

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



October 8, 2019

GI-2019-06-PGE-76

Ms. Christine Cowsert, Vice President
Pacific Gas and Electric Company
Gas Transmission and Distribution Operations
6121 Bollinger Canyon Road
San Ramon, CA 94583

SUBJECT: Closure Letter for General Order 112-F Operation and Maintenance Inspection of Pacific Gas and Electric Company's PG&E's Bay Area West Transmission

Dear Ms. Cowsert:

The Safety and Enforcement Division (SED) of the California Public Utilities Commission reviewed Pacific Gas and Electric Company's (PG&E) response letter dated September 6th, 2019 and a follow-up response letter dated October 4th, 2019, that addressed the concerns identified during the General Order (G.O.) 112-F Comprehensive Operation and Maintenance Inspection of PG&E's Bay Area West Transmission, that was conducted on June 3 through 14, 2019.

Attached is a summary of SED's inspection findings, PG&E response to SED's findings, and SED's evaluation of PG&E's responses to the concerns.

This letter serves as the official closure of the 2019 G.O. 112-F Inspection of PG&E's Bay Area West Transmission.

Thank you for your cooperation in this inspection. If you have any questions, please contact Gordon Kuo, at (213) 618-5263, or by email at GK2@cpuc.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mahmoud Intably".

Mahmoud Intably, P.E.
Program and Project Supervisor
Gas Safety and Reliability Branch
Safety and Enforcement Division

Enclosure: Post-Inspection Written Preliminary Findings

cc: Alberta Ekukinam, PG&E Gas Regulatory Compliance
Dennis Lee, Kan-Wai Tong, Desmond Lew, Claudia Almengor, SED

Post-Inspection Written Preliminary Findings

Date of Transmittal: 06/14/2019

Dates of Inspection: 06/03/2019 - 06/14/2019

Operator: PACIFIC GAS & ELECTRIC CO

Operator ID: 15007 (primary)

Inspection Systems: Bay Area West Transmission Sys Districts

Assets (Unit IDs): Bay Area West Transmission (86287)

System Type: GT

Inspection Name: PG&E Bay Area West Transmission

Lead Inspector: Gordon Kuo

Operator Representative: Alberta Ekukinam

Unsatisfactory Results

1. Design and Construction: Construction Welding Procedures (DC.WELDPROCEDURE)

Question Text: Does the operator have detailed records showing proper qualification of the welding procedures in accordance with 192.225?

References: 192.225

Assets Covered: Bay Area West Transmission (86287 (76))

Issue Summary:

WPS 266-Sc-BR is currently qualified by PG&E using WPS 261-Sc-BR and WPS 262-Sc-BR. 192.225(a) cites qualification by API 1104 under Section 5, Section 12, API Appendix A, or API Appendix B or by Section IX of ASME BPVC.

API 1104 Section 5.4.1. General states in part:

"A welding procedure must be re-established as a new procedure specification and must be completely requalified when any of the essential variables listed in 5.4.2 are changed."

In this case, 266-Sc-BR differs from 261-Sc-BR and 262-Sc-BR with the scope of its base materials, wall thickness group. These constitute as essential variables. API 5.4.2.2 and API 5.4.2.5 addresses changes in these essential variables.

WPS

Base Material

Wall Thickness

266-Sc-BR	42000 psi < X < 65000 psi	<= .750"
261-Sc-BR	X52 (52000 psi)	< .188"
262-Sc-BR	42000 psi < X < 65000 psi	.188" <= X <= .750

As WPS 266-Sc-BR is a separate welding procedure from 261-Sc-BR and 262-Sc-BR, SED is of the opinion WPS 266-Sc-BR should have its own qualification test records to satisfy the language API 1104.

Additionally, the inclusion of multiple wall thickness groups in one welding procedure specification contravenes the language dictating the establishment of essential variables as stated in API 1104. Therefore, SED found PG&E in violation of G.O. 112-F, Reference Title 49 CFR, Part 192, Section 192.225.

PG&E’s Response:

PG&E respectfully disagrees with this finding for the following reason:

PG&E has performed the code required procedure qualification testing to incorporate the two essential variable wall thickness groupings of "Less than 0.188 inches" and "from 0.188" through 0.750 inches" into one comprehensive, combined WPS to help ensure compliance with welding procedures in the field as outlined above. We believe this common industry practice is permitted by API-1104 code, and therefore the requirements of G.O. 112-F along with 49 CFR §192.225 are satisfied. If there are any further questions or concerns, we would welcome the opportunity to meet and discuss this in person. The attached documents provide a more detailed response: "PG&E WPS 266-Sc-Br Response.doc " and reference file "1104 20th Ed Interpretations-2019-01-29.pdf"

PG&E’s Follow-up Response:

API 1104 Section 5.3.2.2 permits base materials to be grouped in welding procedures provided that the procedure qualification test was made using materials with the highest specified minimum yield strength (SMYS) in the group. Even though API-1104 specifies a base metal grade grouping with a SMYS greater than 42,000 psig but less than 65,000 psig, no pipe materials are produced in industry in Grade X60 with a wall thickness (WT) less than 0.188 inches. For several years, PG&E searched the marketplace through national pipeline materials distributors, direct contact to pipe mills, and machine shops. All inquiries confirmed that pipe in grade X60 with a WT less than 0.188 inches is not produced in the U.S. PG&E’s database for existing pipelines was also researched and no cases of pipe with grade X60 and less than 0.188 inches WT were found to exist in the system. Therefore, PG&E applied the same engineering principle stated in paragraph 5.3.2.2 to this situation and performed the qualification test using the highest available grade in the WT group - which was API-5L Grade X52.

Because API-1104 does not limit how weld procedures should be structured when welding dissimilar thickness materials, PG&E combined tests 261Sc-BR and 262Sc-BR to form WPS 266Sc-BR. This WPS is structured to address welding variables for the three possible weld joint combinations listed in the table below.

	Base Metal #1		Base Metal #2	
	Thickness Group	Grade Group	Thickness Group	Grade Group
Combination #1	0.188 inches to 0.750 inches	42,000 < x < 65,000 psig	0.188 inches to 0.750 inches	42,000 < x < 65,000 psig

Combination #2	0.188 inches to 0.750 inches	42,000 < x < 65,000 psig	Less than 0.188 inches	42,000 < x < 52,000 psig
Combination #3	Less than 0.188 inches	42,000 < x < 52,000 psig	Less than 0.188 inches	42,000 < x < 52,000 psig

WPS 266Sc-BR does state that it is qualified for welding carbon steels with a SMYS > 42,000 psig to < 65,000 psig and WT less than 0.750 inches. This was done to cover the various WT and grade group combinations listed above. It is understood that industry has limited the grade to X52 or less for pipe with WT less than 0.188 inches. PG&E believes it has satisfied the intent of paragraph 5.3.2.2 by performing the qualification test for 261Sc-BR using a material meeting the requirements of API-5L X46 & X52.

Additionally, please see "*Index 13484-01_MTR 226873.pdf*", which documents the pipe material used for qualification test 261Sc-BR.

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has articulated and implemented. However, SED may review the records of the corrective action during future inspections.

2. Maintenance and Operations: Gas Pipeline Maintenance (MO.GM)

Question Text Do records indicate proper inspection and partial operation of transmission line valves that may be required during an emergency as required and prompt remedial actions taken if necessary?

References 192.709(c) (192.745(a), 192.745(b))

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

Milpitas

2.1 DR B-36 E. Evelyn Ave & Ferry Morse Wy

Maintenance on 2/7/19 listed that corrective actions have been created but did not list the number. Per the inspection form (TD-4540P-01-F02), "For outstanding or planned corrective actions needed, indicate the SAP Corrective Work Notification Number." Similar language in TD-4540P-01, section 6.1.7. Upon following up with PG&E, no correctives actions could be found related to these issues, which suggests no corrective actions were created (117392891 & 117392935). Per TD4540P-01, section 7.1.1, "Supervisors.....must....Ensure SAP corrective work notifications are created."

2.2 S-340 Lawrence & Stevens Creek

All three critical valves have no service history after 6/22/17. Station as a whole has been inspected more recently, however. PG&E was unable to locate inspection records for these valves. PG&E missed at least 1 cycle for these valves.

2.3 Bayshore Station

Actuator valves 1, 2, and 39.85 were maintained on 12/21/2016 with subsequent maintenance conducted on 1/10/2018. PG&E did not conduct maintenance for these valves in 2017.

Therefore, SED found PG&E in violation of G.O. 112-F, Reference Title 49 CFR, Part 192, Section 192.745 (a).

PG&E's Response:

PG&E recognizes this concern, and has taken the following corrective action:

2.1 Corrective notifications were created on 6/5/2019 to address #117392935 & #117392891.

2.2 Station S - 340 valves A, B and 14 were missed in 2018 and have now been maintained as of 6/6/2019 which can be viewed in the following gas valve maintenance record form: "S-340 Valves V-A_V-B_V-14.pdf

2.3 Actuator valves 1, 2, and 39.85 missed their 2017 maintenance, as they were maintained on 12/21/2016 and next again on 1/10/2018. These valves are now on annual maintenance plans.

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has articulated and implemented. However, SED may review the records of the corrective action during future inspections.

3. Time-Dependent Threats: Atmospheric Corrosion (TD.ATM)

Question Text Do records document inspection of aboveground pipe for atmospheric corrosion?

References 192.491(c) (192.481(a), 192.481(b), 192.481(c))

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

San Francisco

Span: 44419767 - L132, Cesar Chavez & Evans

In the most recent inspection of this span (5/24/19), the inspection form was marked with "no coating damage." However, during field observations on 6/12/19, SED observed a holiday that exposed the pipe metal to atmosphere. SED followed up with PG&E and received the following explanation:

The Corrosion Mechanic (C5C5) performed the inspection in 2015, 2016 and 2019. Per the Corrosion Supervisor, the mechanic documented the minor damage to the wrap (coating) in the 2015 and 2016 inspections by checking the "Minor Issue (Small Holidays)" box on the Inspection Record. In the 2015 Inspection Record in which the photographs were taken, the Mechanic also noted "see photo 2" under Description and "No action needed" under Action Taken. No photographs were taken in 2016 and 2019 because the condition had not changed. In addition, the Mechanic did not check the same "Minor Issue" box in the 2019 Inspection Record due to the fact that the

condition had not changed and did not meet the criteria for an Abnormal Operating Condition (AOC).

While SED recognizes that coating damage that exposes the pipe along the main span (not at the air-to-soil transition) is not considered an "abnormal operating condition" per PG&E's procedures, it should still be considered "Major Issue (Disbonding or No Coating)" per Per TD-4188P-02 rev 1 section 2.2.3.c ("IF sections of the pipeline are uncoated, the coating is disbonded from the metal, or the coating is damaged, THEN check "Major Issue (Disbonding or No Coating)."). Furthermore, PG&E's procedure does not allow the mechanic to check "No Coating Damage" if the coating damage condition has not changed since the previous inspection. The coating damage remained, leading SED to believe that a thorough inspection was not done on 5/24/19.

SED believed that coating damage required proper documentation on PG&E's inspection form and follow-up by PG&E. The mechanic did not record the coating damage conditions leading PG&E to miss the chance of addressing the atmospheric corrosion on the pipe. Therefore, SED found PG&E in violation of G.O. 112-F, Reference Title 49 CFR, Part 192, Section 192.481(a).

Furthermore, SED recommends that PG&E incorporate "no coating, disbonded coating, and damaged coating" as an Abnormal Operating Condition, as any of these conditions may lead to significant damage to the pipe. By categorizing the damage as an AOC, PG&E would have to do a more in-depth inspection of the damage rather than just a visual inspection. A more in-depth inspection would have revealed that the holiday went entirely through the coating, exposing pipeline metal to the atmosphere, indicating the presence of atmospheric corrosion.

PG&E's Response:

PG&E respectfully disagrees with this finding for the following reason:

49 CFR 192.481(a) requires an operator to inspect a pipeline for atmospheric corrosion and this was performed accompanied by SED on 6/12/19. In addition, the coating holiday in question had historically been minor, but was most likely worsened during the field inspection due to SED's request to scrape the coating with a knife to gain a better view of the holiday. Regardless, holidays on pipeline coatings are very common and does not indicate inadequate levels of cathodic protection. The rectifier protecting the pipeline merely needs to output more current to compensate for the holiday. An ETS (EQ 41420490 at Jerrold & Quint Rd) near Span 44419797 located in the same CPA L132SF was read on 5/5/2019 at -1280mV, demonstrating adequate levels of cathodic protection. To address SED's concerns, CAP # 117489371 was created to track this issue and PM #43839609 was created on 6/13/2019 to remediate the damaged pipe coating by 3/11/2020.

PG&E's Follow-up Response:

The 2019 record should have noted the minor coating damage. PG&E has reopened notification number 116996693 to correct the record. PG&E has also issued work order 43839609 to repair the coating damage.

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has articulated and implemented. However, SED may review the records of the corrective action during future inspections.

4. Time-Dependent Threats: External Corrosion - Cathodic Protection (TD.CP)

Question Text Do records adequately document electrical isolation of each buried or submerged pipeline from other metallic structures unless they electrically interconnect and cathodically protect the pipeline and the other structures as a single unit?

References 192.491(c) (192.467(a), 192.467(b), 192.467(c), 192.467(d), 192.467(e))

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

San Francisco Division

SED found that four casings had no readings in 2017, and three of them were missing from the 2018 list (see below). Per PG&E, these four equipment numbers were erroneously removed from SAP in Aug-2017. Inspection records have not been found for periods when casings were inactive in SAP.

41395175: No reading in 2016 or 2017, missing from 2018 list. Added back to SAP 2/19/19, reading taken 2/28/2019 (no contact found).

41395184: No reading in 2017, missing from 2018 list. Added back to SAP 6/11/19, reading taken 6/12/2019 (no contact found).

41420586: No reading in 2017. Added back to SAP 11/7/19, reading taken 11/28/2019 (no contact found).

41420596: No reading in 2017, missing from 2018 list. This is in the process of being added back to SAP as of 6/14/19. Reading taken 6/14/19 (no contact found).

The first three casings have since been added back into SAP and were inspected on the dates shown. Therefore, SED found PG&E in violation of G.O. 112-F, Reference Title 49, CFR, Part 192, Section 192.467(d) for failing to inspect these casings for electrical isolation.

Additional concern: Since it is currently unknown why these casings were removed from SAP, SED requests that PG&E perform an investigation to determine if any other casings were erroneously removed from SAP within the last 3 years. Please extend this investigation to all regions covered in this inspection, not just San Francisco.

PG&E's Response:

PG&E recognizes the missed 2017 readings for these 4 casings, but disagrees with the code references in this report. PG&E believes this is deviation with our internal procedures for checking annual reads and in all 4 casings, there was no casing contact identified. As noted by SED within the finding, all 4 casings have been re-added back into SAP as of 6/11/19.

Per SED's additional concern involving erroneously removed casings, PG&E reviewed 2016 - 2018 deleted/junked casings for the Bay Area West Inspection areas to determine if any could be identified. PG&E performed this and identified no removed casings during the timeframe that were removed due to deviation from the RW (request for work) notification process. Currently, PG&E's casing removal process involves a RW notification to be created, following Corrosion Engineering & Mapping validation to confirm asset existence before Asset Strategy can proceed with any equipment deletions.

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has articulated and implemented. However, SED may review the records of the corrective action during future inspections.

Concerns

1. Assessment and Repair: Repair Methods and Practices (AR.RMP)

Question Text Perform observations of selected locations to verify that adequate steps have been taken by the operator to minimize the potential for accidental ignition.

References 192.751(a) (192.751(b), 192.751(c))

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

Milpitas

Concern: During regulator station inspection, SED observed that temporary 1/4" blowdown tubing ended above the vault, but below the head level of the individuals standing outside the vault. While this is not a violation, SED recommends the use of longer temporary blowdown stacks to purge gas to a point above the heads of personnel standing nearby the vault, to mitigate any temporary health risks from inhalation of gas, and any ignition risks from possible ignition sources present on those personnel.

PG&E's Response:

PG&E respectfully disagrees with this concern for the following reason:

This tubing is merely to vent gas and would not be utilized as a blowdown location as the objective of vent stacks is to move the gas up out of the vault. It is not standard practice to have non-qualified personnel standing nearby while conducting the maintenance at stations.

SED's Conclusion:

SED has reviewed PG&E's response and accepts the explanation provided in it.

2. Design and Construction: Construction Weld Inspection (DC.WELDINSP)

Question Text Do records indicate that NDT and Interpretation are in accordance with 192.243?

References 192.243

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

Magnetic particle inspection dates met or exceeded the calibration date on 3 occasions while project number 31198357 was active. A Parker Research Model B-300 magnetic particle contour probe with serial number 23663 was recorded to have a calibration due date sticker stating "8/9/2017". For weld numbers TI-166, TI-167, TI-169, and TI-170 this information was recorded as part of their Magnetic Particle Examination Report (GO-TS-001-F1-MT). For the first two welds, the examinations were conducted on "8/9/2017", the calibration due date. For the latter two welds, their examinations were conducted on

"8/10/2017", a day after the calibration due date. SED recommends PG&E adhere to the tools calibration procedure and ensure its employees return the tools for calibration on or before the due date.

PG&E's Response:

PG&E respectfully disagrees with this concern for the following reason:

The Non Destructive Testing and Interpretation was in accordance with 192.243 and ASTM E709, as well the magnetic particle instrument was in calibration. Calibration is performed daily prior to each inspection with the lift test per Gas Operations MT procedure. The calibration is typically documented annually along with the sticker on the instrument. In this case the updated documentation was not provided to the technician until a later date. The calibration record provided from the NDE vendor, Shaw Pipeline Services displays the instrument was calibrated on 8/9/2017 and due next for calibration on 2/9/2018 and can be viewed in "23663.MT.Yoke.Cal.Paperwork.pdf"

SED's Conclusion:

SED has reviewed PG&E's response and accepts the explanation provided by PG&E. However, SED may review the records during future inspections.

3. Maintenance and Operations: Gas Pipeline Maintenance (MO.GM)

Question Text Do records indicate proper inspection of each vault to determine whether it is in good physical condition and adequately ventilated as required and any necessary action taken to remediate deficiencies?

References 192.605(b)(1) (192.749(a), 192.749(b), 192.749(c), 192.749(d))

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

Milpitas

3.1 Concern/Recommendation: Vaults in Milpitas District are inspected using form F4446-2. On multiple inspection forms, the inspector wrote "leaks" under the "Leakage Check" column on this form, often omitting the checkmark that denotes satisfactory condition. Per conversation with the supervisor, this indicates a check for water intrusion. However, the vault inspection procedure (S4446) does not include any wording related to water intrusion checks but does require "If gas is found in the vault, the equipment in the vault must be inspected for leaks, and any leaks found must be repaired." SED recognizes that PG&E is going above and beyond requirements by inspecting for water leakage, however the form as filled out currently does not indicate whether gas was found in vault, which is a required check per S4446. SED recommends that a checkmark be used to indicate the lack of gas leakage, as appears to be the intent of the form. SED further recommends PG&E to add a "comments" section to the Inspection Form, where inspectors could optionally note water intrusion, or other observations that are not required by S4446.

Milpitas Terminal

3.2 Concern: SED observed that the latch for the vault lid for valve M-30 was broken. SED recommends that PG&E take the necessary steps to repair the vault's lid.

PG&E's Response:

3.1 PG&E respectfully disagrees with this concern for the following reason: PG&E's Standards Engineering & Gas Pipeline Operations and Maintenance (GPOM) organizations are in alignment that the intention of the Vault Inspection form, F4446-2 is to check for gas leaks not water leaks. To prevent reoccurrence, at the next weekly GPOM All-Hands meeting, GPOM leadership recommunicated to all employees who perform vault inspections the need to clearly indicate water leaks on form F4446-2, if any is found.

3.2 PG&E respectfully disagrees with this concern for the following reason: Per confirmation from the GPOM supervisor at Milpitas Terminal, the vault lid for valve M-30 was not broken. Rather, it was left unlatched from previous entry.

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has articulated and implemented. However, SED may review the records of the corrective action during future inspections.

4. Maintenance and Operations: Gas Pipeline Operations (MO.GO)

4.1 Question Text: Are construction records, maps and operating history available to appropriate operating personnel?

References 192.605(a) (192.605(b)(3))

Assets Covered: Bay Area West Transmission (86287 (76))

Issue Summary:

While conducting records review of valves for L303 as part of the first week's record's review, valve D05 was found to be left "Open" on PG&E valve maintenance logs while the operational maps and valve information sheet both indicated the normal valve position was in the "Closed" position. SED highlighted this anomaly in PG&E's records leading PG&E to investigate as a field inspection of the asset could not be accomplished within the field inspection timeframe. PG&E's investigation found the valve information was incorrect and did not properly reflect its current operational status. While their records indicated D05 was a redundant key valve upstream of a stub or pipe segment end on L303, PG&E's field investigation found several customers were downstream of D05.

As per correspondence with PG&E on BA-W#65, PG&E has stated they will address the discrepancies involving Milpitas District's L303 Valve D-05's operating record. The details of which include its normal operating state, designation, and downstream structure. SED requests a follow-up reflecting the remedial actions PG&E had stated in BA-W#65 after they have been successfully implemented in their records.

PG&E's Response:

PG&E recognizes this concern, and has taken the following corrective action:

4.1 On 6/7/19, Gas Transmission Mapping implemented revision 102 to drawing 382203 (operating map for Tracy Station to Milpitas Terminal via Livermore Junction & Irvington Station) to reflect the accurate "OPEN" position as indicated in the valve information sheet. The updated operating map and normal valve position for L-303 valve D-05 can be viewed in "TracyMilpitas_3822032_Rev102_08092019.pdf."

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has articulated and implemented. However, SED may review the records of the corrective action during future inspections.

4.2 Question Text: Are construction records, maps and operating history available to appropriate operating personnel?

References 192.605(b)(3)

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

Milpitas

Alum Rock

SED observed that the MLV is marked as V-495.50A in field but is marked as V-496.50A on the station diagram (off by 1-mile point). SED recommends PG&E to update the valve labeling on the station diagram.

PG&E's Response:

PG&E recognizes this concern, and has taken the following corrective action:

4.2 CAP #117451196 was created to update the mismarked station diagram for MLV V-495.50A.

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has articulated and implemented. However, SED may review the records of the corrective action during future inspections.

5. Time-Dependent Threats: External Corrosion - CP Monitoring (TD.CPMONITOR)

5.1 Question Text: Are impressed current sources properly maintained and are they functioning properly?

References 192.465(b)

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

SED and PG&E conducted a field inspection on a rectifier named "41392671" at Venus Way, San Jose. PG&E was using a variable rheostat to split the current between two transmission lines. The rheostat failed. To allow for safety of PG&E corrosion control staff during adjustment of the rheostat, GSRB staff recommends PG&E install a series fuse to ensure the variable rheostat does not exceed its power rating.

PG&E's Response:

5.1 PG&E respectfully disagrees with this concern for the following reason: A fuse is not an approved device for protecting personnel from electricity. A fuse installed upstream of the variable rheostat would only protect the rheostat from exceeding its power rating.

PG&E's Follow-up Response:

Historically, rheostats have not failed energetically while corrosion mechanics were making adjustments. Failures have occurred on rheostats due to dirt at the contact points and overheating due to high environmental temperatures. The Rectifier Maintenance and Adjustment Standard TD-4181P-301 is currently being updated, however the updated version of the standard will require the corrosion mechanics to exercise variacs (rheostats) annually in the rectifier and junction boxes to ensure proper operation.

The component that failed at the referenced rectifier is not a rheostat but a slide resistor. The purpose of the slide resistor at this location is to adjust the current flow to the two linear anode systems. Slide resistors are adjusted with the rectifier in the off-position. The failure of this slide resistor was due to heat over time. Since this inspection, PG&E has replaced the slide resistor.

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has articulated and implemented. However, SED may review the records of the corrective action during future inspections.

5.2 Question Text Are areas of potential stray current identified, and if found, the detrimental effects of stray currents minimized?

References 192.473(a)

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

On 6/11/19, SED observed PG&E employees take a read on casing 41395286 at L101 MP 44.49. The P/S read fluctuated due to DC interference from nearby Muni light rail tracks, and the final read was +.226 mV. SED recommends that PG&E investigate and apply adequate measures to reduce the interference from the rail tracks.

On 6/13/19, SED observed that the AC mitigation device in a cabinet for casing 42832373 had been disconnected. The pipe-to-soil reading (-1580 mV) and casing-to-soil reading (-482 mV) were within requirements. SED recommends PG&E ensure the AC mitigation is properly reconnected to the system.

PG&E's Response:

5.2 PG&E respectfully disagrees with this concern for the following reason:

CFR 192.473(a) only requires casings be isolated from the carrier pipe and does not require DC interference control on casings. Therefore, as the casings (41395286 & 42832373) for these locations are isolated from the pipeline at both locations, PG&E has fulfilled the CFR requirement. Most recently, casing 41395286 was read on 8/5/2019 with the pipe-to-soil reading (-1103 mV) and casing-to-soil reading (-515 mV), and casing 42832373 was read on 8/6/2019 with the pipe-to-soil reading (-1572 mV) and casing-to-soil reading (-373 mV) and can viewed in "EQ 41395286_EQ 42832373.pdf"

PG&E's Follow-up Response:

PG&E is aware that dynamic direct current (DC) stray current effects are known to be present on Line 101 at mile point (MP) 44.49. PG&E has confirmed that the effects are attributable to the proximity of BART and San Francisco (SF) Muni to pipelines in the

subject area and has implemented continuing programs to minimize the detrimental effects of such current on Line 101 near MP 44.49 in accordance with CFR § 192.473.

To address the stray current from BART and SF Muni systems, PG&E has undertaken intensive studies and engineering analysis and has designed DC Interference Mitigation Systems (DCIMS) and a Deep Well Anode system (DWA) for Line 101 in the area. Please see the table below for the location of the systems on Line 101.

PMO Project No.	Project Order No.	Line	Mile Point	Mitigation System	Mile Point Range of System
C-1173	74015743	101	32.42	DCIMS	26.74-44.61
C-1173	74015743	101	32.57	DCIMS	26.74-44.61
C-1173	74015743	101	37.01	DCIMS	26.74-44.61
C-1173	74015743	101	39.6	DWA	26.74-44.61

These four systems are presently being commissioned and tested on Line 101. Preliminary testing identifies that the systems effectively control detrimental effects of DC stray currents, and further in-depth testing will be performed over the next month to confirm control of DC stray currents on Line 101.

Yes; casing 41395286 is in a High Consequence Area (HCA).

The alternating current (AC) mitigation device near the casing was PG&E's first attempted mitigation measure at this location and was installed in 2012 because Lines 109 and 132 run parallel to HVAC powerlines. As of the last inspection, the device was still connected.

Since 2012, additional mitigation measures have been installed along this section of Lines 109 and 132, and additional investigation indicated the referenced device is no longer required. At this time, it is unclear why the mitigation device was disconnected. Additional studies or surveying will be required to determine if the remaining 2012 installations are still needed or if the additional mitigation measures added since 2012 provide sufficient protection without them.

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has proposed and/or implemented. However, SED may review the records of the corrective action during future inspections.

6. Time-Dependent Threats: External Corrosion - Cathodic Protection (TD.CP)

Question Text Are bare or coated pipes in compressor, regulator or meter stations installed before August 1, 1971 (except for cast and ductile iron lines) cathodically protected in areas where active corrosion was found in accordance with Subpart I or Part 192?

References 192.457(b)

Assets Covered Bay Area West Transmission (86287 (76))

Issue Summary:

On 6/11/19, SED observed PG&E employees take a read on ETS 44428069, in which the read (-0.553 mV) was below the required criteria (-0.850 mV). SED recommends PG&E take remedial actions to address the Cathodic Protection deficiencies.

PG&E's Response:

PG&E recognizes this concern, and has taken the following corrective action:

On 6/11/19, notification #117434511 was created to troubleshoot the low read on ETS 44428069. On 8/12/19, the re-read of -1024mV was completed and found to be adequate cathodic protection and can be viewed in "EQ 44428069.pdf"

SED's Conclusion:

SED has reviewed PG&E's response and accepts the corrective actions that it has articulated and implemented. However, SED may review the records of the corrective action during future inspections.