaced in 2011, downrated to distribution, will be replaced in 2014, or require Phase 2 action.

CPUC's Recommendation

It is unclear to SED the reason behind this footage discrepancy. Due to the significant difference in validated footage this discrepancy should be addressed and resolved immediately and segments Decision Tree outcomes re-evaluated and addressed accordingly.

PG&E's Response

The SED Safety Review Report findings are correct; the footage in the project workbook for Route DREG4872 does not match the PFL. However, the PFL is correct. The data validation incorrectly excluded 50 feet of pipe (feature 10.0 in the PFL) from Segment 204-2. This excluded footage has since been included in the PSEP Workbook and now shows the total footage for Segment 204-2 is 99.5 feet (see Attachment 29). Since the segment length does not have an impact on the PSEP Decision Tree action, PG&E does not believe this is a potential Type 5 error.

Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it includes employee names.

No.	File Name
29	SED-SRR_Atch29_T5ErrorTAPS-REPL_CONF.xlsx

Next Steps

No further action required. PG&E replaced the entire 99.5 foot section of pipeline Segment 204-2 under Order 31031728. Construction was completed in April 2014, and the as-built package has been received within the Mapping department.

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PSEP Workbook - L-300A_I TEST 58.46MI MP 0.29-502.24 PHI

Type 4/5: The Decision Tree code reflected in the PFL is incorrect. Although these segments are located in a Class 3, the PSEP workbook incorrectly answered “no” to the question 3B of the Decision Tree “HCA or Class 2-4?” resulting in Decision Tree code C1 “Strength Test & CIS or ILI & CIS Phase 2” instead of the correct C2 Decision Tree code “Reduce Pressure and Strength Test in Phase 1. ILI, or Replace Phase 2”. Because the corrected Decision Tree code provides for Phase 1 or 2 action, this error was categorized as Type 4/5.

However, Staff also found an error with the pressure test duration entered in the workbook for these segments, which resulted in a more conservative Decision Tree code than the information in the PFL would require. These two errors cancelled each other out resulting in the same Decision Tree code as originally entered. It is unclear why PG&E designated these segments with a deviation code of “other” commenting that they were “Moved to Ph2 - further engineering assessment necessary”.

CPUC’s Recommendation

PG&E should provide SED with more detail on the additional engineering assessment being performed on these segments.

PG&E’s Response

There were two errors made on Segments 369.05, 369.052, and 369.053 (see Appendix B Error No. 2; T3 Error and T5 Error.) The T3 (Data Assurance) Error concerns the test duration in the project workbook (6.1 hours) not matching the PFL (8.1 hours). Using the correct test duration from the PFL, the Decision Tree outcome would result in C4 (tested, no Phase 1 action) and the deviation would change from “Other - See Comments” to “No Decision Tree Deviation.” As a result, these two errors cancelled each other out and the original workbook Decision Tree outcome of C4 is correct.

Regardless of the Decision Tree outcome, these segments would be deferred to Phase 2 since they have a prior strength test. The comment “Moved to Ph2 – further engineering assessment necessary” means:
1) The segment should be prioritized as a Phase 2 project because a previous test has been performed, even though the data validation was not showing a valid Subpart J test. (PG&E prioritizes strength testing pipe with no test record before strength testing pipe that has had a previous strength test.)

Attachment(s)

No attachments accompany the above response.

Next Steps

No further action required.

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SED's Other Observations

Unable to determine Decision Tree outcome for segments tested in 2011 and 2012

SED had difficulty reviewing PSEP workbooks for segments that had been hydrotested in 2011 and 2012. In order to determine correct Decision Tree results for those segments, it was necessary to use the pre-2011 pressure test information validated by the MAOP Validation Project. However, in many instances the workbooks reflected post-2011 hydrotest information and used that data to run the segments through the decision tree, resulting in an inaccurate Decision Tree. It is unclear how PG&E intended to reflect pipeline replacement and hydrotest information that occurred in 2011 and after. Although this inconsistency obscures actual Decision Tree outcome, it is not considered an operational safety issue as these segments were tested or replaced.

CPUC's Recommendation

(No recommendation provided)

PG&E's Response

The data validation sheets were populated with the PFL data upon MAOP Validation completion in July 2013. In most instances, the 2011 and 2012 strength test results were included within the July 2013 PFLs.

Given that the July 2013 PFLs included 2011 and 2012 strength test results, the PSEP engineers did not perform data validation for 2011 and 2012 projects for three reasons: 1) from a safety perspective, the most relevant data is updated in the PFL; 2) the purpose of the PSEP data validation process was to compare Decision Tree outcomes based on data validation to the action proposed in the August 2011 PSEP; in these cases, the Decision Tree action was already completed; and 3) D.12-12-030 disallowed cost recovery for all strength testing performed prior to the effective date of the decision (December 20, 2012), such that proposed revenue requirements and rates did not need to be submitted in the PSEP Update Application for projects completed in 2011 and 2012.

Attachment(s)

No attachments accompany the above response.

Next Steps

No further action required.

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Adjusted test pressures

The PSEP workbooks often failed to use the adjusted test pressure when such data was available in the PFL. The adjusted test pressures must be used as these have been adjusted to account for elevation differences in the tested pipeline and represent the minimum pressure experienced at any point in the pipeline. Adjusted pressures are fundamentally lower than the unadjusted pressure and affect determination of whether a test is valid as outlined in Attachment 2B Chapter 2, PSEP Update Filing Work papers Preparation (Section 1.4 – Pressure Test Requirements). In addition to other criteria, a valid test pressure must be sufficiently high to meet requirements based on class location and MAOP of the segment. The adjusted pressure vs. test pressure differences found by Staff ranged from 3psi to 100psi, but did not affect the validity of the test. However, these type discrepancies could have an effect on test validity for segments running with test pressures that are very close or equal to the minimum test pressure requirement.

CPUC's Recommendation

(No recommendation provided)

PG&E's Response

PG&E intended to use the adjusted test pressure (see PSEP Update Application Testimony Appendix B in section 1.3.6, Step 10 (page 2B-12)). However, although it is possible that using the test pressure at the pressure sensing point instead of the adjusted test pressure may result in a test not meeting the acceptable test pressure to MAOP ratio (defined within the PSEP Decision Tree), this error had no impact on PSEP Phase I recommended actions/decisions. The Commission found in D.12-12-030 (Finding of Fact 21) that "A valid pressure test record need only comply with the regulations in effect at the time the test was performed, not later adopted regulations." The MAOP Records Validation Program therefore determined whether a pipeline strength test met regulations at the time of the test, and then determined the qualified MAOP. The PSEP Pipeline Modernization Decision Tree was used to prioritize the testing and replacement of untested pipelines. Since only untested pipelines were under consideration for testing in Phase I, inputting the test pressure at the pressure sensing point vs. the adjusted pressure would have no impact on the PSEP Phase I Decision Tree actions. The test pressure to MAOP ratio is a calculation used when performing a Remaining Life Fatigue Analysis (Decision Tree Action Box M1) also referred to as a "Cyclic Fatigue Analysis" (CFA). PG&E has begun conducting CFA's on previously tested pipelines, which will help PG&E determine the priority of re-testing pipe within the 2015 GT&S rate case period.

Attachment(s)

No attachments accompany the above response.

Next Steps

No further action required.

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Route BD143 and DRIP10897- “Historical Test Met Code Only” Deviation incorrectly applied

This deviation code was generally used by PG&E to defer certain segments beyond Phase I due to the existing pressure test records meeting historical test requirements even though PSEP test requirements were not met. In PG&E’s view, these are lower priority segments. For the segments and routes listed (on pg. 28 of the CPUC Safety Review Report), PG&E incorrectly applied the “Historical Test Met Code Only” Deviation based on the premise that the existing pressure test records met historical test code. However, the Updated PSEP database indicates that these segments have no Hydrotest records at all. Although the validated phase for these segments indicates C3 Decision Tree code action “Strength Test and CIS or ILI and CIS in Phase 2” the validation comments in the Updated PSEP database indicate that at some point it was decided that these segments would be in Phase 2.

CPUC’s Recommendation

PG&E may not defer the segments referenced above based on the deviation category it applied and must demonstrate precisely when and how Phase 2 will address these segments.

PG&E’s Response

As a general practice, PG&E only applied deviation code, “Historical Test Met Code Only” in instances where test records complied with the regulations at the time the test was performed. With respect to Route BD143 and DRIP10897, PG&E incorrectly applied the deviation code. However, neither error presents a safety issue, as explained below.

BD143: Route BD143 was a blow down (BD) line connected to Line 109 on the downstream side of V-30.77. This pipeline cross-tied/connected Line 109 and Line 132 as shown in drawing 382486.tif (see Attachment 30). BD143 was installed in 1948 by Job 98015 and removed in 2013 by Job 30843884. Job 30843884 removed and replaced Line 109 mainline valve V-30.77 and Line 132 mainline valve V-31.93. Although the removal of BD143 is not shown in the as-built, the entire mainline valve assembly was replaced (including BD143). BD14954 replaces BD143 and is shown in as-built drawing (see Attachment 31). BD143 did not have a historical test, and the correct deviation should have been “Other – See Comments.” The comments should be updated to explain the BD was being replaced with the PSEP valve automation project (obviating the need for a strength test).

DRIP10987: DRIP10987 is connected to Line 132 at mile point 24.47. The PFL used to validate this route originally did not include a 2011 test for the first few feet (Segments 601 & 602). The latest PFL shows this whole route was tested on a 2011 PSEP strength test (see Attachment 32). This DRIP did not have a historical test, and the correct deviation should have been “2011 Hydrotest Plan.”

As these segments have been addressed in Phase I they will not need to be addressed in Phase 2.

Attachment(s)

Attachments to this response have been marked CONFIDENTIAL and are submitted pursuant to Section 583 of the Public Utilities Code because they include employee names.

No.	File Name
30	SED-SRR_Atch30_BD143_DRIP10897_CONF.pdf
31	SED-SRR_Atch31_BD143_DRIP10897_CONF.pdf
32	SED-SRR_Atch32_BD143_DRIP10897_CONF.pdf

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Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook (TAPS-REPL PN PH1) to incorporate corrections above.	2014. End of Quarter 2	PSEP Engineering

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SED's Findings and Recommendations on PSEP Update Scope

I. PSEP Scope Update

I.1 PG&E limited the scope of the Updated PSEP Application to only the segments identified in the original filing

As the MAOP Validation Project has been completed, it is possible that segments exist in PG&E's transmission system which have not been included in the updated application, but that lack valid pressure testing records and potentially met Phase I PSEP criteria. PG&E has explained that it considers those segments as outside of PSEP scope and indicated that in its 2015 GTS application PG&E is proposing a new set of decision trees to address the pipeline hydrotesting and replacement priorities based on a more holistic risk assessment approach to prioritizing that will not plan PSEP work separately from Base work.

CPUC's Recommendation

PG&E should be required to demonstrate how and when it plans to address those potential Phase I segments included in the tables (on pg. 29 of the CPUC Safety Review Report). The scope and prioritization of the new programs proposed in the 2015 GTS rate case must be equivalent or more conservative than the one already authorized through the PSEP Decision Tree.

PG&E's Response

In PG&E's PSEP Testimony filed on August 26, 2011 under Rulemaking (R.) 11-02-019, Chapter 3, page 3-37, PG&E stated we would not complete strength testing of all untested Class 3, Class 4 and HCA pipeline segments within Phase I:

"Despite Decision 11-06-017 stating that each Implementation Plan 'should start with pipeline segments located in Class 3 and Class 4 locations and Class 1 and Class 2 high consequence areas,' this represents far too large of a work scope for PG&E to accomplish in a 4-year period (2011-2014) in Phase I. Therefore, PG&E chose to prioritize a subset of that broader scope into Phase I, consisting of the pipe segments in urban areas (Class 2, 3 and 4 and Class 1 HCA) operating at or greater than 30 percent SMYS without strength tests and those segments characterized with a manufacturing threat at or greater than 20 percent SMYS. This subset represents pipe segments that pose the biggest threat for a pipeline rupture. The remaining urban pipe (Class 2, 3 and 4 and Class 1 HCA) operating between 20 percent SMYS and 30 percent SMYS characterized with a Fabrication and Construction (F&C) threat construction threat and/or a corrosion and latent mechanical damage threat, will be addressed at the beginning of Phase 2 commencing in 2015"

PG&E completed MAOP validation in July 2013. PSEP engineering compared results from the MAOP validation effort, a very labor intensive process, since the MAOP PFLs had to be manually aligned with information within GIS. The result was 2,500 pages of PSEP Update workpapers submitted in October 2013. Since PG&E was under a strict deadline to submit and update the PSEP filing under D.12.12-030, given these constraints, it was not practical to query MAOP PFL's for additional untested pipeline segments meeting PSEP Phase I criteria, identify project scopes, develop workpapers and cost estimates, and schedule actual project execution before December 2014.

As of early 2014, MAOP Validation and Class Location Change verification has identified 62.11 segment miles of untested Class 3&4 and HCA Class 1&2 pipe that will not be tested within PSEP Phase I. These untested pipeline segments are proposed to be addressed/strength tested within the 2015 GT&S Rate Case Period. Figure 4A-9 within PG&E's 2015 GT&S Rate Case Application (A.) 13-12-012 contains the proposed Hydrostatic Testing Decision Tree. The untested pipeline miles proposed for strength testing are based on the following priorities listed in order of importance: (i) HCA, (ii) Integrity management Threats, (iii) Class 3 non-HCA segments, (iv) Class 1 and 2 non-HCA segments, and (v) short segments.

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Attachment(s)

No.	File Name
33	SED-SRR_Atch33_1.1.pdf

Next Steps

PG&E will be addressing the remaining segments that meet the PSEP decision tree criteria in the GT&S 2015 – 2017 rate case period, with most being addressed in 2015.

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I.2 Phase 2 of PSEP will be incorporated into the 2015 GT&S Rate Case

Pipeline segments requiring Phase 2 action have been rolled into the 2015 GTS rate case filing. PG&E has indicated that it has developed new prioritization criteria and will not be using the approved PSEP Decision Tree for Phase 2 segments.

CPUC's Recommendation

As with Phase 1 segments not currently addressed by PSEP, the new prioritization proposed in the 2015 GT&S rate case must be comparable or more conservative than that approved for the PSEP Phase 2 filing.

PG&E's Response

PG&E is being more conservative in the 2015 GT&S Rate Case Strength Testing Program, considering additional threats (e.g. fatigue analysis) in the pool of potential segments to be addressed. Figure 4A-9 within the 2015 GT&S Application (A.) 13-12-012 contains the proposed Hydrostatic Testing Decision Tree. The untested pipeline miles proposed for strength testing are based on the following priorities listed in order of importance: (i) HCA, (ii) Integrity management Threats, (iii) Class 3 non-HCA segments, (iv) Class 1 and 2 non-HCA segments, and (v) short segments.

Attachment(s)

No.	File Name
34	SED-SRR_Atch34_1.2.pdf

Next Steps

No further action required.

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2. Decision Tree Implementation

2.1 PG&E's application of the Decision Tree, as presented in the workbooks, appears to have eliminated a branch of the tree under the Fabrication and Construction Threats outcome

Decision Tree point 2B was intended to identify the presence of non-standard fittings on pipeline segments, which following an engineering evaluation, could require pipeline replacement in Phase 1 or 2 of PSEP (Decision Tree code F1). PG&E's process for determining PSEP scope assumes that no such pipe fittings exist in its system by systematically answering "no" to point 2F, effectively eliminating the entire branch from PSEP scope.

CPUC's Recommendation

PG&E should be required to justify this elimination and to demonstrate how it has and how it will continue to address segments that would have fallen under that PSEP outcome. This must be aligned with the approved PSEP Decision Tree.

PG&E's Response

PG&E did not eliminate Decision Tree Point 2B from the scope of PSEP Phase I. Decision Points 2B and 2C identify and address unique Fabrication and Construction pipe joining features (e.g., wrinkle bends, miter joints greater than 3 degrees, dresser coupling, expansion joints, and non-standard fittings). Because PG&E's GIS system, GIS 1.0, is based on pipeline segments, which was the basis of the original 2011 PSEP filing, PG&E did not know if and where these features existed when analyzing GIS segments through the Decision Tree. Therefore, in order for the segments to be successfully processed through the Decision Tree, PG&E had to assume all outputs from Decision Tree Action 2B were "No." PG&E now has visibility into the location of known features based on route and mile point, as a result of completing the MAOP validation PFLs in July 2013. PG&E is addressing non-standard fittings/features, when known, during PSEP Phase I projects by removing them prior to strength testing or retiring them when new pipeline segments are installed. PSEP has implemented a program to remove all known remaining dresser couplings (six based on MAOP Records validation) in 2014 as part of our Engineering Condition Assessment, Decision Tree Action Box 2C.

PG&E's Vintage Pipe Replacement Program, described in Chapter 4A of PG&E's 2015 GT&S Rate Case Prepared Testimony in A.13-12-012, addresses these threats by replacing pipeline segments containing vintage fabrication and construction threats that are subject to the threat of outside forces such as land movement that are in proximity to population.

Attachment(s)

No attachments accompany the above response.

Next Steps

No further action required.

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3. Valid Pressure Test

3.1 The PSEP criteria PG&E developed to validate pressure test records is inconsistent with and in some regards less conservative than that applied for MAOP Validation purposes.

PG&E's PSEP criteria [...] fails to consider the quality codes assigned to records by the MAOP Validation Project. The quality codes developed and assigned to test records by the MAOP Validation project did not indicate whether test records meet its definition of traceable, verifiable, and complete.

CPUC's Recommendation

PG&E should consider document quality in its criteria for validating pressure tests. Low quality documents that do not represent an actual performed test and should not be used as valid test documents (i.e. documents representing intent - design packages). Tests must at a minimum, meet the traceable, verifiable, and complete criteria adopted for validation of MAOP.

PG&E's Response

PG&E acknowledges that it did not use the STPR quality codes in the PFL to validate pressure tests for purposes of performing work under PSEP. This is due to the differing purposes for the use of STPRs between MAOP Validation, and the PSEP Update. PG&E agrees that a strength test must meet the traceable, verifiable and complete (TVC) criteria adopted for validation of MAOP. However, for purposes of prioritizing work under the PSEP, pipeline segments with no documented strength test were prioritized before pipeline segments with at least some documentation of a strength test, even if the documentation did not meet the TVC standard required for MAOP Validation. PG&E has reviewed the Updated PSEP database and identified 27 pipeline segments where the STPR Quality code was greater than Q7 (See Attachment 35). Data Validation listed the 27 segment as having a TVC test record at the time of the test, and the segment is not being addressed by replacement/strength test in PSEP Phase I. These segments will be strength tested to meet Subpart J requirements at some point after the PSEP Phase I period based on the strength testing prioritization criteria.

Attachment(s)

No.	File Name
35	SED-SRR_Atch35_3.1.xlsx

Next Steps

No further action required.

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4. Deviations

4.1 SED was unable to confirm proposed PSEP Downrates

In order to reduce the scope of the updated PSEP application, PG&E selected to downrate approximately 14 miles of PSEP covered segments by reducing their pressure to under 60 psi and reclassifying as distribution pipeline. SED did not have the adequate information available to verify the status of these downrates and confirm that these have been performed.

CPUC's Recommendation

PG&E should be required to provide valid documentation verifying the status of all the PSEP transmission pipeline downrates, as indicated in the Updated PSEP database, and to provide a schedule of the downrates it has yet to perform.

PG&E's Response

PG&E agrees with this recommendation. PG&E has identified four projects (13.5 miles total) where the existing gas transmission pipeline MAOP has been, or will be, reduced to an MAOP of 60 PSIG and the pipeline will therefore become a gas distribution asset. The downrate on three of the four projects have been completed and as-built: DFM-7225-02 DWNRT 1.94MI MP 0.00-2.42 PHI; Line 050A TRANSFER 5.09MI MP 2.55-7.60 PHI; and Line I 18A TRANSFER 6.15MI MP 0.00-5.62 PHI. One remaining project is scheduled for completion in 2014: DFM-0604-16 DWNRT 0.32MI MP 0.18-0.50 PHI. The as-built for all four projects will be provided to SED upon request.

Attachment(s)

No attachments accompany the above response.

Next Steps

No further action required

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Appendix B

SED Safety Review Results: PSEP Update

Error No. 1: T3

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-300A_2 TEST 21.67MI MP 230.32- 490.59 PHI	T3 (Data Assurance) Error	Type 2	Did not use Adjusted Test Pressures from PFL (Segs 218.1, 218.6-1, 220.5-1, 250.5-1, 395.31)

Error No. 1: T3 PG&E's Response

The report findings are correct; the workbook did not use adjusted test pressures. However, using the adjusted test pressures from the PFL does not change the Decision Tree outcome because the test pressure to MAOP ratio is still above 1.25 for Class 1 (Segments 218.1, 218.6-1, and 250.5-1) and above 1.5 for Class 3 (Segments 220.5-1 and 395.31).

Error No. 1: T3 Attachment(s)

No attachments accompany the above response.

Error No. 1: T3 Next Steps

No further action required.

Error No. 1: T4

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-300A_2 TEST 21.67MI MP 230.32- 490.59 PHI	T4 (Hydrotest) Error	Type 3	Test information (Validated TEST_JOB, PRESSURE TEST_DATE, MEDIUM, TEST_DURATION) between the workbook and PFL don't match. (Seg 395.6-1)

Error No. 1: T4 PG&E's Response

The report findings are correct; the test information in the workbook does not match the PFL. The PFL is correct. Although the data validation showed no test information and the PFL shows a valid test, the Phase I action for PSEP would still be 'N/A' (no Phase I action). The Decision Tree would change from C2 (Phase I test) to C7 (tested, no Phase I action) and the deviation would change from "Other - See Comments" to "No Decision Tree Deviation."

Error No. 1: T4 Attachment(s)

No attachments accompany the above response.

Error No. 1: T4 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook	2014, End of Quarter 2	PSEP Engineering

PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014

to incorporate corrections above.		
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**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 2: T3

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-300A_I TEST 58.46MI MP 0.29- 502.24 PHI	T3 (Data Assurance) Error	Type 3	Workbook Hydrotest duration (6.1hrs) does not match PFL (8.1 hrs). (Segs 369.051, 369.052, 369.053)

Error No. 2: T3 PG&E's Response

The report findings are correct. However, this error does not result in any change to Phase I action. The test duration in the workbook does not match the PFL and when the data validation is updated with the 8.1 hour duration, the decision tree changes from C1 (Phase 2) to C4 (tested, no Phase I action). The deviation for the segments (369.051, 396.052, and 396.053) would change from "Other- See Comments" to "No Decision Tree Deviation". (The discussion on page 27 of the SED report correctly shows this as C4 although Appendix B's table does not.)

Error No. 2: T3 Attachment(s)

No attachments accompany the above response

Error No. 2: T3 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

Error No. 2: T5

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-300A_I TEST 58.46MI MP 0.29- 502.24 PHI	T5 (Decision Tree) Error	Type 4/5	Incorrect Decision Tree Code. Should be C2 instead of C1. C2 may be Phase I or 2 action. (Segs 369.051, 369.052, 369.053)

Error No. 2: T5 PG&E's Response

See the response to "Error No. 2: T3."

Error No. 2: T5 Attachment(s)

No attachments accompany the above response.

Error No. 2: T5 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 3: T2

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-300B_I TEST 59.49MI MP 0.00- 502.64 PHI	T2 (Segment Split) Error	Type 2	Footage doesn't match with PFL (PSEP DV = 65' rather than PFL (feature #24207) = 74.3'). As a result total footage doesn't match. Total PSEP = 169' rather than Total PFL = 178.3'. (Segs 258.1-3)

Error No. 3: T2 PG&E's Response

The report findings are incorrect. Segment 258.1-3 was validated using PFL instance 120, which matches the footage shown in the data validation workbook (65 feet). Adjacent upstream segments (256-1 to 257.9) used a different instance number (162) for validation. It appears SED had used the PFL instance 162 when checking the data validation which contains a different footage for segment 258.1-3. PFL instance 120 was the correct instance to use for data validation.

Error No. 3: T2 Attachment(s)

No attachments accompany the above response.

Error No. 3: T2 Next Steps

No further action required.

Error No. 3: T5

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-300B_I TEST 59.49MI MP 0.00- 502.64 PHI	T5 (Decision Tree) Error	Type 4	Incorrect Decision Tree Code. Should be C4 instead of C7. (Segs 258.6, 258.7, 258.9, 260.12-1, 264.2, 264.4)

Error No. 3: T5 PG&E's Response

The report findings regarding Error No. 3, T5 are correct. However, this change does not affect the PSEP Phase I Decision Tree (Decision Tree) action as both C4 and C7 require no Phase I action. The Decision Tree codes are incorrect in the workbook; Segments 258.6, 258.7, 258.9, 260.12-1, 264.2 and 264.4 should have had a Decision Tree code of C4 instead of C7 because they are tested, non-HCA and operating over 30% SMYS.

Error No. 3: T5 Attachment(s)

No attachments accompany the above response

Error No. 3: T5 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 4: T2

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-131_I TEST 4.41MI MP 42.35- 57.47 PHI	T2 (Segment Split) Error	Type 2	The footage doesn't match with PFL (PFL = 691.2' rather PSEP DV = 690'), as a result the total footage doesn't match (Total PFL = 760.4' rather than Total PSEP DV = 759.2')

Error No. 4: T2 PG&E's Response

The report findings are correct, but this error has no effect on the PSEP Decision Tree outcome because this segment was tested and did not require PSEP Phase I action (C6). The error states that the footage in the workbook does not match the PFL. While the SED does not specify a segment, this response assumes the error is on Segment I57.13 (only segment in the data validation workbook with 690'). The footage is incorrect in the data validation workbook (690') and should have been entered as 691.2'.

Error No. 4: T2 Attachment(s)

No attachments accompany the above response

Error No. 4: T2 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

Error No. 4: T3

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-131_I TEST 4.41MI MP 42.35-57.47 PHI	T3 (Data Assurance) Error	Type 2	Test Pressure: PFL = 911 psi PSEP = 914. PSEP did not use adjusted test pressures. (Segs 182-2, 182-5, 192.9, 186.3, 187.7, 190.5)

Error No. 4: T3 PG&E's Response

The report findings are correct, the workbook did not use adjusted test pressures. However, using the adjusted test pressures from the PFL does not change the PSEP Decision Tree outcome because the test pressure to MAOP ratio is still above 1.5 for Class 3 (Segments 182-2, 182-5, 192.9, 186.3, 187.7, and 190.5).

Error No. 4:T3 Attachment(s)

No attachments accompany the above response.

Error No. 4: T3 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
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PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014

Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP engineering
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**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 5: T2

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-118A TEST 1.30MI MP 0.00-58.74 PHI	T2 (Segment Split) Error	Unknown	4 additional splits are necessary due to SMYS and WT differences (Segment 126-2). Unable to determine consequence of error.

Error No. 5:T2 PG&E's Response

The report findings are correct, that additional splits were necessary in the workbook. However, this has no effect on the PSEP Decision Tree outcome because this segment was tested and did not require PSEP Phase I action (C6). The additional splits identified would have included stubs (3/4") as mainline pipe (8"). During data validation, engineering judgment was used to determine that the features for the stubs could be skipped because they were not mainline pipe and as a result Segment 126-2 would not need to be split further.

Error No. 5:T2 Attachment(s)

No attachments accompany the above response.

Error No. 5:T2 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

Error No. 5: T4

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-118A TEST 1.30MI MP 0.00-58.74 PHI	T4 (Hydrotest) Error	Type I	Length on PSEP workbook does not match PFL, is 2 feet section untested (Segs 200.4)

Error No. 5:T4 PG&E's Response

The report findings are correct that the segment length within the workbook was incorrect. However, this has no effect on the PSEP Decision Tree outcome because the segment was included within a strength test performed in 2012 and would be included in the test regardless of the error. The identified 2 feet section would be its own segment (200.3) rather than added to Segment 200.4. The data validation workbook incorrectly combined the two segments into 200.4. The PSEP Decision Tree outcome for the 2 feet would be C3 (untested, Phase 2) because the pipe was installed in 1931, seamless, untested, operating under 30% SMYS and in a Class 3 area.

Error No. 5:T4 Attachment(s)

No attachments accompany the above response.

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 5: T4 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014. End of Quarter 2	PSEP Engineering

Error No. 5: T5

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-118A TEST 1.30MI MP 0.00-58.74 PHI	T5 (Decision Tree) Error	Type 4	Incorrect Decision Tree Code. Should be C5 instead of C6. (Segs 101.507, 200.4, 201.2)

Error No. 5: T5 PG&E's Response

The report findings are correct that the Decision Tree codes are incorrect in the workbooks. The Decision Tree for these segments (101.507, 200.4, and 201.2) should be C5 instead of C6 because they are not HCA. This has no effect on the work performed under PSEP because these segments were included within a strength test performed in 2012.

Error No. 5: T5 Attachment(s)

No attachments accompany the above response.

Error No. 5: T5 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 6: T4

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-118A TEST 1.30MI MP 0.00-58.74 PHI	T4 (Hydrotest) Error	Type I	Marked as validated test in workbook when should not have been. (Segs 200.8, 201.3, 201.6-1, 201.9, 202-1, 202-2).

Error No. 6: T4 PG&E's Response

The report findings are correct. The workbook incorrectly marked Segments 200.8, 201.3, 201.6-1, 201.9, 202-1, and 202-2 as having a valid test, and the data validation workbook had incorrectly shown these segments as tested. The correct Decision Tree outcome for these segments would have been M4 (200.8, 201.9, and 202-1) and C3 (201.3, 201.6-1, and 202-2). This has no effect on the PSEP Decision Tree action because all of the segments were included within a 2012 strength test.
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Error No. 6: T4 Attachment(s)

No attachments accompany the above response.

Error No. 6: T4 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 7: T2

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-153_I TEST 17.35MI MP 0.00- 22.87PHI	T2 (Segment Split) Error	Unknown	3 additional splits are necessary because of different SMYS (35k & 50k). Unable to determine consequences of error.(Seg 135.6-4).

Error No. 7: T2 PG&E's Response

The report findings are correct that additional splits should have been made in the workbook. The data validation workbook was incorrect and should have included three additional splits to Segment 135.6-4 because of the different SMYS values in the PFL (35,000 psi and 50,000 psi). The seam type was also incorrect and should have been (seamless and unknown > 4" diameter). These different SMYS and seam type values would drive the Decision Tree to C3 (untested, Phase 2) and M4 (Phase I test). However, this does not have an effect on the PSEP Phase I action.

Error No. 7: T2 Attachment(s)

No attachments accompany the above response.

Error No. 7: T2 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

Error No. 7: T3

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-153_I TEST 17.35MI MP 0.00- 22.87PHI	T3 (Data Assurance) Error	Unknown	Validated TEST_DUR_R mismatch between workbook and PFL. Segments tested in 2011 hydratest. (Segs 122.6; 123; 123.2; 123.4; 123.6; 124).

Error No. 7: T3 PG&E's Response

The report findings are correct that the duration in the workbook does not match the PFL. The data validation workbook incorrectly shows a strength test duration of 5.3 hours for these segments (122.6, 123, 123.2, 123.4, 123.6, and 124). The PFL shows a strength test duration of 8.3 hours. This error does not impact PSEP Phase I action.

Error No. 7: T3 Attachment(s)

No attachments accompany the above response.

Error No. 7: T3 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 7: T4

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-153_I TEST 17.35MI MP 0.00- 22.87PHI	T4 (Hydrotest) Error	Type 4	Workbook shows this test as having a valid witness but PFL indicates no valid witness. (Segs 142.3-1, 142.3- 2, 142.6, 142.9)

Error No. 7: T4 PG&E's Response

The report findings are incorrect; the workbook correctly shows a witness. The data validation workbook shows these segments (142.3-1, 142.3-2, 142.6, and 142.9) as having a valid test even though the PFL does not have a witness listed. The STPR used in the development of the PFL has a witness. Therefore, the PFL inadvertently omitted the strength test witness data field. The data validation workbook comments should indicate that the witness was obtained from the STPR linked within the PFL (see Attachment 36).

Error No. 7: T4 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it includes employee names.

No.	File Name
36	SED-SRR_Atch36_Error7T4_CONF.pdf

Error No. 7: T4 Next Steps

No further action required.

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 8: T3

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-153_I TEST 17.35MI MP 0.00- 22.87PHI	T3 (Data Assurance) Error	Type 4	Incorrectly shows test as meeting code and PSEP criteria. (Segs 123.2; 123.4)

Error No. 8: T3 PG&E's Response

The report findings are correct, because the data validation workbook incorrectly shows an inaccurate test duration of 5.3 hours. If the correct duration of 8.3 hours was used, the data validation workbook would have correctly identified the segments as tests meeting code and PSEP criteria. This error does not impact PSEP Phase I action.

Error No. 8: T3 Attachment(s)

An attachment to this response has been marked CONFIDENTIAL and is submitted pursuant to Section 583 of the Public Utilities Code because it includes employee names.

No.	File Name
37	SED-SRR_Atch37_Error8T3_CONF.pdf

Error No. 8: T3 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 9: T3

PSEP Project	Error Category	PFL Impact	Error Description/Comment
DFM-1816-01_2 TEST 9.17MI MP 8.44-18.25 PHI	T3 (Data Assurance) Error	Type 5	SMYS doesn't match PFL. (% SMYS PFL=35 but %SMYS PSEP=28). PSEP DT should be =M2 instead of M4. (Seg 234.3-1)

Error No. 9: T3 PG&E's Response

See response to 'Type 5 Errors' for DFM-1816-01_02 TEST.
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Error No. 9: T3 Attachment(s)

No attachments accompany the above response.

Error No. 9: T3 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 10: T2

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-021F REPL 4.24MI MP 0.00-21.16 PHI	T2 (Segment Split) Error	Type I	Unnecessary split (Segs 101.3-1 & 101.3-2; 150.7-3 & 150.7-4)

Error No. 10: T2 PG&E's Response

<p>The report findings are incorrect. The workbook correctly split the segments.</p> <ul style="list-style-type: none"> • Segments 101.3-1 and 101.3-2 were correctly split in the data validation workbook but Segment 101.3-2 did not use the correct SMYS (42,000 psi). Using the correct SMYS would result in the same Decision Tree outcome and therefore does not affect the PSEP Phase I action. • Segments 150.7-3 and 105.7-4 were correctly split in the data validation workbook but Segment 105.7-3 did not use the correct SMYS (30,000 psi). Using the correct SMYS would result in the same Decision Tree outcome and therefore does not affect the PSEP Phase I action.

Error No. 10: T2 Attachment(s)

No attachments accompany the above response.

Error No. 10: T2 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to correct the SMYS values for Segments 101.3-1, 101.3-2, 150.7-3 and 150.7-4.	2014, End of Quarter 2	PSEP Engineering

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 11: T2

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-191 REPL 1.97MI MP 0.07-6.47 PHI	T2 (Segment Split) Error	Type I	12 ft is missed in PSEP as a split by itself, rather included with Seg 130.5. Appears to be a cut out from 2011 Hydrotest (new pipeline). Not a safety concern. (Seg. 130.2-1)

Error No. 11: T2 PG&E's Response

The report findings are correct. However, the data validation workbook combined the footages for Segments 130.2 and 130.5 of the PFL into one segment, 130.5. Segment 130.2 is a tie-in piece from a PSEP 2011 test. Since the adjacent segments to 130.2 were both installed on the same job, and 130.2 was from the PSEP 2011 test, engineering judgment was used to assume that the pipe before the installation of the PSEP 2011 test tie-in was also installed on the same job as the adjacent segments. It was also assumed that Segment 130.2 was only created because of the installed tie-in pipe so the footage was added to Segment 130.5.

Error No. 11: T2 Attachment(s)

No attachments accompany the above response.

Error No. 11: T2 Next Steps

No further action required

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 12: T2

PSEP Project	Error Category	PFL Impact	Error Description/Comment
TAPS-REPL MI PHI	T2 (Segment Split) Error	Unknown/ Potential Type 5	DREG4872: The footage doesn't match with PFL (PFL=99.5' but PSEP DV=49.5'), hence total length in PSEP is off by 50'. (Total PFL=115.4' & Total PSEP DV=64.5'). Unable to determine the consequence of this error.

Error No. 12: T2 PG&E's Response

The report findings are correct that the footage in the workbook does not match the PFL. The data validation workbook did not capture 50 feet for Segment 204-2. This footage would not create an additional split but would be included in the footage for Segment 204-2. This additional footage does not affect the PSEP Phase I action.

Error No. 12: T2 Attachment(s)

No attachments accompany the above response.

Error No. 12: T2 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of Quarter 2	PSEP Engineering

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 13: T2

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-109_2 REPL 4.65MI MP 0.49- 16.93 PHI	T2 (Segment Split) Error	Type I	Unnecessary split (Segs I33.6-1 and I33.6-2)

Error No. 13: T2 PG&E's Response

The report findings are incorrect. The split of Segments I33.6-1 and I33.6-2 in the data validation workbook were necessary because the installation jobs for each segment are different. The job numbers are 4679379 and 4679130, respectively.

Error No. 13: T2 Attachment(s)

No attachments accompany the above response.

Error No. 13: T2 Next Steps

No further action required.

**PSEP Update Application (A.13-10-017)
CPUC Safety Review Report, April 25, 2014**

Error No. 14: T3

PSEP Project	Error Category	PFL Impact	Error Description/Comment
L-191-1 TEST 10.07MI MP 9.59- 35.83 PHI	T3 (Data Assurance) Error	Type 2	PFL lists test pressure as 1041 psi. PSEP lists as 1059 psi. PSEP Did not use adjusted test pressure. (Seg.106)

Error No. 14: T3 PG&E's Response

The report findings are correct that the workbook did not use adjusted test pressures. However, using the adjusted test pressures from the PFL does not change the PSEP Decision Tree outcome because the test pressure to MAOP ratio is still above 1.5 for Class 3 (Segment 106).

Error No. 14: T3 Attachment(s)

No attachments accompany the above response.

Error No. 14: T3 Next Steps

Action Item	Estimated Due Date	Responsible Dept.
Update project workbook to incorporate corrections above.	2014, End of quarter 2	PSEP Engineering

EXHIBIT 3



ORA

Office of Ratepayer Advocates
California Public Utilities Commission

JOSEPH P. COMO
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June 4, 2014

Ms. Liza Malashenko
Safety and Enforcement Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

RE: Comments Of the Office of Ratepayer Advocates on the Safety and Enforcement Division's April 25, 2014 "Safety Review Report of PG&E's PSEP Update Application" in A.13-10-017

Dear Ms. Malashenko:

The Office of Ratepayer Advocates (ORA) offers the following comments on the Safety and Enforcement Division's April 25, 2014, "Safety Review Report of PG&E's PSEP Update Application" (SED Report) which was served on the parties in Pacific Gas and Electric Company's (PG&E) Application 13-10-017 (PSEP Update Application).

The SED Report summarizes the results of the Safety and Enforcement Division's (SED) audit of PG&E's Maximum Allowable Operating Pressure (MAOP) Validation and Pipeline Safety Enhancement Plan (PSEP) work ordered by the Commission. ORA commends SED for conducting the audit and reviewing the work performed by PG&E.

The SED Report identifies a number of significant problems in both PG&E's MAOP Validation and PSEP work, and its findings confirm that SED audits of this work should continue. However, there are a number of problems with the SED Report's documentation of the audit results which should be addressed before the SED Report is finalized.

ORA provides the following detailed comments to: (1) assist SED in clarifying how the audit was performed; (2) urge SED to correct unsupported conclusions made in the SED Report; (3) provide suggestions to aid SED in designing and implementing any similar audits/analyses it plans for the future and, (4) perform our own due diligence as the customers' representative at the CPUC.

In sum, and as described in more detail in the attachment to this letter, ORA offers the following recommendations to improve the SED Report:

1. The Executive Summary should be revised to reflect the actual findings of the audit and to define what is meant by the conclusion that “no imminent safety concerns arose from SED’s review.” In common language this would be interpreted to mean there is no situation that puts the public in immediate risk of death or serious physical harm. If that is the meaning, please confirm. If not, please clarify the meaning. In either case, this definition should be provided in the SED Report.
2. The SED Report should clearly identify the high priority pipelines that would have been placed in Phase 1 if PG&E had considered all of its transmission pipelines for purposes of the PSEP Update.
3. The SED Report should better explain the impacts of PG&E’s use of less conservative assumptions and low quality data.
4. The SED Report should comment on the overall effectiveness of PG&E’s Quality Assurance and Quality Control (QA/QC) programs.
5. The SED Report should provide additional details regarding the MAOP Validation errors discovered.
6. Issues discussed at the May 5, 2014 Workshop should be resolved and documented in an updated SED Report, and SED’s original findings should be included as an attachment as well as party responses.

For purposes of transparency, ORA encourages SED to release a revised SED Audit Report responsive to party comments such as these. This revision should include a section summarizing parties’ comments and identifying where the SED report has been modified to address those comments. The revision should also include as attachments both the April 25, 2014 version of the SED Report and PG&E’s response to that report.

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Ms. Liza Malashenko
Safety and Enforcement Division
June 4, 2014
Page 3

PG&E's response to the SED Report indicates a commitment to improve PG&E's operations. Another indication that PG&E is making a commitment to continual improvement is the asset management certifications (PAS-55 and ISO-55001) PG&E recently obtained from Lloyd's Register. That certification process appears to provide useful guidance to PG&E. PG&E is to be commended for engaging in the process.

Please feel free to contact Nat Skinner at (415) 703-1393 or nathaniel.skinner@cpuc.ca.gov if you have any questions or concerns regarding these ORA Comments.

Sincerely,

/s/ LINDA SERIZAWA
Linda Serizawa
Deputy Director
Office of Ratepayer Advocates

LS:tlg

Attachment

cc: Denise Tyrrell, Acting Director, Safety and Enforcement Division
Brian Turner, Deputy Executive Director
Service List for A.13-10-017



ORA

Office of Ratepayer Advocates
California Public Utilities Commission

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ATTACHMENT

Comments of the Office of Ratepayer Advocates On the Safety and Enforcement Division's April 25, 2014 "Safety Review Report of PG&E's PSEP Update Application"

I. The Executive Summary Should Be Revised To Reflect The Actual Findings Of the Audit And To Clarify The Meaning Of "Imminent Safety Concerns"

A. The SED Report Identifies Many Troubling Errors In PG&E's Work Which Are Not Mentioned In the Executive Summary

The Executive Summary gives the impression that in its audit SED did not find anything that is cause for concern. The Executive Summary focuses on the conclusion that: "*Aside from the exceptions detailed in this report, SED learned that PG&E's validation of MAOP was generally consistent with the CPUC's requirements under D.11-06-017, D.12-12-030, and Resolution (R.) L-140.*"¹ However, the bulk of the SED Report (all but the first and last pages) then identifies a number of troubling issues regarding both PG&E's MAOP Validation and its PSEP work including, among other things:²

MAOP Validation:

- PG&E validated the MAOP of certain pipelines using an inapplicable federal regulation, 49 Code of Federal Regulations (CFR) § 192.611;³
- Some pipeline features lists (PFLs) were validated using less conservative assumptions than others;⁴

¹ SED Report, p. 1.

² ORA notes that PG&E responded in detail to the SED on May 22, 2014, in some cases agreeing, and in others disagreeing, with SED's findings.

³ SED Report, p. 13.

⁴ SED Report, p. 14.

- PG&E did not use traceable, verifiable and complete (TVC) records to determine the MAOP of design for its gas lines;⁵ and
- PG&E’s use of different databases for the MAOP Validation can create inconsistencies in PG&E’s data.⁶

PSEP Work:

- PG&E limited the scope of the PSEP work to only the segments identified in the original filing. In other words, PG&E did not run all of the MAOP validated pipelines through the Decision Tree to identify high priority projects;⁷ and
- The criteria PG&E used to validate pressure test records was, in some regards, less conservative than the criteria applied for MAOP Validation.⁸

B. The Report’s Conclusion of “No Imminent Safety Concerns” is Contradicted by Findings within the Body of the Report

The Executive Summary concludes that “no imminent safety concerns arose from SED’s review.”² It is difficult to understand how the SED Report could reach this conclusion, which appears to apply to PG&E’s entire system, for at least three reasons:

- First, SED’s review, confirmed at the May 5, 2014 workshop, included only a limited number of PG&E project records, and the SED Report expressly states that its findings are not statistically significant even for the limited population of deferred projects.¹⁰ Specifically, for the MAOP Validation audit, SED reviewed only 20

⁵ SED Report, pp. 16-18.

⁶ SED Report, p. 18.

⁷ SED Report, pp. 28-30.

⁸ SED Report, pp. 30-31.

² SED Report, p. 1. This finding is also reiterated in the Conclusion to the SED Report at page 33.

¹⁰ See, SED Report, p. 8 (“It is important to highlight that this [MAOP Validation] review was not intended to provide a statistically significant assessment of data accuracy of the MAOP Validation project as a whole...”) and p. 21 (“... it is important to highlight that this [PSEP] review was not intended to provide a statistically significant assessment of data accuracy supporting the updated application...”).

- pipeline features lists (PFLs) out of a total of 12,309 PFLs, and it did not review all segments within a PFL.¹¹ For the PSEP audit, SED “[c]onducted at least one test on 42 [PG&E] workbooks” and it found that 12 of those workbooks “contained errors.”¹² While SED did not disclose the total number of PG&E workbooks available for review, there are a total of 381 PSEP projects that SED could have reviewed.¹³
- Second, notwithstanding the small number of projects examined, the SED Report documents errors that ORA would define as safety risks. For example, SED discovered that line 181B has an MAOP nearly 20% higher than is supported by pipeline feature data.¹⁴
- Third, SED does not define what it means by “safety concerns.” The Report’s absence of a definition of “safety concerns” raises the question of why, for example, a line operating nearly 20% higher than its MAOP, or inappropriately operating a pipeline with a reduced margin of safety under 49 CFR § 192.611 (without the pipeline having experienced a class location change) does not raise safety concerns.¹⁵

Based on the issues identified in the Report, it seems that the Report at most can conclude that the limited sampling of projects SED reviewed raise “no imminent safety concerns.” However, even such a limited conclusion seems tenuous.

The SED Report recommends that there should be no delay in the PSEP program, based principally on its conclusion of “no imminent safety concerns.” But this recommendation implies that SED’s findings can be extrapolated to PG&E’s entire transmission pipeline system (which is not a valid assumption if SED’s findings are not statistically significant), and gives the misleading impression that SED has determined that the entire PG&E gas transmission system is safe.

¹¹ Compare SED Report, p. 10 to PG&E Testimony, Table 3-1, Line 1. SED’s sampling was not random, and could not be used to support statistical analysis even if there were a larger sample: PFLs were selected in part because they related to cancelled projects, and the “weakest” or oldest features within a PFL were selected. *See*, SED Report, p. 10.

¹² *See*, Slide 13 of SED’s May 5, 2014 Workshop Presentation.

¹³ PG&E Testimony, Table 3-1, Lines 2-7, indicates there were a total of 381 workbooks. ORA received 380 workbooks in response to a data request.

¹⁴ *See*, SED Report, p. A-4 comment for result number 19. Based on statements at the workshop, it may be that the pipeline was operated approximately 2% over MAOP, not 20%.

¹⁵ *See*, SED Report, p. 13 (“PG&E’s method for validating the MAOP systematically relies on using this section of the code to apply a lower factor of safety for those instances where [sic] a feature’s MAOP of Design does not support the MAOP of Record and the class location, as installed, is unknown.”)

C. The Executive Summary Should Be Revised To Reflect The Actual Findings Of The Audit

As described above, the principal conclusions of the Executive Summary – regarding PG&E’s compliance with Commission decisions and the safety of PG&E’s system – are inconsistent with much of the substance of the SED Report. At a minimum, the Executive Summary should be revised to accurately summarize the findings of the SED Report chronicled on pages 3 to 32, and to eliminate, or at least clarify, the conclusions that are inconsistent with those findings.

Among other things, SED should specifically address the following questions:

1. How does SED define a “safety concern” in the context of the SED Report? Do SEDs findings on MAOP Validation as compared to the PSEP review lead to different safety concerns? If so, the two differences should be clearly described.
2. How does SED define “imminent”?
3. What types of errors would SED consider as leading to an “imminent safety concern?” Would a type 5 error in MAOP Validation have the same impact as a type 5 error in PSEP?
4. Do SED’s findings suggest any safety concern for a period longer than what SED defines as “imminent”?
5. To the extent PG&E is not following its own procedures, what are the safety implications for PG&E’s gas transmission system?
6. Why does SED assume that operating a pipeline improperly under the requirements of 49 CFR § 192.611 does not pose a safety concern? ORA understands that operating older pipes at higher pressures increases the risk of failure and therefore decreases safety margins, particularly in areas where greater populations exist than when the pipelines were designed and installed.
 - a) How is this issue being addressed in the Order Instituting Investigation 11-11-009?
 - b) How many feet of pipeline that SED reviewed were being operated in inappropriate reliance on 49 CFR § 192.611?
 - c) Has SED determined PG&E’s interpretation of 49 CFR § 192.611 is incorrect? If so, who made this determination in SED?

- d) Given the apparent confusion around the application of 49 CFR § 192.611, has SED sought clarification from the Pipeline Hazardous Materials Safety Administration (PHMSA)? If SED has received an interpretation, then it should share that interpretation.

II. The SED Report Should Clearly Identify High Priority Pipelines That Would Have Been Tested Or Replaced In Phase 1 If The PSEP Update Had Been Applied to All Transmission Pipelines

The SED Report recognizes that PG&E failed to run all of its pipelines through the Decision Tree following MAOP Validation. In doing so, PG&E eliminated the possibility of moving higher priority projects identified by the MAOP Validation into PSEP Phase 1, as was contemplated in D.12-12-030.¹⁶ SED was aware of this shortcoming prior to the PSEP audit in January 2014,¹⁷ and SED asked PG&E to run a “preliminary query” to identify pipelines still missing valid test results that were not included in the PSEP Update. Those results are provided on page 29 of the SED Report. However, the SED Report provides no analysis of this information, or any explanation of the results of the query. Instead, the SED Report simply comments: “Ideally, as the MAOP Validation Project evolved, PG&E should have been continually updating its PSEP database to incorporate and re-prioritize all priority Phase 1 segments.”¹⁸

In order to clarify that high priority work not included in the PSEP Update was identified through the MAOP Validation, ORA recommends that the SED Report be supplemented with the following information:

1. A description of the “preliminary query” performed by PG&E, and the limitations of that query;
2. A breakdown by segment footage and Decision Tree (DT) outcome of all pipelines requiring Phase 1 mitigation, based on the MAOP Validation, but excluded from PSEP Phase 1; and

¹⁶ D.12-12-030 OP 11 directed PG&E to “update its Implementation Plan” “after the completion of its Maximum Allowable Operating Pressure validation and records search.” OP 6 stated that “the adopted expense and capital amounts for any program shall be reduced by the cost of any Implementation Plan project not completed and not replaced with a higher priority project.” Taken together, ORA concludes that the Commission intended for PG&E to re-run the decision tree on all transmission pipelines using the improved data from the MAOP validation project, and replace projects eliminated due to found records with projects found to require Phase 1 mitigation.

¹⁷ Based on SED staff comment at the January 14, 2014 pre-audit meeting.

¹⁸ SED Report, p. 29.

3. If any of the above information cannot be provided by PG&E, then an accurate and complete explanation should be provided of why this is not possible.

III. The SED Report Should Better Explain The Impacts of PG&E's Use Of Less Conservative Assumptions And Low Quality Data

The SED Report states that some PFLs “reflect a less conservative iteration of the PRUPF [Procedure for Resolution of Unknown Pipeline Features].”¹⁹ PG&E's use of less conservative assumptions than those assumptions it had submitted in its PSEP Update Application raises a safety concern.

To assist the Commission and parties in evaluating whether PG&E's engineering assumptions are reasonable, the SED Report should address the following:

1. Document SED's specific findings regarding its review of PG&E's PRUPF, including any changes in assumptions, if any.
2. Clarify whether federal regulations provide any guidance for assumptions when pipeline features are unknown.
3. If federal regulations do provide guidance, but only from a certain time period forward, clarify whether it is appropriate to use less conservative assumptions for older pipelines. Clarify if the use of assumptions that are less conservative than they should be poses any safety risk.
4. Clarify if there are any safety concerns during hydrotesting, operation, or maintenance, associated with using less conservative assumptions when features are unknown. Identify problems that could occur during hydrotesting, operations, or maintenance activities if a higher pressure than the actual features can withstand is used.
5. Clarify whether pipelines not wholly under PG&E's ownership should be subject to less conservative standards or vice-versa.

Similarly, the SED Report indicates that in some cases PG&E relied on low quality data to determine the MAOP of a line and to determine whether an appropriate pressure test had been performed.²⁰ The SED Report should address the following issues regarding the use of low-quality data:

¹⁹ SED Report, p. 14.

²⁰ SED Report, pp. 16-17 and 30-31.

1. Discuss the impact of using low quality data on the short-term reliability of a utility's natural gas system.
2. Identify whether there are safety concerns raised by gas system operations with low quality data.
3. What data quality categories identified by PG&E would not meet the National Transportation Safety Board (NTSB) or Commission criteria for MAOP validation?
4. Identify how many PFLs and miles of pipeline have been classified as having "traceable, verifiable, and complete" records of pressure testing that rely on low quality documents that "do not represent an actual performed test".²¹

IV. The SED Report Should Comment On The Overall Effectiveness Of PG&E's QA/QC Programs

SED's review of PG&E's MAOP Validation and PSEP Update relied upon PG&E's own QA/QC procedures, yet SED's analysis revealed errors that PG&E's QA/QC effort did not. This finding, coupled with SED's new in-depth familiarity with PG&E's QA/QC procedures, should position SED to comment on PG&E's QA/QC program, including addressing the following questions:

1. Can SED reach any statistical or non-statistical conclusions about the effectiveness of PG&E's QA/QC?
2. Based on the findings of PG&E's QA/QC, how many errors should SED have found during its review?
3. Does SED believe any changes are needed to PG&E's QA/QC as a result of its review?

V. The SED Report Should Provide Additional Details Regarding The MAOP Validation Errors Discovered

Type 4 errors are described in the SED Report as errors where there is an "impact on MAOP, [but] the error does not actually impact the MAOP of the PFL because it does not affect the limiting MAOP."²² Type 5 errors are defined as "errors result[ing] in an MAOP for the PFL that is less conservative" and sets the MAOP for the entire line.²³

²¹ See, e.g. SED Report, p. 31.

²² SED Report, pp. 11-12.

²³ SED Report, p. 12.

While it is possible that both Type 4 and Type 5 errors pose safety concerns, Type 5 errors would seem to result in an imminent safety threat since the segments would be operated at a pressure in excess of those allowed under federal law (which set minimum safety standards)²⁴. The SED Report should be supplemented to include more information on some of the errors it discovered, as follows:

1. With regard to Error 19, a Type 5 error identified on page A-4 of the SED Report, please explain:
 - a. The number of feet of pipeline impacted by the reduction of the MAOP;
 - b. The class location of the impacted portion of the pipeline, and if any other pipelines are impacted by this decrease in MAOP;
 - c. The steps PG&E should have taken in the PSEP if the correct MAOP had been used;
 - d. The risk to the public presented by an MAOP set at 82 psig (nearly 20%) higher than it should have been;
 - e. The risk to the public presented by an MAOP set at 8 psig (approximately 2%) higher than it should have been;²⁵ and
 - f. Any reporting requirements that are triggered in the event an MAOP is set a certain percentage above the correct MAOP. Address the triggering percentage and the relevant reporting requirements.
2. An explanation of whether, from a safety process perspective, Type 4 errors present less of a risk than Type 5 errors.
3. A description of the specific steps SED is taking to verify that PG&E has taken, or will undertake, corrections to the Type 4 and 5 errors identified in the SED Report.

²⁴ 49 CFR § 192.1(a).

²⁵ ORA understands from the May 5, 2014 Workshop that the reduction was in the order of 8 psig, not 82 as noted in the SED Report.

4. An explanation of non-adjusted test pressures²⁶ and whether SED identified instances where this invalidated a test. The explanation should also address whether it might invalidate a test for other projects and the pervasiveness of the issue in SED's review.

²⁶ ORA understands that during a hydrotest, the pressure varies along the length of the pipe due to changes in elevation, e.g. the total pressure is the static pressure applied by the test equipment plus the weight of the water. Pipe locations lower in elevation than the test control point have a total pressure higher than the pressure recorded at the control point due to the extra weight of water. Similarly, locations higher than the test control point have less water adding pressure, such that the lowest pressure experienced along the test section typically occurs at the highest elevation. It is not clear, however, whether the term "adjusted test pressure" used in the SED Report is the pressure at the highest point of the test section, which has the minimum total pressure based on elevation, or if other factors are encompassed within this term.