PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

July 6, 2017

GI-2017-04-PGE29-09

Mr. Sumeet Singh, Vice President
Pacific Gas and Electric Company
Portfolio Management & Engineering
6111 Bollinger Canyon Road, Room 4590-D
San Ramon, CA 94583

SUBJECT: General Order 112 Gas Inspection of PG&E's Distribution Integrity Management Program (DIMP)

Dear Mr. Singh:

The Safety and Enforcement Division (SED) of the California Public Utilities Commission conducted a General Order112 inspection of Pacific Gas & Electric (PG&E) Company's Distribution Integrity Management Program (DIMP) from April 17-21 and May 23-25, 2017[1].

SED's findings are noted in the Summary of Inspection Findings (Summary) which is enclosed with this letter. The Summary reflects only those particular records that SED inspected during the audit.

Within 30 days of your receipt of this letter, please provide a written response indicating the measures taken by PG&E to address the observations noted in the Summary.

If you have any questions, please contact Sikandar Khatri at (415) 703-2565 or by email at Sikandar.Khatri@cpuc.ca.gov.

Sincerely,

Kenneth A. Bruno - Program Manager
Safety and Enforcement Division

Enclosure: Summary of Inspection Findings

cc: Dennis Lee, SED
Mike Bradley, PG&E Compliance Gas Operations
Susie Richmond, PG&E Gas Operations Regulatory Compliance and Risk Analysis
Kelly Dolcini, SED

[1] General Order 112-F was adopted by the Commission on June 25, 2015 via Decision 15-06-044.

SUMMARY OF INSPECTION FINDINGS

I. Probable Violations

Based on the records reviewed, SED did not find any violation of the Code of Federal Regulations – part 192 and General Order 112-F.

II. Areas of Concern/ Observations/Recommendations:

SED made the following observations during the audit. PG&E have created Corrective Action Program (CAP) notifications to address these, and draft language for the same was provided. Please provide final language for these CAP notifications together with status update.

1. PG&E has made changes to the definition of 'transmission' and 'distribution' assets (reference: TD- 4125P-10, effective date 01/01/2018). However, DIMP team mentioned that they have already started implementing some changes and Transmission Integrity Management Program (TIMP) will be evaluating some of assets that were previously considered under DIMP program.
   In addition, the current DIMP documents, for example, TD-4850P-01, page 28, has the definitions for "distribution > 60 psig" and 'Distribution pipe'.

   DIMP program should make the necessary changes in relevant documents to reflect the new definition and implement the same.

   PG&E through CAP notification, CAPN 112780109, Task 1 informed that it agrees to update the TD-4850P-01 to make the "distribution" definition consistent with TD-4125P-10 at the time the new definition takes effect. The transition of integrity management responsibility associated with the change in asset definition will be coordinated between TIMP and DIMP to ensure all assets are accounted for between the two programs. Please provide final language of CAP notification with status update, if any.

2. SED reviewed the "Gas Service Record" (GSR) form and recommends that PG&E should capture other additional data from field activities either in GSR or other platforms that might be relevant/critical for DIMP program either for current or future use. One most important data is the information on welder/joiner for each joint they make for traceability purposes.
   SED understands the steps PG&E is taking steps, for example digitizing the records which is currently focused on capturing plastic pipe information and may later evolve on capturing welder/joiner information for the joints they make. Also the current method of identifying employees who worked on a project through time sheets and logs is insufficient as it does not lead to find employee who made a particular joint.
   Therefore, SED strongly recommends that until digitizing projects are fully implemented, PG&E should capture information of welders and joiners for each joint they make for traceability purposes.

PG&E has created CAPN 112780109, task 2 for this purpose, but it does not address actions to take to start capturing this information from now. Please provide updated language of the CAP notification and status update.

3. PG&E procedure TD-4850P-01 on page 29 defines "potential threat" as 'A threat to a system component or system process that has not yet resulted in a leak'.

   PHMSA FAQ's C4.b.9 on DIMP requires operator to consider reasonably available information to identify existing and potential threats (include threats that are known potential threats that the operator has not experienced yet as well as threats that have not resulted in a leak (e.g., near misses; GO112-F Section 105 Definitions).

   PG&E should review its procedure to address definition of potential threats as per above reference guideline so as not to limit potential threats to leaks only, and also implement the same.

   (Reference: CAPN 112780109, Task 3)

4. California Public Utilities Commission's General Order 112-F, Section 105 provides definition for the 'Near-miss events'. PG&E's DIMP Program does not define "Near-miss" events and neither implements the same. Therefore, DIMP documents should address it.
   (Reference: CAPN 112780109, Task 4)

5. Title 49 Code of Federal Regulations, Section §192.1007(b) identifies 'patrolling' as one source of data gathering. During audit, PG&E indicated that the DIMP team has used patrolling records in the past as a data resource; however, it is not being used anymore. SED highly recommends that PG&E should continue to use the available patrolling records to identify existing and potential threats; such as new landslide areas, missing supports for span and others.
   (Reference: CAPN 112780109, Task 5)

6. To ensure continuous improvement of PG&E DIMP Program, SED recommends that PG&E review the Gas Piping Technology Committee (GPTC) guidance and other industry resources to ensure integrity management program maturity. For example, PG&E can perform an exercise on suggested threat sub-categories in GPTC and make a determination that how these can be applied into PG&E and record the reasons for their inclusion or otherwise.
   (Reference: CAPN 112780109, Task 6)

7. SED reviewed results of DIMP risk ranking carried out for 2016. It was found that the "Other" ranked high on the list. An example is that 'others' category had "no dope/deteriorated dope' which can be accommodated under material failure or equipment.
   SED recommends that PG&E's DIMP team should review existing field forms and determine whether these need to be updated or field personnel be trained to ensure incoming data are accurate to reduce the threats going to 'other' category.
   (Reference: CAPN 112780109, Task 7)

8. PG&E defines interactive threats in TD-4850P-01, section 5.2(3). However, during the audit PG&E did not demonstrate whether they are considering any interactive threats for calculating the risk.
   One examples of Interactive Threats (interaction of multiple threats) can be a potential threat (rock impingement for plastic) to prioritize replacement. PG&E should look to its leak and incident history and operations and maintenance history to identify interactive threats specific to its system. Examples are:
   • Slow crack growth in older plastics where pipeline was pinched during operational event or where over-squeeze occurred due to improper tools or procedure
   • Slow crack growth in older plastics where non-modern construction practices were used
   • Water main leakage areas or areas of soil subsidence with cast iron mains
   • Installation of mechanical fittings without restraint in soils or conditions (excavation damage) that cause pipe to pull out of fitting

   (Reference: CAPN 112780109, Task 8)

9. SED reviewed PG&E's Attachment N –Risk Algorithm and understands that PG&E considers the following factors affecting consequence: severity, population density, migration and pressure.

   - 2.2.2.1 Severity factor –Table 1: Severity factor values. Highest value is 1. Unknown is assigned a value of 0.5 in this category.

     PG&E should consider that "unknown" should carry a weighting factor value of the worst case scenario which is 1 in this case

   - 2.2.2.2 Population Density Factor includes:

     * Public Assembly locations
     * Large customer meters (customer type = residential or commercial complexes, or large industrial or commercial)
     * Inside meter sets
     * Overbuilds

     Where assets are within 100 feet of one of these locations, the Population Density factor is assigned a value of 1.0. For Above Ground Facility features, this factor only uses statuses for large customer meters and inside meter from the feature being scored.

     What factors will PG&E assign if there are multiple situations at a location? For example, public assembly location in high population density area etc.

   - 2.2.2.3 Migration factor, Table 3-Migration factor values

     For the case of "other" the assigned value is 0.5. PG&E did not define "other" in its Mitigation Factor.

   - 2.2.2.4 Pressure factor-The Pressure factor uses the pressure classification of the asset to gauge the release rate of gas in the event of a failure. A higher pressure class results in a higher release rate and potentially affects a larger area. When pressure is not available, the Pressure Class is assumed to be HP and the factor defaults to 0.1.

PG&E should consider appropriate value for the case when pressure is not available.

In addition, SED recommends PG&E should consider including:

- Interactive threat of an adjacent facility on its pipelines.

- The railroad facilities located in proximity to its pipelines when calculating the consequence of failure for evaluating the risk.

- Applicable operating and environmental factors affecting consequence (e.g., paved area, hard to evacuate etc.). These are considered to be operating environment factors and must be considered as additional factors relating to consequence of failure when evaluating risk.

- Pipe diameter as additional factor relating to consequence of failure when evaluating risk–larger diameters will create situations where there may be greater consequence in the event any threat manifests a failure. Thus the larger diameters have higher consequence factors.

  (Reference: CAPN 112780109, Task 9)

10. PG&E has information on Steering Committee (SC) in attachment E of the procedure TD-4850P-01. SED would like to emphasize that if SC members are required to provide an expert opinion on a technical matter for decision making, then they should meet the definition of "subject matter expert" as outlined in PHMSA DIMP FAQ C.4.a.3. "Subject matter experts are simply people who have specific knowledge of topics and/or facilities under consideration. This includes the operator's operations and maintenance personnel - the people who construct, inspect, maintain and oversee it distribution facilities day-to-day …"
    (Reference: CAPN 112780109, Task 10)

11. PG&E procedure TD-4850P-01, section 6.8 talks about validation including comparison to previous years and adjustment to risk logarithm, if needed. PG&E should continue to perform validation against the expectations based on knowledge of the system and mitigation activities and other resources, as available.
    (Reference: CAPN 112780109, Task 11)

12. Attachment A–Mitigation activities, 4.0 Attachment A-mitigation Activities for DIMP cycle 2012 showed that Permasert and Kerotest curb valves leaks were considered under incorrect operation threat. In 2015 the same valves were classified under incorrect operation, equipment failure, material or welds. SED requests that PG&E provide additional information regarding these valves to verify if the cause of the leak is related to incorrect operation, equipment failure, material or welds?
    (Reference: CAPN 112780109, Task 12)

13. SED recommends that when a change in weighting factors, algorithm etc. is made for risk model, the modified model should be re-run on previous data. For validation purposes, the model results with new parameters should be compared with previous model results and also with the observations made through mitigation measures/field observations to ensure that the changes are driving the model in right direction.

(Reference: CAPN 112780109, Task 13)

14. SED discussed with DIMP team the Discovery Bay incident that occurred in December, 2015. Due to this incident, wet gas entered into the system. SED would like to know that if any other PG&E team studied the risk of moisture intrusion into the distribution system. If it was studied, please let us know the details of steps/measures taken and what the conclusion was. During the audit, the DIMP team further stated that the pipeline system in Discovery Bay area is plastic and therefore there is no concern about the internal corrosion. Please confirm the same.
    (Reference: CAPN 112780109, Task 14)

15. Title 49 Code of Federal Regulations, §192.1007(g) Report results requires operator on an annual basis to report the four measures listed in paragraphs (e)(1)(i) through (e)(1)(iv).
    SED recommends that in addition to reporting these measures, PG&E should monitor the trends on these performance measures and perform a root cause analysis triggered by the determination of high risk, if applicable.
    (Reference: CAPN 112780109, Task 15)

SED also made following observations during the second week of the audit. Please provide final language of CAP items and status update on the same:

16. PG&E explained that currently it uses Riskfinder model for the assets which operate at ≤ 60psig. For assets greater than 60 psig, PG&E uses previous leak based model. We understand that PG&E's document "2016 Known Threats Risk Assessment Results" has information on this, but PG&E procedures do not specify that which methods will be used for two types of assets. Therefore, PG&E should make this clear in their relevant procedures.

17. Attachment N, table 1 has severity factor values. It has severity factor values for Other – Pipe Dope. SED discussed with PG&E and it has been agreed that these issues identified as Pipe Dope – others should be re-classified under Material Failure or as PG&E determine to be appropriate. SED reviewed PG&E Cause Analysis Report for pipe dope, "CA 2016-03 Pipe Dope", which states on page 5, "The reason behind this type of leak could be associated with lack of riser thread quality and the quality of the pipe dope itself".
    Therefore, SED recommends that the severity factor value for Pipe Dope should be moved to another appropriate Primary Threat Category.

18. PG&E's A-from have information on 'leak cause' and 'leak source'. SED recommends that the listing under these two headings should be aligned with DIMP threat categories for capturing better information and thus reducing data being categorized under 'others'. In addition, as far as possible, the threat categories should be sub-categorized to finer level to capture detailed information for proper categorization.

19. PG&E procedure TD-4150P-01, section 4.6. talks about the 'new construction data' collection. Currently, RiskFinder model treat this the same way as the existing pipeline

assets, however, it should be recognized that some vintage data such as previous leaks data may not be applicable to it. Therefore, it is suggested that possibly these be assessed separately, however still considering all kinds of threats.

20. PG&E procedure TD-4850P-01 often refers to the term "DIMP manual". It was discussed that what is included in this? It appears that standard, procedure and all attachments are part of it. However, the language in the procedure sometime is confusing. One example is section 1.4 of TD-4850P-01 which states:
    "This utility procedure and the attachments to the DIMP Manual will be reviewed and updated as necessary to implement annual and periodic reviews."
    SED suggests that the language in new revision of DIMP documents should address this correctly.

21. PG&E's model RiskFinder is defined in Attachment N. In this document, the section 2.2.2.2 Population Density Factors has two items 'Inside Meter Sets' and 'overbuilds'. SED discussed and PG&E indicated that these will be moved to section 2.2.2.3 Migration Factor.

22. There is a lot of information captured by field personnel on A-form; this includes internal corrosion, external corrosion, soil type, pipe condition and others. SED suggests that this information can be used for validation purposes, when needed.

23. PG&E provided Cause Analysis Report, "2016 DIMP Cycle, CA No. 2016-06 October 2016". One of the items in this report under Mitigation Activities is "2016-06-04: Submit CAP to identified gap in leak reporting process. Station leaks are not fully captured under the normal leak program."

    Please provide an update on this CAP item.