

## Areas of Concern for PG&E's Integrity Management Program

Objectives for regulated gas transmission (GT) integrity management (IM) programs include accelerating pipeline integrity assessment in areas of high consequence to public safety and increasing public assurance in pipeline safety. The Lafayette Gas Safety Task Force (GSTF) has concerns for PG&E's IM program, specifically regarding PG&E's lack of comprehensive threat identification, subsequent continuous risk assessment and prioritization of risk mitigation measures. Incomplete, erroneous, and/or outdated data used for risk assessment undermines IM program integrity. GSTF seeks verification of PG&E risk data to gain confidence in PG&E IM and risk mitigation measures. PG&E data has shown the likelihood of a gas transmission pipeline incident in Lafayette is low, yet PG&E has not adequately identified threats or completed integrity tests to validate data in the Lafayette baseline assessment. Since 2018, residents have asked PG&E for identified threats to local transmission pipeline and have yet to receive this accounting. Instead, GSTF provides community identified threats that may provide locally informed context for SED's TIMP audit. Summary of concerns and examples are not exhaustive. Notations within topics are for easier reference.

### **Inadequate High Consequence Area (HCA) identification**

HCA identification is critical to inclusion in regulatory IM programs for pipeline safety. GSTF lacks confidence in PG&E's timely HCA identification and reporting process. PG&E has provided conflicting reports as to HCA in Lafayette, i.e. whether and where it exists on lines. A significant example is PG&E confirmation during April 2020 Alliance meeting that Twin Canyon Girl Scout Camp, as pointed out by the GSTF, was not designated as HCA although qualifies as an "identified site". The camp site has operated 60+ years, hosting hundreds of day campers each summer. In 2012 the CPUC conducted a General Order 112-E audit of PG&E's TIMP program. The audit found PG&E "did not have any formal process to gather pipeline information from its other departments related to design, construction, operation and maintenance activities which can help gather data to identify new "identified sites"," and indicated steps for PG&E to remedy the finding<sup>1</sup>. No HCA designation at the camp site shows lack of remedy in this instance. Newly identified HCA has a 10-year window for baseline assessment, but this HCA site is not "new". Pipeline in this area was installed in 1952, is untested, and in an area of soil instability. How can assessment be accelerated at this site?

Sections of 3001-01 and 191-1 run along the Lafayette-Moraga Regional Trail, a linear park managed by East Bay Regional Park District (EBRPD). Hundreds of pedestrians and cyclists use this trail daily. Would these sections qualify as HCA per "identified site" factors?

GSTF would like confirmation that PG&E has designated HCA as appropriate where 191-1 and 3001-1 meet (191-1 feeds 3001-01) outside of the newly rebuilt regulator station<sup>3</sup>. 191-1 includes HCA at this location, 3001-01 does not<sup>2</sup>. The pipelines converge under a busy residential/commuter intersection (Olympic Blvd x Reliez Station Rd) which is also the location of an entrance to Lafayette-Moraga park trail and emergency evacuation route for multiple neighborhoods. Does proximity of multiple gas transmission lines affect HCA calculation for 3001-01 here?

<sup>1</sup> PG&E Response Letter to CPUC GO 112-E Dec. 17, 013 TIMP Audit Report, Finding NOV-1 re: Title 49 CFR § 192.905(b)(1), p.2, 2/18/14

<sup>2</sup> PG&E Data Response to CPUC, Index No. 12473.01 Supp01, 10/5/18

<sup>3</sup> PG&E Reliez x Olympic regulator station map, p.1, Homeowner Assoc. Meeting, 11/7/19

## **Incomplete Integrity Assessment**

58% of transmission pipeline (approx. 6.4 of 11 miles) in Lafayette has no record of pressure test that would validate maximum allowable operating pressure (MAOP)<sup>1,2</sup>. California PUC Code § 958 calls for gas operators to test or replace pipeline that has no record of strength test. PG&E reports it plans to complete pressure testing for Lafayette transmission lines by 2026. By then, untested pipelines will have components, including vintage lap welds and furnace butt welds<sup>2,3</sup>, that are 75+ years out of compliance with modern standards. 100% of transmission pipeline in Lafayette has not been assessed by traditional ILI testing<sup>4</sup>. Recent “non-traditional” ILI on 191B found an “immediate repair” manufacturing threat anomaly but the extent and other findings of this testing is unknown. PG&E has no report of ECDA on 191A, 191B, or 3001-01<sup>5</sup> and direct assessment on 191-1 and 3002-1 is minimal<sup>6</sup>. PG&E reports portions of untested 1952 installed pipeline on 191-1 runs at 44% SMYS<sup>3</sup>. This pipeline runs through city center, under Hwy. 24, through Girl Scout camp site and Briones Park. How is PG&E updating baseline assessment of untested, aging lines in Lafayette? GSTF notes that in 2015. PG&E was cited and fined in violation of, among other safety laws, Title 49, CFR, § 192.937 regarding “lack of continual process of evaluation and assessment to maintain a pipeline’s integrity”<sup>5</sup>.

<sup>1</sup> CPUC MAOP Validation Report – Lafayette, 6/28/19

<sup>2</sup> PG&E Gas Safety Q&A (PG&E response to Lafayette questions), PG&E, p.48-49, 8/18

<sup>3</sup> PG&E Data Response to CPUC, Index No. 12473.01 Supp01, 10/5/18

<sup>4</sup> “Pipeline Information for the City of Lafayette”, PG&E, p. 15, 8/17

<sup>5</sup> PG&E Data Response to CPUC, Index No. 12448-01, 10/5/18

<sup>6</sup> CPUC Citation for Violations Pursuant to Resolution ALJ-274 of GO-122-E, #ALJ 274 15-01-002, 1/23/15

## **Reclassified Transmission Pipeline - former Distribution Feeder Main (DFM) pipeline**

In 2014 PG&E explained re-categorization of distribution pipeline assets “in light of 49 CFR 192.3” and related PHMSA interpretation letters<sup>1</sup>. DFM lines 3001-01 and 3002-01 in Lafayette were part of the 920 distribution pipeline miles reclassified as transmission pipeline although it is unclear when, as 2011 PG&E GT maps include these two lines<sup>2</sup>. Since HCA identification impacts IM assessment schedules, when was PG&E required to determine HCA on these lines? GSTF notes CPUC made related finding in terms of no clear establishment of “HCA identification date” per its 2013 GO 112-E PG&E TIMP audit<sup>3</sup>. GSTF would posit the former DFM lines were operating in areas of high consequence prior to re-classification. These lines were first installed in 1940s and ‘50s, include small diameter pipeline (3.5” or 4.5”), and are relatively high pressure (170psi and 283psi)<sup>4</sup>. 70% - 90% of these lines, respectively, are untested, e.g. 2.3 of 2.55 miles of 3002-01<sup>5</sup>. They run through residential neighborhoods, city center, and under major streets to neighbor cities and commuter routes.

In the April 2019 Alliance meeting, PG&E provided a handout that showed several PG&E incident prevention measures on distribution mains “do not meet industry best practices AND current controls are not adequate”<sup>6</sup>. This determination specifically referred to prevention measures on distribution mains against corrosion (cathodic protection), construction material and weld defects (inspection during manufacturing), incorrect operation (design and patrol), and for emergency response (emergency shutdown zones)<sup>5</sup>. This reporting is significant as reclassified lines were historically managed per this threat matrix. GSTF requests verification that PG&E’s GT IM program for lines 3001-01 and 3002-01 is comprehensive considering PG&E’s acknowledged, substandard safety measures on (former) DM lines.

<sup>1</sup> “PG&E Gas Safety Plan September 30, 2014 Revision 2 GP-1000”, PG&E, p. 16, 9/30/14

<sup>2</sup> PG&E Gas Transmission Pipeline Map 23 & 27, PG&E GIS 3/15/11

<sup>3</sup> PG&E Response Letter to CPUC GO 112-E Dec. 17, 013 TIMP Audit Report, Finding NOV-2 re: Title 49 CFR § 192.905(c), p. 5, 2/18/14

<sup>4</sup> “Pipeline Information for the City of Lafayette”, PG&E, 8/2017

<sup>5</sup> PG&E Gas Safety Q&A (PG&E response to Lafayette questions), PG&E, p.48-49, 8/18

<sup>6</sup> [Lafayette Gas Safety Meeting presentation handout](#), PG&E, p.7, Alliance meeting 4/25/19

### **Construction Concerns – welds, over-pressurization, unrepaired anomaly, MAOP test data**

Transmission pipeline in Lafayette includes many manufacturing bends<sup>1</sup> likely to accommodate the city’s unique topography, e.g. rolling hillsides, creeks, steep slopes. Primary concern for construction threats is unknown condition of untested welds from 1940s and ‘50s that may have higher potential for defect. 58% of transmission pipeline in Lafayette has no record of strength test (approx. 6.4 of 11 miles)<sup>2,3</sup>. The untested mileage is predominantly of 1940s and ‘50s construction and 191-1, 191B, 3001-01, and 3002-01 all include untested sections from this era. The NTSB’s investigation of the San Bruno pipeline explosion found “the rupture of Line 132 was caused by a fracture that originated in the partially welded longitudinal seam of one of six short pipe sections, which are known in the industry as “pups.””<sup>4</sup>. Last year, a 3<sup>rd</sup> party investigated two pipeline spans on 191-1: a 40’ span at Girl Scout Camp and a 47’ span at Buckeye Ranch Trail<sup>5</sup>. The investigation neither identified location or type of welds on the spans nor determined fabrication of the Buckeye Ranch trail curvature<sup>6</sup> aside from “likely possibilities” of “mitered small pipe sections that were welded” or cold bend. We hope that the PG&E TIMP audit in Lafayette might review documentation as to location and assessment of welds on this pipeline. If not available, GSTF would request appropriate evaluation and/or tools (e.g. removal of coating, radiography) that could determine the information.

In the Superseding Indictment filed by the United States of America against PG&E, there are 3 separate indictment counts specific to 191-1<sup>7</sup>. One of these counts refers to “changed circumstance” (over-pressurization)<sup>8</sup>. This circumstance exacerbates concern particularly for untested 1952 installed pipeline (which includes sections at Girl Scout Camp and the span at Buckeye Ranch Trail). Some MAOP test dates on 191-1 pre-date installation (1970, 2001)<sup>1</sup>. What is the explanation for the discrepancy? A 2013 ECDA excavation<sup>9</sup> found an “undetermined pipeline anomaly” and cut out and replacement was recommended for the affected section. Was the mitigation performed?

191-1 is a bi-directional line, flowing south easterly from Martinez to downtown Lafayette, and south westerly from Pittsburg to downtown where it connects to 3.5” diameter pipeline of 3002-01. Can SED determine if PG&E is monitoring any heightened safety threats in this central downtown intersection?

Recent untraditional ILI testing on 191B found a “manufacturing metal loss” anomaly for immediate repair. Testing was triggered by a resident report of soil instability and subsequent geo-hazard monitoring on the 1947 installed yet the anomaly was not found on his property. What was the extent and findings of the testing? Is PG&E adjusting assessment of risk on similar sections of this pipeline?

3001-01 includes 4.5” diameter pipeline, including untested 1947 installed components operating at 32% SMYS<sup>1</sup>, prior to capacity project in 2018 for pipe replacement on St Mary’s Rd. GSTF would like to confirm the extent of 4.5” diameter pipeline replaced on this line, i.e. plan and priority for any remaining 1947 4.5” diameter sections, and that necessary measures to monitor abandoned pipeline are in place.

3002-01 runs off 191-1 beginning at city center location (Moraga Rd. x St. Mary’s Rd) runs through town, Lafayette Reservoir rim trails, and ends in Orinda. The line is 90% untested and predominantly 1940s-50s construction. Some MAOP test dates on 3002-01 pre-date installation (install years 1965, 2011)<sup>1</sup>.

<sup>1</sup> PG&E Data Response to CPUC, Index No. 12473.01 Supp01, 10/5/18

<sup>2</sup> CPUC MAOP Validation Report – Lafayette, 6/28/19

<sup>3</sup> PG&E Gas Safety Q&A (PG&E response to Lafayette questions), PG&E, p.48-49, 8/18

<sup>4</sup> [NTSB Accident Report, PG&E Gas Transmission Rupture and Fire, San Bruno, CA, Sept. 9. 2010](#), p. x

<sup>5</sup> "PG&E Line 191-1 Pipe Span Investigation", Exponent Inc., 10/16/19

<sup>6</sup> GSTF, PG&E Gas Safety Concerns, "[Gallery of PG&E Exposed Pipelines & Spans](#)", 2019

<sup>7</sup> U.S.A. v. PG&E, Superseding Indictment, counts 13, 20, 27, filed 7/30/14, Federal Court Northern CA

<sup>8</sup> Van Derbeken, Jaxon, "[PG&E Accused of Obstructing Justice in San Bruno Blast Probe](#)", SF Gate, Hearst Communications, 7/30/14; <https://www.sfgate.com/crime/article/PG-amp-E-accused-of-obstructing-justice-in-San-5655355.php#photo-6660042>

<sup>9</sup> PG&E Data Response to CPUC, Index No. 12448-01, 10/5/18

### **Exposed Pipeline - Threat Identification**

In 2018, PG&E reported 14 exposed sections of GT pipeline in Lafayette to the CPUC<sup>1</sup>. It is not clear if that report included the 47' span, sections at Girl Scout Camp, or former DFM lines. There is no verification for if, or when, exposed sections were included in PG&E's Atmospheric Corrosion Program. PG&E reports 8 of the exposed sections are "currently not exposed"<sup>2</sup> with no explanation.

The members of Lafayette's GSTF believe there is abundant evidence that PG&E is not proactively identifying threats to multiple exposed gas pipelines in Lafayette. For example, residents pointed out risk of trees falling on 3 separate spans on 191-1 and 191B since 2015 if not earlier. Last fall, the GSTF requested PG&E remove hazardous trees before red flag weather (Diablo wind, high fire conditions) and to inspect the 47' span at Buckeye Ranch Trail. GSTF appreciates subsequent 3<sup>rd</sup> party investigation of the 191-1 spans but it did not include weld identification or analysis<sup>3</sup>. Should weld analysis have been included? The spans are untested, 1952 installed construction<sup>4</sup> subject to defect-prone welds and flammable coal tar coating<sup>5</sup> among other threats. How is PG&E pro-actively mitigating these risks?

After residents brought the span at Buckeye Ranch Trail to their attention, the Contra Costa Fire Protection District also notified PG&E of their concerns for the exposed section including access, wildland fire, and seismic activity<sup>6</sup>.

<sup>1</sup> PG&E A17-11-009 Data Request Response No. OSA\_004-Q04, Exposed pipelines Lafayette 7/16/18

<sup>2</sup> "[Lafayette Gas Safety WROF Risk Management](#)" PG&E Alliance meeting presentation, p.10, 7/9/19

<sup>3</sup> "[PG&E Line 191-1 Pipe Span Investigation](#)", Exponent Inc., 10/16

<sup>4</sup> PG&E Gas Safety Q&A (PG&E response to Lafayette questions), PG&E, p.48-49, 8/18

<sup>5</sup> "[PG&E Briones Pipe Span Addendum](#)", Exponent Inc., 3/30/20

<sup>6</sup> Letter from Contra Costa County Deputy Fire Chief to PG&E regarding exposed pipeline, 9/13/19

### **Corrosion Prevention – inadequate CP, threat identification**

We seek verification that PG&E has at least adequate cathodic protection (CP) presently and had consistent, historic CP on all GT lines, with emphasis on 3001-01 and 3002-01, former distribution main pipeline. The "Threat Matrix - Distribution Mains and Services" documentation distributed at the April 2019 Alliance meeting showed substandard CP and inspection measures on (reclassified) DM pipeline<sup>1</sup>. PG&E conducted a Close Interval Survey recently and GSTF would like to know the extent and results. PG&E is implementing major electrical system update (increased capacity, wire hardening) on St. Mary's Rd. where 3001-01 runs beneath. Does electrical current pose compromise to CP in this area?

The Buckeye Ranch Trail span on 191-1 had coating damage to bare steel that PG&E was unaware of prior to GSTF bringing to their attention. Coating damage was on the bottom curve of the pipeline and edges looked slightly separated from the steel, possibly allowing moisture to enter<sup>2</sup>. Did PG&E

determine cause and implications of damage before covering with a sleeve? PG&E has an Atmospheric Corrosion Program to monitor exposed pipeline with no CP. How long have this span and other exposed sections<sup>3</sup> been recorded in this program? Did PG&E patrol reporting capture damage? Does PG&E have regular schedule for ground patrol to capture underside detail of spans (vs. aerial)? How does field data (patrol, repair) get integrated with program data, e.g. corrosion, vintage pipeline?

PG&E reported 8 of the 14 exposed pipeline sections identified to the CPUC are “currently not exposed”<sup>2</sup> and GSTF would like verification the sections have been buried and if CP is implemented as appropriate.

<sup>1</sup> [Lafayette Gas Safety Meeting presentation handout](#), PG&E, p.7, Alliance meeting 4/25/19

<sup>2</sup> GSTF, PG&E Gas Safety Concerns, [“Gallery of PG&E Exposed Pipelines & Spans”](#), 2019

<sup>3</sup> [“Lafayette Gas Safety WROF Risk Management”](#) PG&E Alliance meeting presentation, p.10, 7/9/19

### **Gas Shut-off Valves and Emergency Response**

The locations of existing gas shut-off valves are prohibitive to easy access and fast response and shut off zones are not clear for downtown and neighborhood areas. Manually operated shut off valves are either located at highly trafficked commuter intersections (for L191-1, 3001-01, 3002-01) or in remote Tier 3 wildfire zone at top of Briones Park (for 191-1, L191A, L191B)<sup>1</sup>. In 2017 PG&E reported 2 planned installations of automated valves in Lafayette. In 2018 PG&E reported only one would be installed. Why did PG&E change plans? The planned automated valve will not shut off gas in 191-1 (flowing south easterly from Briones to town center), 191A, or 191B and will be located at a busy intersection (Olympic Blvd. x Olympic Oaks Dr.) along the emergency evacuation route for multiple neighborhoods<sup>2</sup>.

Reclassified GT lines (3001-01, 3002-01) may include substandard emergency response measures, e.g. “Emergency Shutdown Zones” as acknowledged in recent PG&E reporting<sup>3</sup>. If not already remedied, substandard zoning may impact emergency response in Lafayette, Moraga, and Orinda as these lines originate from 191-1 in Lafayette and end in Moraga and Orinda, respectively.

<sup>1</sup> “Pipeline Information for the City of Lafayette”, PG&E, p. 13, 8/17

<sup>2</sup> PG&E Gas Safety Q&A (PG&E response to Lafayette questions), p.55, 8/18

<sup>3</sup> [Lafayette Gas Safety Meeting presentation handout](#), PG&E, p.7, Alliance meeting 4/25/19

### **Community Pipeline Safety Initiative (CPSI) – inadequate threat interaction assessment & lack of systems perspective**

GSTF is concerned that implementation of CPSI can increase gas safety threats in Lafayette. PG&E has no record of strength testing for majority of pipeline where trees are targeted for removal.<sup>1,2</sup> CPSI misrepresents the threat of trees to community safety by omission of context to other risks, e.g. PG&E Risk Register<sup>3</sup> shows total “WROF Tree Damage” score at 58 as compared to “WROF Pipe Span Damage” score of 548, or “Weld and Pre-1962 Construction with Land Movement” scored at 804. Latter risks are identified in Lafayette and a related “Vintage Pipeline Replacement” project has been delayed for years<sup>4</sup>

Basis for CPSI (formerly Pipeline Pathways) were tree root/pipeline interaction studies of fully excavated tree roots.<sup>5</sup> PG&E has not shown further, recommended study of CPSI methodology to remove tree at trunk, leaving root system, and any coating damage roots may have caused, in place<sup>5</sup>. CPSI does not consider the unstudied effect of this mitigation method with other threats and may exacerbate any existing threats e.g. corrosion (SCC from increased carbon dioxide levels in soil<sup>5</sup>), inadequate CP, defects, induced bending strains (vertical displacement from tree weight removal<sup>6</sup>), slope instability, etc.

PG&E has identified that pipelines in Lafayette are susceptible to landslides, liquefaction, and erosion. Tree removal in specified areas may exacerbate pipeline susceptibility to these threats. In one example, PG&E concludes that “most (targeted) trees in the Las Trampas Creek corridor. . . will not pose a bank erosion hazard”<sup>7</sup>. What about the targeted trees that *will* pose an erosion hazard?

PG&E reports “Each section of pipeline in Lafayette has unique characteristics and geographic makeup and, therefore, there is no one single risk factor that stands apart from the others that can be applied holistically to all pipelines in the City of Lafayette”<sup>8</sup>. Yet trees currently targeted by CPSI, holistically across all Lafayette pipelines, share a single risk factor: “Emergency Response: limited access to site with emergency vehicles”<sup>2</sup>. *This data is false* as target trees are on vehicle-accessible trails and public ROWs.

<sup>1</sup> PG&E Data Response to CPUC, Index No. 12473.01 Supp01, 10/5/18

<sup>2</sup> CPSI Unacceptable Risk Trees Lafayette spreadsheet, PG&E, 2/19

<sup>3</sup> 2019 GTSR “Workpapers Supporting Chapter 4, Safety, Risk, and Planning”, PG&E, pp. 36, 35 11/17/17

<sup>4</sup> “Pipeline Information for the City of Lafayette”, PG&E, p. 16, 8/17

<sup>5</sup> PG&E Data Response to CPUC, Index No. 12473.02, data request date 9/18/18

<sup>6</sup> Multiple: “Effects of Tree Roots on External Corrosion Control”, Det Norske Veritas, 3/25/15; “Tree Root Interactions with Natural Gas Transmission Pipelines: An Arborist Field Study”, final report 12/31/13, Frizzell & Associates; “Tree Root Interference Threat Analysis”, 4/29/13, Dynamic Risk

<sup>7</sup> “Tree Cutting – Vertical Displacement Study” Dynamic Risk Associates, 4/27/15

<sup>8</sup> “Pipeline Information for the City of Lafayette”, PG&E, pp. 11-12, 8/17

<sup>9</sup> PG&E Gas Safety Q&A (PG&E response to Lafayette questions), pp.3, 8, 16, 8/18

### **Threat Identification - Wildfire**

It is not clear if PG&E identifies wildfire as a threat or considers interaction with other threats to pipeline in Tier 2 and Tier 3 high fire severity zones. Exposed sections, above ground equipment, emergency response would all be adversely impacted by wildfire. Recent flammability testing of coal tar coating from Buckeye Ranch Trail span showed potential, when ignited, to substantially raise the temperature of the pipeline<sup>1</sup>. Exposed sections<sup>2</sup> on 191-1,191A and 191B have coal tar coating<sup>3</sup> and are in Tier 2 and 3 wildfire zones. The Contra Costa County Deputy Fire Chief noted the span at the trail “would be subject to direct flame impingement from the surrounding flammable vegetation” and additionally “it is very typical in a wildland fire for rocks to become dislodged, debris to roll, and trees to become compromised and even fall independently”<sup>4</sup>. Is PG&E studying wildfire risk to these sections and what protective measures are they implementing now in wildfire season?

Conversely, a gas incident can increase the likelihood of wildfire in high fire zones. Extreme consequence of failure in Tier 2 and Tier 3 wildfire zones is not being considered. PG&E repaired a gas leak in Briones on L191-1. What sections have similar leak risk profile in that area? Does PG&E prioritize repair and monitoring in high fire zones? Are shut-off valves sufficiently located to minimize gas release as quickly as possible? Girl Scout Camp and residential neighborhoods are nestled at the south downhill end of Briones Park and gas shut off valves for 191-1, 191A 191B are situated north, and uphill of these areas. Fire in the park may prohibit access from Lafayette and Orinda to these shut-off valves.

<sup>1</sup> “[PG&E Briones Pipe Span Addendum](#)”, Exponent Inc., 3/30/20

<sup>2</sup> PG&E A17-11-009 Data Request Response No. OSA\_004-Q04, Exposed pipelines Lafayette 7/16/18

<sup>3</sup> CPSI Unacceptable Risk Trees Lafayette spreadsheet, PG&E, 2/19

<sup>4</sup> Letter from Contra Costa County Deputy Fire Chief to PG&E regarding exposed pipeline, 9/13/19