Pacific Gas and Electric Company®

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November 6, 2023

By Email

Mr. Terence Eng
Program Manager
Gas Safety and Reliability Branch
Safety and Enforcement Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Re: General Order 112-F Gas Inspection of PG&E's Peninsula Division Area

Dear Mr. Eng:

Pacific Gas and Electric Company (PG&E) submits this response to the Safety and Enforcement Division's (SED) Post-Inspection Written Preliminary Findings (Summary) received October 4, 2023, stemming from the 2023 SED inspection of PG&E's Peninsula Division distribution pipeline assets conducted from July 10 to July 21, 2023.

For clarity, each of the items identified in the Summary will be repeated followed by PG&E's response.

Unsatisfactory Results:

None.

Concern #1: Design and Construction: Design of Pipe Components (DC.DPC)

Question Title, ID	Flanges and Flange Accessories, DC.DPC.FLANGE. O
Question	2. Do flanges and flange accessories meet the requirements of 192.147?
References	192.141 (192.147(a), 192.147(b), 192.147(c))
Assets Covered	Peninsula Division (88609 (04))
Issue Summary	SED team conducted field inspections at meter set regulation DR-B43 (Located at [redacted] Redwood City, CA) on 7/12/23 and found multiple flanges with stud bolts that are too short with the bolts not extending completely through the nut. Title 49 CFR §192.147(a) states, "Each flange or flange accessory (other than cast iron) must meet the minimum requirements of ASME/ANSI B 16.5 and MSS SP-44 (incorporated by reference, see §192.7), or the equivalent." American Society of Mechanical Engineers (ASME) / American National Standards Institute (ANSI) B 16.5, section 6.10.2 states, "6.10.2 Bolt Lengths. Stud bolt lengths, including the height of two heavy hexagon nuts, are shown as dimension L in Tables 7, 10, 13, 15, 17, 19, and 21 (Tables F7, F10, F13, F15, F17, F19, and F21 of Annex F). The tabulated stud bolt length L does not include the height of end points. An end point is defined as an unthreaded length, such as a chamfer, which extends beyond the thread. The method of calculating bolt lengths is explained in Annex D. The tabulated bolt lengths are reference dimensions. Users may select other bolting lengths." ASME B16.5-2003 Annex D requires that bolt length be calculated to include the length of the necessary nuts needed to connect the flange, plus the minimum flange thickness, plus the gasket thickness, plus the appropriate thickness tolerances.

Additionally, PG&E Gas Design Standard B-45.4: Flange Bolt-Tightening Sequence and Torque Values, section 2.1(E) states, "Bolts/studs must be fully engaged and extend completely through the nut, with a recommended minimum of one thread exposed. Any excess thread protruding beyond the nut face should be minimized with a recommendation, not to exceed ½ beyond nut face."

PG&E has already initiated a system wide self-report for the bolt thread engagement issue with Corrective Action Program (CAP) #126221073 having been created on 5/24/23. The bolt thread engagement issue was also included on the Q2 Internal Review Summary of Findings (IRSF) report which was submitted to SED on 7/13/23. PG&E created a work order for corrective action to be done on DR-B43 on the same date.

Response to Concern #1:

The flush bolt/nut thread engagement for flanged connections at DR-B43 have been brought into alignment with the recommended minimum of one thread extending beyond the nut as outlined in PG&E Gas Design Standard B-45.4, section 2.1(E) (see Att#01).

Corrective Action Program (CAP) #126221073 was created on May 24, 2023, and self-reported to SED on July 13, 2023, within the Q2 Internal Review Summary Findings (IRSF).

Concern #2: Time-Dependent Threats: External Corrosion - CP Monitoring (TD CPMONITOR)

Question Title, ID	Test Stations, TD. CPMONITOR.TESTSTATION. R
Question	15. Do records identify the location of test stations and show a sufficient number of test stations?
References	192.469
Assets Covered	Peninsula Division (88609 (04))
Issue Summary	SED found several records of low Cathodic Protection (CP) measurements, in addition to a down rectifier in the Colma area.

PG&E provided a rationale for not doing a resurvey of Cathodic Protection Areas (CPAs), which are intended to find a representative sample of pipe-to-soil test locations within a CPA. in their document *"Cancellation Notice for WP4133-02"*. This was a temporary stand down as stated in the *"Background, Justification and Rationale for Cancellation"* section of this document. This section states in part:

"...Overtime, the purpose and value of the resurvey process has diminished and has largely been limited to a paperwork exercise which, alone, has not achieved the above stated goals. Additionally, there are currently a large number of distribution "down" CPA's which require troubleshooting and corrective work in order to restore appropriate CP levels. This restoration work is required to be performed not only for the safety and integrity of PG&E's system but is also required prior to performing a resurvey for the results to be valid. Therefore, PG&E is temporarily standing down the resurvey process, effective immediately, in order to focus the corrosion mechanic resources on the critical CPA restoration work while corrosion engineering re-evaluates and revises the resurvey process in 2015."

SED staff agrees that restoring CPAs is critical work that should be conducted before resurvey work. However, this temporary stand down was implemented in 2015 and the resurvey work has not yet been re-established. Also, Gas Safety and Reliability Branch (GSRB) staff and PG&E staff observed field work in the North Peninsula area that

suggests that an additional step is needed in TD4181S and calls into question PG&E's decision to not perform resurveys.

GSRB and PG&E staff checked two random locations for Pipe-to-soil (P/S) reads in different CPAs. Each random location was near an identified CPA test point and was found to have low reads. The purpose of resurveys is to identify a representative sample of reads within a CPA that will ensure all other reads within the CPA are above the minimum requirements of -850mV. Therefore, the additional random reads should have been more negative than -850mV. However, they were not.

The locations and reads were as follows:

1. [redacted] Daly City (Random Read): -620mV
2. [redacted] South San Francisco (Random Read): -246mV.

SED recommends that PG&E include a process of doing one random check within each CPA when doing the yearly pipe to soil reads until PG&E can restore the resurvey process. Given that many CPAs are constantly changing, with steel pipe being replaced with Polyethylene (PE) pipe, the representative test points may no longer be valid. Random reads will ensure that low reads within a CPA have a better chance of being found since PG&E has temporarily suspended doing resurveys.

Response to Concern #2:

PG&E appreciates the feedback and recommendation from the CPUC. The Company has made many cathodic protection (CP) monitoring improvements since the suspension of the resurvey process in 2015. The CP monitoring locations were increased from two to three per CPA to approximately two reads per mile of main, providing better visibility into the health of the pipeline's CP system. In addition, PG&E introduced the Cathodic Protection Review Form (CPRF), Utility Procedure TD-4181P-102, which requires corrosion personnel to review all necessary projects prior to construction to provide feedback to ensure CP will not be adversely affected by the construction activities. This review also contains a post construction requirement to ensure the construction did not have a detrimental effect on the overall CP health of the pipeline. This review is completed nearly real time with the construction activities so any deficiencies are corrected promptly. Also, PG&E has continuing surveillance of the health of the pipeline's CP systems at random locations through various construction activities that require CP readings to be taken during pipe inspections. These reads, if determined to be deficient, create follow up actions for the corrosion operations teams to resolve.

The two low reads for pipe-to-soil at the locations where SED visited randomly were addressed by PG&E's corrosion group with two notification numbers: 127419587 for [redacted] Daly City, and 124758415 for [redacted] South San Francisco.

PG&E's approach is that CPA evaluation should be an ongoing activity and dynamically change with the pipe system rather than a set review once every six years. We continue to review maintenance practices to improve our CP monitoring activities.

Concern # 3 Time-Dependent Threats: External Corrosion - CP Monitoring (TD CPMONITOR)

Question Title, ID	Interference Currents, TD. CPMONITOR.INTFRCURRENT.R
Question	21. Do records document an effective program is in place to minimize detrimental effects of interference currents and that detrimental effects of interference currents from CP systems on other underground metallic structures are minimized?
References	192.491(c) (192.473(a))
Assets Covered	Peninsula Division (88609 (04))
Issue Summary	SED staff is concerned about interference currents from Bay Area Rapid Transit (BART) or AC interference currents for the following reasons.

- PG&E staff stated that there is no leak cause category of interference currents. Therefore, leaks that may be caused by interference currents such as BART DC interference cannot be identified and analyzed.
- During field activities on July 20, 2023, SED staff observed the following at casing #44912806, which cases a pipe which runs directly below the BART tracks and Interstate 280, as confirmed by a PG&E corrosion engineer. A pipe-to-soil read taken by a corrosion tech varied between positive and negative values as the train passed through the station, which is evidence of interference currents coming from the BART train system.

SED staff believes there are interference currents on PG&E's distribution pipeline segments in and around the BART train system, especially on segments going directly underneath the BART tracks and segments of the distribution system directly adjacent to the BART tracks.

SED recommends that PG&E train their corrosion staff to identify corrosion caused by DC or AC interference and include a "corrosion caused by AC/DC interference" category on their leak form.

Response to Concern #3:

PG&E appreciates the feedback and recommendation from the CPUC there are some corrosion morphologies that may imply that AC/DC interference are the root cause of the damage. Further investigation would be required to determine whether corrosion was caused by AC/DC interference. A visual review could be inconclusive and lead to false positive or false negative results. Thus, PG&E intends to rely on either Root Cause Analysis (RCA), Direct Cause Analysis (DCA), or the interference programs to ultimately determine if AC/DC interference are the causes of corrosion related damage.

Concern #4 Time-Dependent Threats: External Corrosion - CP Monitoring (TD CPMONITOR)

Question Title, ID	Interference Currents, TD. CPMONITOR.INTFRCURRENT.O
Question	22. Are areas of potential stray current identified, and if found, the detrimental effects of stray currents minimized?
References	192.473(a)
Assets Covered	Peninsula Division (88609 (04))
Issue Summary	SED staff is concerned about DC interference currents from BART for the following reasons.

- PG&E staff stated that there is no leak cause category of interference currents. Therefore, leaks that may be caused by interference currents such as BART DC interference cannot be identified and analyzed.
- During field activities on July 20, 2023, SED staff observed the following at casing #44912806, which cases a pipe which runs directly below the BART tracks and Interstate 280, as confirmed by a PG&E corrosion engineer. A pipe-to-soil read taken by a corrosion tech varied between positive and negative values as the train passed through the station, which is evidence of interference currents coming from the BART train system.

SED staff believes there are interference currents on PG&E's distribution pipeline segments in and around BART train system, especially on segments going directly underneath the BART tracks and segments of the distribution system directly adjacent to the BART tracks.

SED recommends that PG&E collect data of cathodic protection pipe-to-soil reads on mains located or going directly under the BART tracks to quantify the extent of the interference currents going to the mains.

Response to Concern #4:

PG&E appreciates the feedback and recommendation from the CPUC and plans to incorporate an identification and flagging opportunity for corrosion operations to utilize during annual CP maintenance on distribution lines that are seeing potential fluctuations due to BART. This can provide the company a better understanding of the possible influence due to BART.

Please contact [redacted] for any questions you may have regarding this response.

Sincerely,

Kristina Castrence
Director, Gas Regulatory and Risk

cc: Dennis Lee, CPUC
Jason McMillan, CPUC
Claudia Almengor, CPUC
Mohammad Noureddine, CPUC
[redacted]

Attachments:

Att-01 - Bolt-Nut Engagement - DR-B43.pdf