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Lafayette Pipeline Testing Follow Up

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Mr. Dawson,

Thank you for your continued interest in PG&E's gas safety work in the City of Lafayette and for your patience as I worked with our pipeline safety experts to gather the information requested. Below please find responses to and information regarding your questions.

Non-Traditional In-Line Inspection Results

As you know, PG&E conducted a non-traditional In-Line Inspection (NT-ILI) of the gas transmission line 191-1 in the City of Lafayette in November 2020. The inspection assessed the internal and external condition of the pipeline. As part of the NT-ILI, PG&E receives the data from the assessments in two phases. The preliminary report identified 69 indications of metal loss located between the Lafayette-Moraga Regional Trail and Orchard Road. Based off the preliminary report, PG&E initially identified 36 dig locations in order to conduct field evaluations of all 69 anomalies.

PG&E recently received the final report and was able to confirm metal loss anomalies related to manufacturing do not need to be examined in the field, as they are considered a stable threat since this section of pipeline was strength tested in 2014 to 912 pounds per square inch (psi), which is 3.2 times the Maximum Allowable Operating Pressure (MAOP). These 41 anomalies have a high safety factor calculated using the predicted failure pressure of the anomaly and the current operating pressure. As a result, we removed 41 anomalies at 23 dig locations from our plan.

The remaining 28 metal loss anomalies potentially interacting with the long seam weld are called by the inspection vendor as potential external corrosion anomalies. PG&E will direct examine these 28 anomalies in the field through 13 digs to confirm the corrosion and if any repairs are needed. These 13 dig locations have been made a priority and are currently permitted and scheduled for mobilization.

One metal loss anomaly was reported in close proximity of a girth weld that PG&E will consider for potential direct examination once the aforementioned 13 digs are complete. Any girth welds exposed during field examinations will be assessed for safety.

As part of PG&E's ILI process, anomalies determined to meet the criteria for immediate repair conditions described in 49 CFR §192, Subpart O will be excavated and examined. Any pipeline flaws which do not meet acceptance standards will be remediated in accordance with PG&E and industry standards.

Please note, PG&E limits certain gas pipeline, valve, regulator and station information, including its detailed and extensive construction, maintenance, inspection and testing records, from public disclosure for national security reasons consistent with federal laws that protect this type of information. Therefore, per PG&E policies, we are unable to provide the requested NT-ILI raw data report, nor a map depicting detailed dig information or gas pipeline facilities. PG&E does make its pipeline-related records available for inspection at all times by the California Public Utilities Commission (CPUC).

Weld Safety Information

Regarding your question about the conditions of welds on this section of pipeline in Lafayette, PG&E confirmed the welds are safe for continued operation through a strength test. This pipeline segment was strength tested in 2014 to 912psi for 8.3 hours (3.2 times the MAOP), providing confidence that the welds are safe. Strength testing is an accepted assessment method for the manufacturing threat, which includes seam weld stability. This pipeline segment is classified as having a stable manufacturing seam threat.

Please note, the NT-ILI does not provide full condition information for welds; NT-ILI tools report metal loss anomalies, which in some cases interact with welds, requiring direct examination in the field for confirmation, characterization, assessment and remediation, as appropriate. All flaws identified via direct examination will be assessed for fitness-for-service, using industry accepted fracture mechanics analysis, and continued safe operation; this assessment will include any flaws confirmed to be associated with welds.

Safety and Future Maintenance of the Pipeline

PG&E will continue to address this pipeline for threats in accordance with 49 CFR §192, Subpart O. When the work associated with the recent NT-ILI is complete, the current assessment requirements on this pipe segment will be satisfied and subsequent reinspection will be performed on the appropriate interval. The findings from the current inspection will be factored into this interval.

PG&E also has a comprehensive inspection and monitoring program to ensure the safety of its natural gas transmission and distribution pipeline system. PG&E regularly conducts patrols, leak surveys and cathodic protection (corrosion protection) system inspections for its natural gas pipelines.

- **Patrols:** PG&E patrols its gas transmission and gas distribution pipelines at least quarterly to look for indications of construction activity and other factors affecting pipeline safety and operation.
- **Leak Surveys:** PG&E conducts leak surveys of its natural gas transmission pipelines semi-annually. Leak surveys are either conducted by a leak surveyor walking above the pipeline with leak detection instruments or conducted aerially and followed-up with a ground leak survey if there is a leak indication identified during the aerial survey.
- **Cathodic Protection System Inspections:** PG&E utilizes an active cathodic protection (CP) system on its gas transmission and steel distribution pipelines to protect them against corrosion. PG&E inspects its CP systems annually and current sources bi-monthly to ensure they are operating correctly. **PG&E has completed improvements to the cathodic protection systems on Line 191-1 in Lafayette which include additional monitoring locations and remote monitoring units for the rectifiers that provide better visibility into the systems' performance. PG&E is currently working on improving the cathodic protection system on Line 191-1 in Lafayette in order to use a more conservative cathodic protection criteria, with a target date of January 1, 2022. Initial investigations into the effects of Bay Area Rapid Transit (BART) on transmission pipelines in Lafayette were completed in 2019 and 2020. PG&E has initiated Project C-1424 to address BART's DC current effects on PG&E's cathodic protection system and plans to complete in 2021 with follow-up testing to be completed in 2022.**
- **Integrity Assessments:** PG&E incorporates three federally-approved methods in its Transmission Integrity Management Program: In-Line Inspections (ILI), Direct Assessment (DA) and Pressure Testing. An ILI involves a tool (commonly known as a "pig") being inserted into the pipeline to identify any areas of concern such as potential metal loss (corrosion) or geometric abnormalities (dents) in the pipeline. Direct Assessment may involve any of three separate processes to assess for the presence of External Corrosion (EC), Internal Corrosion (IC) and Stress Corrosion Cracking (SCC), depending on the specific threat(s) identified. During ECDA, ICDA or SCCDA, the pipe is excavated in order to perform direct examination of the pipe in identified areas of concern. Pressure testing is a strength test normally conducted using water, which is also referred to as a hydrostatic test. PG&E performs pipeline integrity assessments on its sections of transmission pipeline in high consequence areas (HCAs) at least every seven years. The maximum allowable reassessment interval for integrity assessments are summarized in the Code of Federal Regulations (CFR) (see 49 CFR Part 192, Subpart O).

- **Atmospheric Corrosion Inspections:** PG&E inspects the steel components of its gas distribution and transmission systems exposed to the atmosphere at least once every three years for atmospheric corrosion.

Below please find information on integrity assessments for gas transmission pipeline DFM 3001-01 and DFM 3002-01.

Line	Most Recent Projects		Results	Next Planned Assessment
	Date/Project Type	Location		
DFM 3001-01	2018, 2020 (Pipe Replacement)	2018: St Mary's Rd between South Lucille Lane and Rheem Boulevard 2020: St Mary's Rd between South Lucille Lane and Rheem Boulevard	Installed new pipe	2026: Strength Test near St. Mary's Rd and Woodview Dr to Rheem Blvd
DFM 3002-01	2013 (ECDA)	Intersection of Mt. Diablo Blvd and Moraga Rd	No issues requiring corrective action	2024: Strength Test near Downtown Lafayette on Mt Diablo Blvd towards Risa Rd
	2020 (Strength Test)	Downtown Lafayette	Complete	2027: integrity re-assessment (for pipe tested in 2020)

The below table provides an overview of previous and upcoming planned transmission pipeline projects within the City of Lafayette.

Transmission Pipeline Projects in Lafayette
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Line	Approximate Location of Pipeline Project	Description of Work	Planned Date of Execution	Program
DFM 3001-01	St. Mary's Road between South Lucille Lane and Rheem Boulevard	Replace ~400 feet of pipe	Project Complete	Capacity Program ¹
DFM 3002-01	Near the intersection of Moraga Road and Mount Diablo Boulevard	Assess ~1,700 feet of pipe	Project Complete	Strength Test
DFM 3002-01	Mount Diablo Boulevard east of the entrance to the Lafayette Reservoir Recreation Area, Mount Diablo Boulevard and Moraga Road intersection	Improvements to cathodic protection system to address DC interference issues	Project Complete	DC Interference Mitigation ³
L-191-1	Moraga Blvd to Deer Hill Rd	Inspect ~5,200 feet of pipe using non-traditional In-Line Inspection tool	Project Complete	NT-ILI Program ^{2a}
L-191-1	Along Olympic Blvd to Reliez Station Road	Inspect ~5 miles of pipe using traditional In Line Inspection tools	Project Complete	ILI Program ²
L-191-1	Along Olympic Blvd to Reliez Station Road	Re-inspect ~5 miles of pipe using traditional In Line Inspection tools	Scheduled to mobilize April 12, 2021	ILI Program ²
L-191-1	Moraga Blvd to Deer Hill Rd	Excavate multiple dig sites to identify and assess anomalies detected via NT-ILI	Ongoing (expect to be completed end of 2021)	ILI Program ² , NT-ILI Program ^{2a}

¹The Gas Capacity Program identifies and mitigates current and future gas capacity constraints. Gas systems are designed to provide safe and reliable service under predefined "design days" of abnormally high loading conditions. As systems are identified as constrained (or near constrained) under these conditions, a capacity project is created to mitigate the potential capacity shortfall to ensure the system maintains a minimum gas pressure under the design loading conditions. Note, gas load studies are continuously updated to identify these capacity needs.

²PG&E's In-Line Inspection (ILI) and is performed by inserting technologically advanced tools which are typically propelled by the flow of natural gas into the pipeline to maintain the integrity of the pipeline by detecting external and internal metal loss as well as any geometric abnormalities. In order for the tools to successfully travel through a pipeline any obstructions that would prevent passage must be replaced and launchers and receivers must be built in order to insert the tool into the pipeline and retrieve the tool at the end of the inspection.

^{2a} Non-Traditional In-Line Inspection (NT-ILI) utilizes similar tools and technologies but are typically not propelled by the flow of natural gas and typically used to maintain the integrity of shorter sections of pipeline where system constraints or inspection scope may make traditional inspections infeasible.

³External Corrosion is considered a time dependent threat to the PG&E gas transmission and must be mitigated to prevent corrosion failure of the pipelines and subsequent release of gas.

Dynamic Direct Current Interference (DCI) is the phenomenon by which a metallic structure, such as a pipeline, picks up stray current leaked by an external DC power system into the soil and subsequently discharges this current, causing accelerated corrosion at the location of current discharge. Dynamic (or stray) DCI sources may include DC powered transit systems such as BART, Muni or VTA.

For DCI mitigation systems, grounding systems using magnesium anodes or other grounds are typically used to discharge any unwanted stray current to ground. The stray currents are transferred to the anode grounds which then preferentially corrode instead of the pipeline. Supplemental conventional cathodic protection (CP) is also another effective technique to help reduce adverse external corrosion effects of DCI stray currents on a pipeline system. A combination of grounding systems and CP systems is found most effective to mitigate harmful effects of stray currents from transit systems

Thank you again for your interest in our continued gas safety work in the City of Lafayette.

Thanks,

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