Audit of the
Calpine Corporation
Russell City Energy Center

Audit Number GA2019-01RC

June 2019

STAFF REPORT

PREPARED BY:
ELECTRIC SAFETY AND RELIABILITY BRANCH
SAFETY AND ENFORCEMENT DIVISION

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I. Introduction

Electricity is a vital resource for the State's economic well-being and the safety of its residents. The California Public Utilities Commission (CPUC) has established standards for logbooks, operation, and maintenance of power plants. CPUC General Order 167 (GO 167) codifies these standards with guidelines for Generating Asset Owners. The CPUC Electric Safety and Reliability Branch (ESRB) ensures electric resource adequacy by auditing jurisdictional power plants for compliance with GO 167.

ESRB performed a GO 167 compliance audit of the Russell City Energy Center (Russell City or the Plant) that included a site visit from March 18 through March 22, 2019. On January 18, 2019, ESRB notified the Plant of the pending audit and requested pertinent documents for review. During the site visit, ESRB observed plant operations, inspected facilities, interviewed staff and reviewed additional documentation and data. After the site visit, ESRB continued with a review of additional documents. From these activities, ESRB evaluated whether the Plant was in compliance with GO 167. Additionally, ESRB has made recommendations to improve the Plant's programs, procedures, and policies to enhance safety and reliability.

II. Background

Russell City Energy Center is owned and operated by Calpine Corporation (Calpine). The Plant is located in the eastern industrial district of the City of Hayward in Alameda County. The combined-cycle plant consists of two gas turbine trains in couple with a steam turbine generator. The Plant has a gross power rating of 629 megawatts (MWs) in a two-by-one configuration. Two-by-one configuration is achieved when both combustion turbines are running in conjunction with the steam turbine. The Plant began commercial operation in August 2013.

Russell City sells power to Pacific Gas and Electric Company (PG&E) via a ten-year tolling agreement. PG&E supplies natural gas to the Plant from which the Plant generates power back to PG&E for a fee. Power generation is produced by two Siemens Westinghouse W501FD3 gas turbines and one General Electric (GE) D11 steam turbine. The Plant has a dispatched operating profile with a typical day-ahead notice.

Each gas turbine exhausts into a Nooter-Eriksen Heat Recovery Steam Generator (HRSG) equipped with duct burners for added production capacity. The two HRSGs provide high pressure steam to a single GE D11 steam turbine generator. A nine-cell hybrid cooling tower provides the Plant's cooling system. The hybrid system uses dry cooling in conjunction with wet cooling to reduce steam plume.

The electrical output of the gas turbine generators is stepped-up from 15kV to 242kV by their respective 226MVA Siemens Generator Step-Up (GSU) transformers. The steam turbine generator's output is stepped-up from 18kV to 242kV by a 300MVA Siemens GSU transformer.

III. Conclusions

ESRB identified 14 findings, which are listed in Section IV of the report. Findings are deficiencies that are violations of applicable rules, can adversely affect reliable operation, and present safety hazards to plant personnel.

ESRB made two observations and recommendations, which are listed in Section V of the report. Recommendations are provided to improve plant safety and reliability.

The Plant must respond to these findings and recommendations within 30 days of receipt of this report. The response should include a Corrective Action Plan with an associated timeline for implementation of the corrective actions and preventive measures taken and/or planned in order to resolve the violations, prevent similar deficiencies in the future, and address the recommendations.

IV. Findings Requiring Corrective Action

Finding 1: The Plant lacks a Corrosion Under Insulation Inspection Program for High Energy Piping (HEP). The Plant does not have a Corrosion Under Insulation Inspection Program. Corrosion under insulation is caused by the ingress of water into the insulation and contact with the metal surface of the pipe. Corrosion under insulation can remain undetected because the corrosion is hidden and is difficult to detect under insulating materials. This program is critical for the Plant since it is located close to the bay and is exposed to moist and corrosive sea air where corrosion is of concern.

GO 167, Maintenance Standard 9: Conduct of Maintenance states:
"Maintenance is conducted in an effective and efficient manner so equipment performance and material condition effectively support reliable plant operation."

GO 167, Maintenance Standard 13: Equipment Performance and Materiel Condition states:
"Equipment performance and materiel condition support reliable plant operation. This is achieved using a strategy that includes methods to anticipate, prevent, identify, and promptly resolve equipment performance problems and degradation."

Finding 2: Manway hatch is severely corroded and presents a burn risk for workers. ESRB observed a severely corroded access hatch on Unit 1's HRSG. The corroded surface and discoloration surrounding the hatch indicate the area has been subject to high heat flux. This presents a burn risk hazard for workers as the hatch is within reach from ground level.[1] The Plant must take corrective action to mitigate the hazard and repair the defect. While ESRB did not observe similar defect on Unit 2, it recommends the Plant to inspect and assess all HRSG manways to identify and prioritize repairs where appropriate.

GO 167, Operation Standard 1: Safety, states in part:
"The protection of life and limb for the work force is paramount. GAOs have a comprehensive safety program in place at each site. The company behavior ensures that personnel at all levels of the organization consider safety as the overriding priority. This is manifested in decisions and actions based on this priority."

GO 167, Operation Standard 4: Problem Resolution and Continuing Improvement states:
"The GAO values and fosters an environment of continuous improvement and timely and effective problem resolution."

GO 167, Maintenance Standard 7: Balance of Maintenance Approach states in part:

[1] California Code of Regulation, Title 8, Section 3308 requires that "pipes or other exposed surfaces having an external surface temperature of 140°F or higher and located within 7 feet measured vertically from floor or working level or within 15 inches measured horizontally from stairways, ramps, or fixed ladders shall be covered with a thermal insulating material or otherwise guarded against contact."

"The maintenance program includes the proper balance of the various approaches to maintenance, e.g., preventive, predictive, or corrective. The approach is adequately documented with consideration of economics and reliability of equipment or components, and their effect on reliable operation of the unit. Operating experience is factored into the program. Maintenance procedures and documents should include the generation equipment and all those components owned by the generation owner directly connected to the plant that are an integral part of delivering power to the grid including fuel supply systems, electrical switchyards, transmissions lines, penstocks, flumes, exhaust system, etc."

GO 167, Maintenance Standard 9: Conduct of Maintenance states:
"Maintenance is conducted in an effective and efficient manner so equipment performance and materiel condition effectively support reliable plant operation."

GO 167, Operation Standard 8: Plant Status and Configuration states:
"Station activities are effectively managed so plant status and configuration are maintained to support safe, reliable and efficient operation."

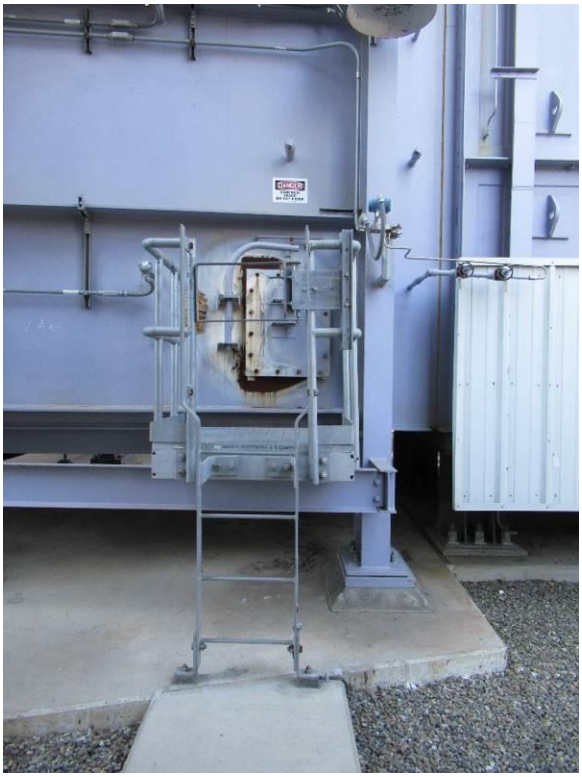

Figure 1: Manway hatch is severely corroded and presents a burn risk for workers.

Finding 3: Methane detectors at the fuel gas compressors are defective. Due to the methane sensors at the fuel gas compressors being defective, the compartment currently lacks leak detection capability. There're four methane detectors in the compartment, all of which are not

functioning due to a low or no voltage (i.e. sensors are not receiving their power supply in proper voltage in order to function and detect). ESRB noticed that Russell City created a Level 4 (urgent) work order in Maximo on January 24, 2019.[2] However, at the time of the audit (March 2019), the Plant still has not yet repaired the defect. Methane sensors are a part of the fire protection system that detect leakage of natural gas which can accumulate in the compartment and lead to a natural gas explosion. The Plant must repair the detectors as soon as possible.

GO 167, Operation Standard 1: Safety states in part:
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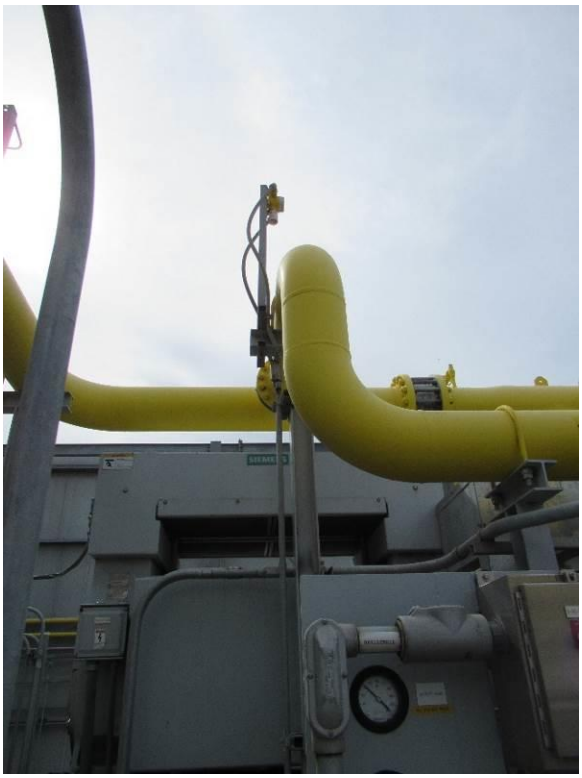

Figure 2: Methane detectors at the gas compressors are defective.

[2] Work Order #27228777

Finding 4: ESRB observed oil leaks at the steam turbine lube oil pump skid. The oil appeared to be leaking from the pump seal. Lube oil is flammable and can catch on fire if it contacts hot bearing or other pump surfaces. The Plant had previously created a work order (#26659485) to repair the leak, but the leak persisted. In response, the Plant generated a new work order (#27404664) and assigned it a priority level 3 to repair the defect. The Plant must repair the leak before it gets worse.

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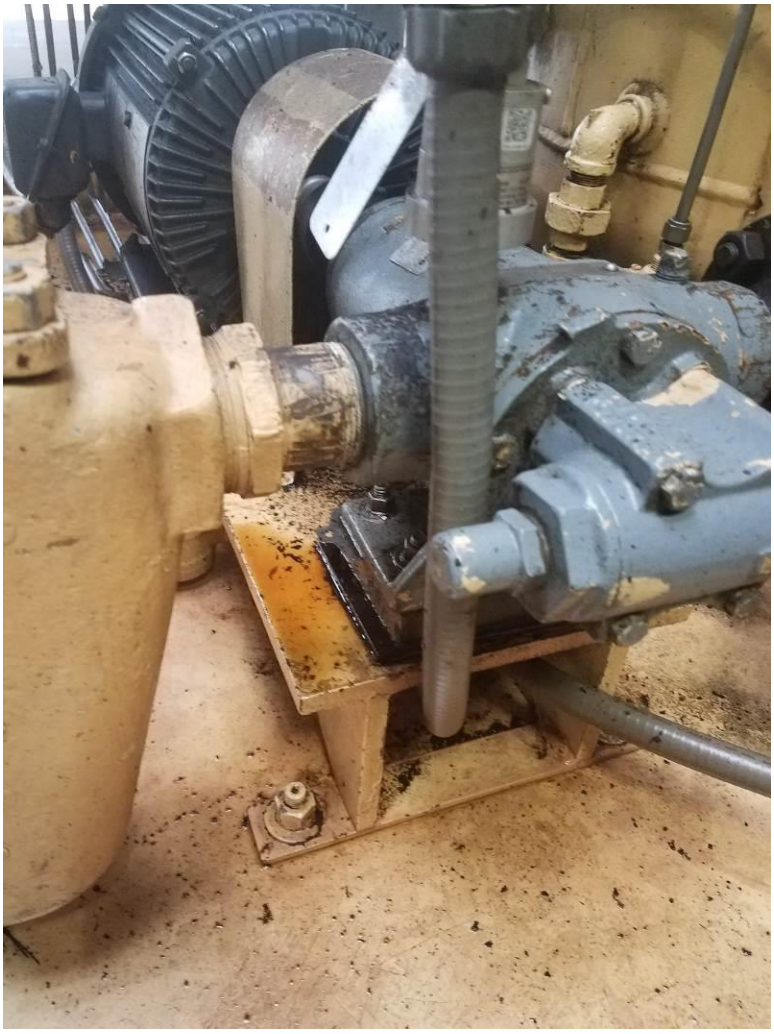

Figure 3: Oil leaks at the steam turbine lube oil pump skid.

Finding 5: ESRB observed atmospheric corrosion on piping and pipe flanges, particularly on the cooling tower risers, and at the zero-liquid discharge (ZLD) crystallizer (See Figures 4 to 9). The Plant plans to clean and repaint the corroded surfaces and is looking into solutions to abate corrosion. As stated in Finding 1, the Plant is located close to the bay and is exposed to moist and corrosive sea air where corrosion is of concern. The Plant must take proper corrective action to address and mitigate atmospheric corrosion on equipment such as increasing the frequency of inspection and re-coating.

GO 167, Maintenance Standard 7: Balance of Maintenance Approach, Guideline L states:
"Equipment or components that are degraded or not performing their intended function are restored in a timely manner, consistent with their respective importance to personnel safety and efficient, reliable operation of the unit."

GO 167, Maintenance Standard 9: Conduct of Maintenance states:
"Maintenance is conducted in an effective and efficient manner so equipment performance and material condition effectively support reliable plant operation."

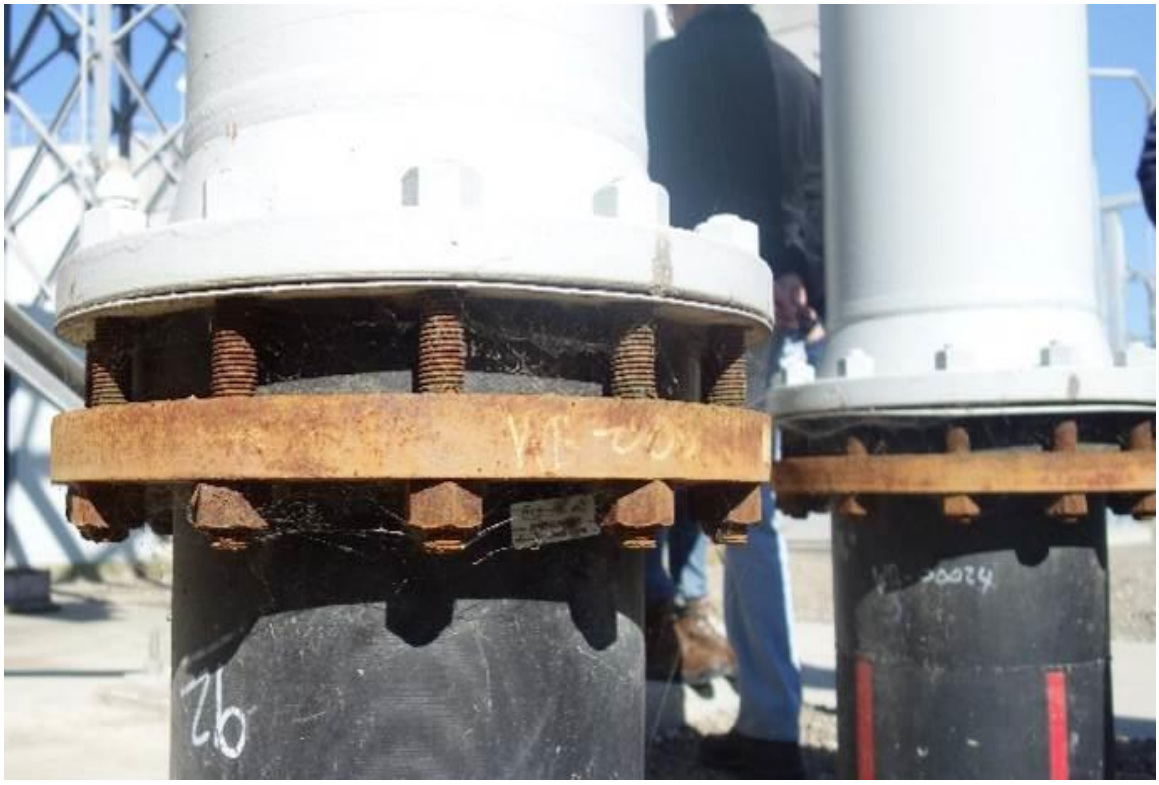

Figure 4. Corroded pipe flange.

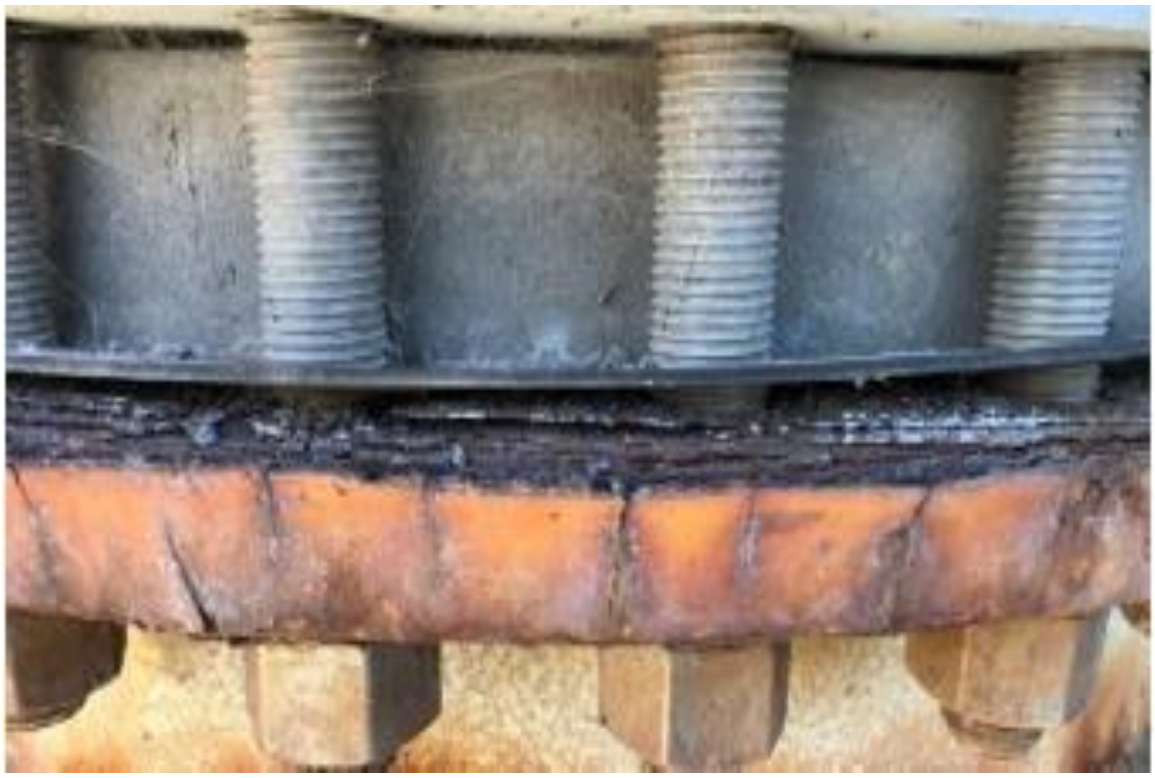

Figure 5. Corroded pipe flange.

Figure 6. Corroded piping.

Figure 7. Corroded riser butterfly valve at the cooling tower.


Figure 8. Corroded support braces.

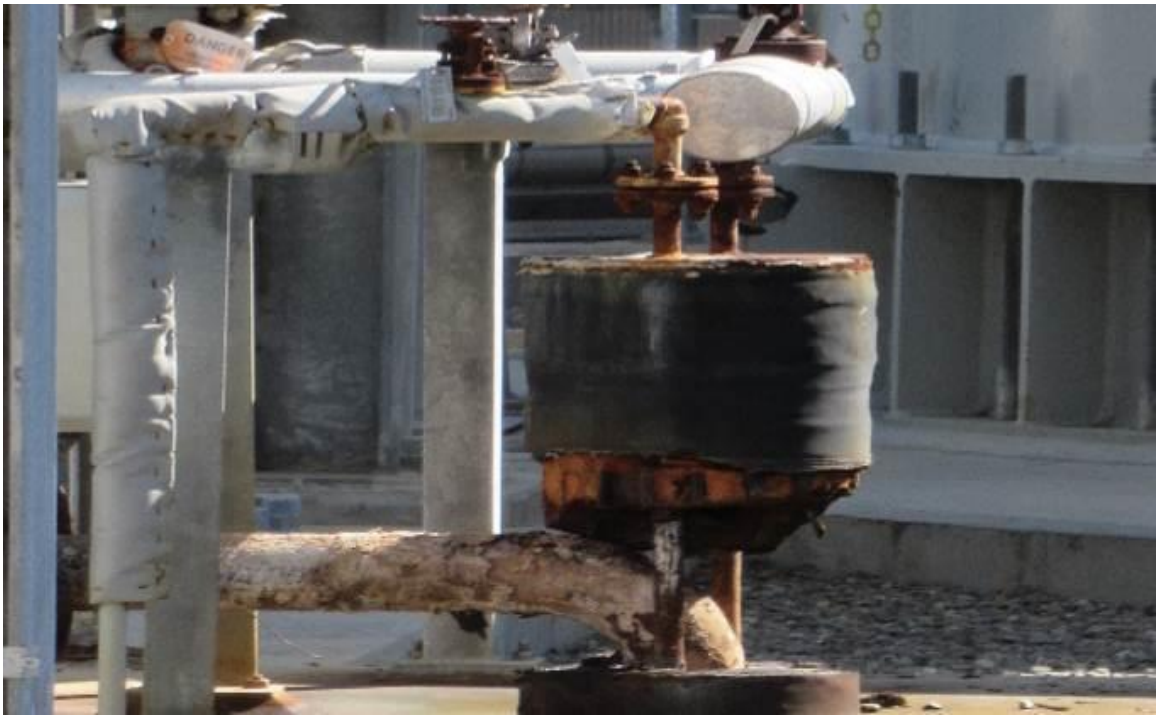

Figure 9. Corroded equipment at the ZLD.

Finding 6: Minor leakage at a Y-strainer connection. ESRB observed leakage of feedwater at a Y-strainer isolation valve connection. This occurred in the LP suction of Unit 2's BFP (directly above the pump). The strainer basket filters the water to catch any debris from entering and damaging the feed pump. There was a work order issued for this defect (WO #27404412 – Priority 3), which called for the replacement of the flange gaskets from paper to Flexitallic® spiral wound gaskets that are more resilient to pressure and temperature fluctuations and suitable for this application. While onsite, the Plant retightened the flange connection and was able to temporarily stop the leak. However, the joint will likely leak again the next time the unit goes through a startup cycle. The Plant must replace joint gaskets and all necessary hardware to permanently repair the leak. While ESRB did not observe similar leakage on Unit 1, it recommends the Plant to inspect and assess similar mechanical fittings throughout the plant to identify and prioritize changeout of gaskets where appropriate.

GO 167, Maintenance Standard 1: Safety states in part:
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GO 167, Operation Standard 4: Problem Resolution and Continuing Improvement states:
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GO 167, Maintenance Standard 7: Balance of Maintenance Approach states in part:

"The maintenance program includes the proper balance of the various approaches to maintenance, e.g., preventive, predictive, or corrective. The approach is adequately documented with consideration of economics and reliability of equipment or components, and their effect on reliable operation of the unit. Operating experience is factored into the program. Maintenance procedures and documents should include the generation equipment and all those components owned by the generation owner directly connected to the plant that are an integral part of delivering power to the grid including fuel supply systems, electrical switchyards, transmissions lines, penstocks, flumes, exhaust system, etc."

GO 167, Maintenance Standard 9: Conduct of Maintenance states:
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Finding 7: Tamper switches at two control valves outside the fire pump house are defective. Per inspection conducted by ORR Protection, two flow control valves next to the fire pump house had defective tamper switches. The Plant confirmed it has not repaired or replaced the switches. While the valves are currently locked open by chain, the tamper switches provide a secondary measure against inadvertent closure of the valves. Water flow to hydrants and sprinklers deluge systems is crucial in the event of a fire. The Plant must repair the defective switches to prevent tampering or accidental closure that would shut off the fire water supply.

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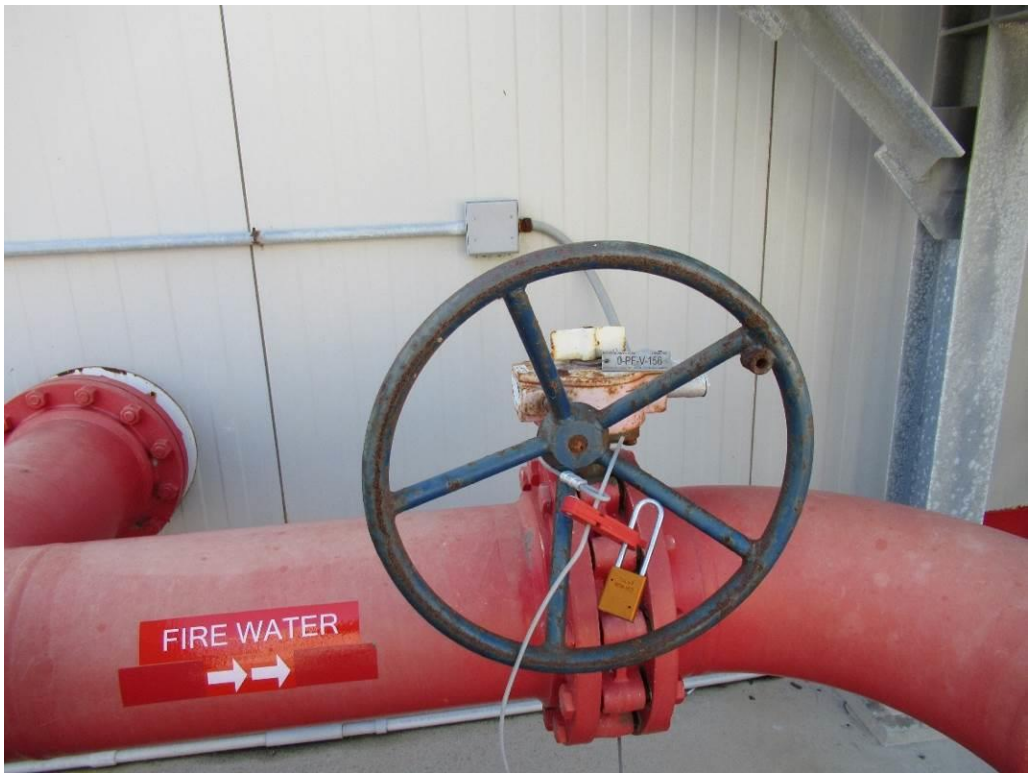

Figure 10: Tamper switches at two control valves outside the fire pump house are defective.

Finding 8: The Plant does not conduct regular emergency drills. Russell City has not conducted an emergency drill in its five-year operating history until recently. Further, the Plant has no procedure, either via a recurring Work Order or in its Emergency Action Plan, that would require the Plant to conduct **regular** emergency drills. Drill provides an opportunity to rehearse anticipated emergency scenarios. Through the exercise, the Plant can validate the adequacy of its emergency response activities and equipment. The Plant must conduct annual emergency drills in accordance with best industry practice. Because Russell City has bulk storage of ammonia and other hazardous chemicals, ESRB also recommends that the Plant involve external agencies, such as the Hayward Fire Department and Hazmat Team, in its emergency drills to the extent practical and reasonable.

GO 167, Operation Standard 1: Safety states in part:
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GO 167, Operation Standard 4: Problem Resolution and Continuing Improvement states:
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GO 167, Operation Standard 20: Preparedness for On-Site and Off-Site Emergencies states in part:
"The GAO plans for, prepares for, and responds to reasonably anticipated emergencies on and off the plant site, primarily to protect plant personnel and the public, and secondarily to minimize damage to maintain the reliability and availability of the plant."

Finding 9: ESRB observed instances where the Safe Work Permit (SWP) was not closed out within the 12-hour time limit or not closed out by the original requestor of the permit as required by the Plant's procedure.

- SWP 18-1146 was not closed out by requestor or control room operator (CRO) after completion of the work.
- SWP 18-1110 was signed off and closed by the CRO outside of the 12-hour time limit; work may have been completed within the time limit but the SWP was not closed out until the next day.
- SWP 18-1103 not signed off for closure by the original requestor. The CRO completed both the requestor and CRO sections.

The Plant must review its policy to validate the need for this requirement in-question and, if so, retrain all personnel including contractors on the SWP policies and procedures to avoid incoherence to the policy.

GO 167, Operation Standard 12: Operations Conduct, subpart A states:
"All personnel follow approved policies and procedures."

Finding 10: Compressed gas cylinders are not being secured properly. ESRB observed improper storage of compressed gas cylinders by the CEMS shack. The high-pressure gas cylinders are loosely held by a single chain with no secondary support, and are otherwise, freestanding. While the Plant stores the tanks inside a metal cage, ESRB observed the cage doors are not secured. General Industry Standard requires compressed gas cylinders to be stored in a manner to prevent hazards by tipping, falling, or rolling.[3] Russell City is located near the Hayward Fault and the area is prone to seismic activities and minor quakes. The Plant must properly secure compressed gas cylinders to prevent tip-overs.

GO 167, Operation Standard 1: Safety, states in part:
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GO 167, Operation Standard 4: Problem Resolution and Continuing Improvement states:

[3] California Code of Regulation, Title 8, Section 4650. Storage, Handling, and Use of Cylinders.

"The GAO values and fosters an environment of continuous improvement and timely and effective problem resolution."

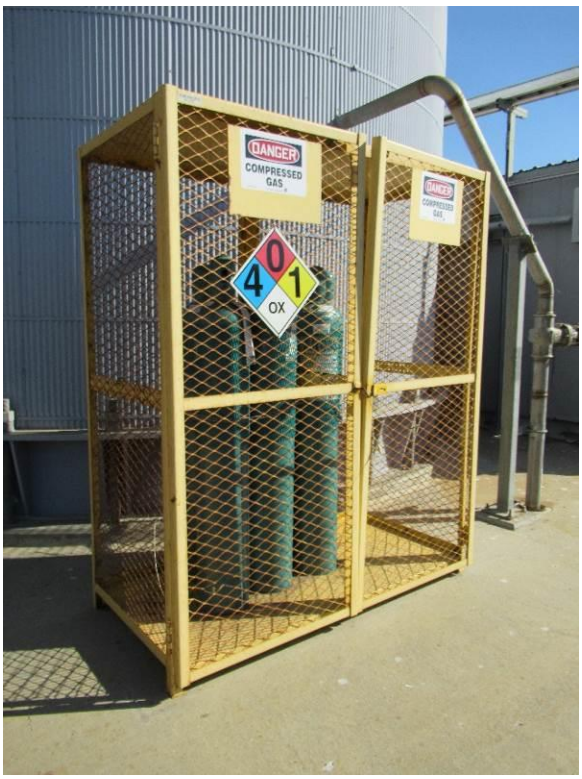

Figure 11: Compressed gas cylinders are not being secured properly.

Finding 11: Calibration stickers are not kept up-to-date. ESRB observed outdated calibration stickers on breaker relays in the 4160V load center. Similarly, online analyzers in the Sampling Water Analysis Shack also have out-of-date stickers. Outside operators routinely take readings off of these instruments. Without up-to-date stickers, operators may get confused as to whether or not the instrument reading is reliable, which may lead to operational error. While the Plant may track calibrations separately in a database, stickers at the instrument location (point of reading) is an effective and inexpensive way to communicate to the operator regarding the instrument's calibration status.

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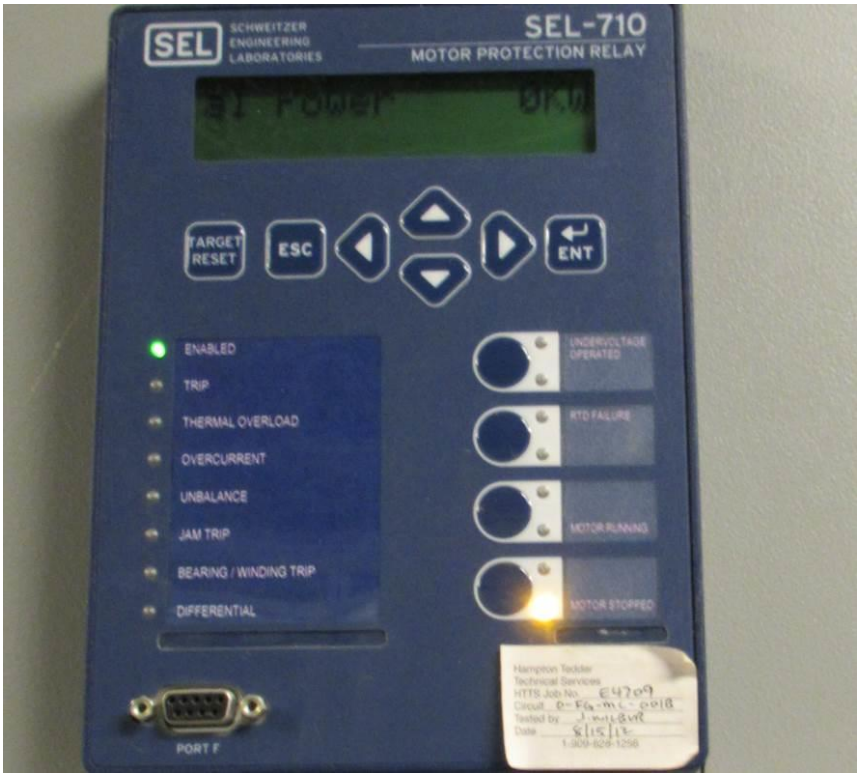

Figure 12: Calibration stickers are not kept up-to-date.

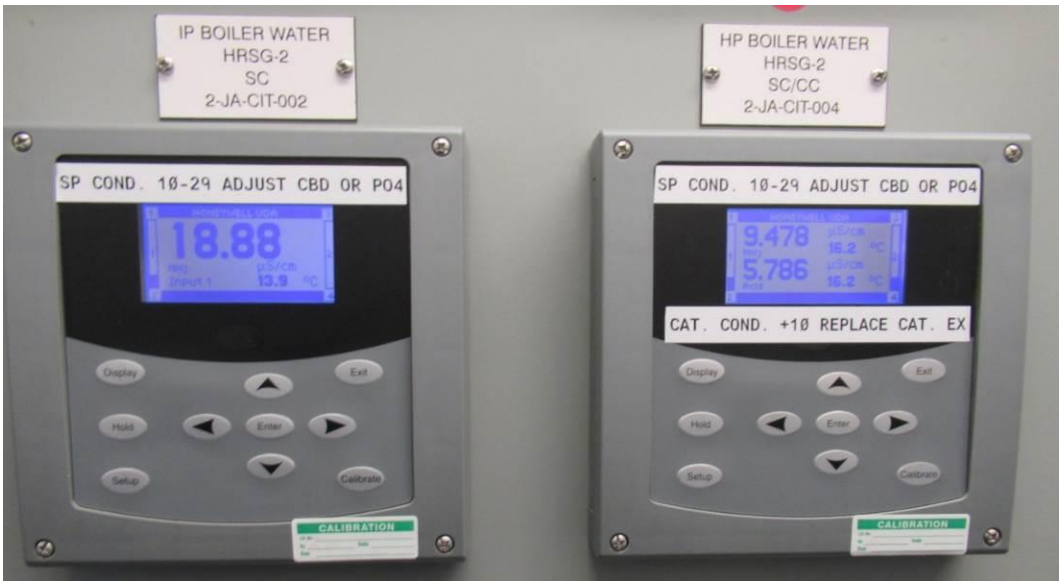

Figure 13: Calibration stickers are not kept up-to-date.

Finding 12: Missing NFPA Placard on main gate. ESRB observed that the Plant's main gate did not have a National Fire Protection Association (NFPA) 704 warning placard. The Plant

stockpiles and uses hazardous chemicals as part of its normal operation, including ammonia for emission controls, sodium hypochlorite, pH adjuster, and oxygen scavenger for feedwater controls. NFPA 704 is a standard system for identifying hazards of materials for emergency response. The posting of an NFPA placard on the main gate is a common industry practice so first responders can quickly and easily identify the risks posed by a facility's hazardous materials. This helps emergency personnel to determine what safety gear and precautions to use and how best to respond in emergency situations. In response, the Plant installed a placard on the main gate. Therefore, the Plant does not need to take further corrective action.

GO 167, Maintenance Standard 1: Safety states in part:
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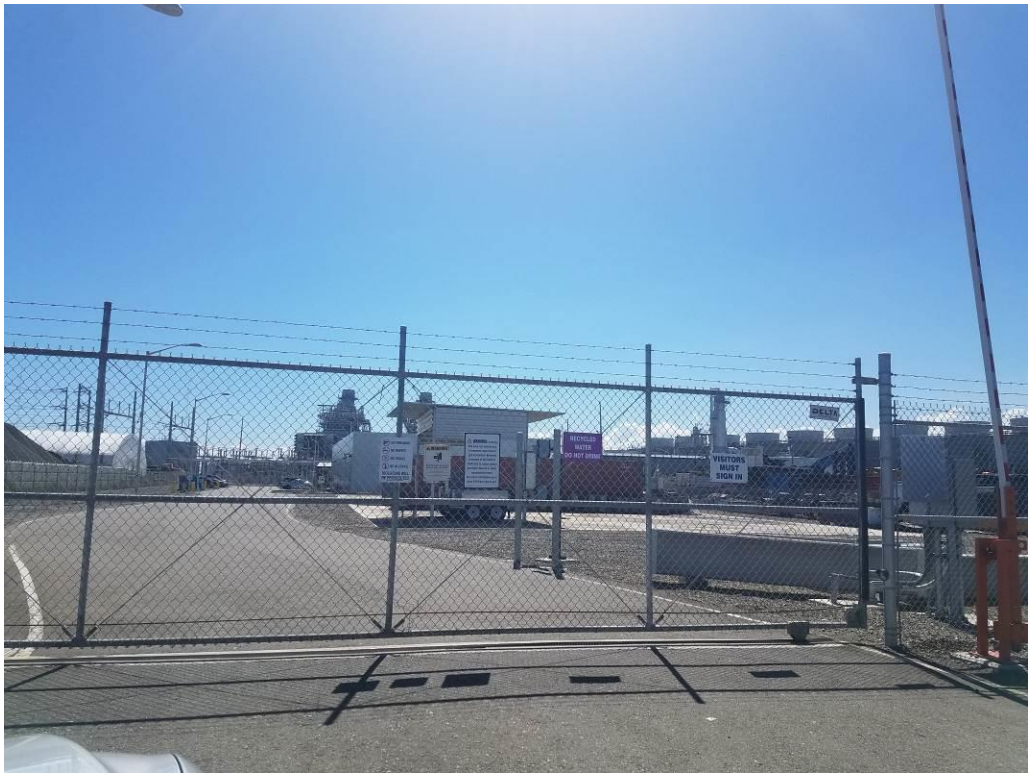

Figure 14: Missing NFPA Placard on main gate.

Finding 13: Piping and Instrumentation Diagrams (P&IDs) on demineralizer/deionizer are not up-to-date. ESRB observed the Plant's P&IDs still show it uses a mixed-bed DI trailer. The Plant did away with portable trailers and has since installed a permanent setup that uses reverse osmosis and ultrafiltration systems. Maintenance techs in many occasions rely and refer

to equipment P&IDs in work packages to perform repair work. It is imperative that the Plant has an effective Management of Change (MOC) process to ensure equipment upgrades and retrofits are properly reflected on documentation such as P&IDs and vendor manuals. In response, the Plant updated the system P&IDs and labeled the mixed-bed trailers as decommissioned to prevent confusion. Therefore, the Plant does not need to take further corrective action.

GO 167, Operation Standard 9: Engineering and Technical Support states:
"Engineering activities are conducted such that equipment performance supports reliable plant operation. Engineering provides the technical information necessary for the plant to be operated and maintained within the operating parameters defined by plant design. Engineering provides support, when needed, to operations and maintenance groups to resolve operations and maintenance problems."

Finding 14: Improper storage of spare component. ESRB observed a metal-clad breaker being precariously stored in the 4160V load center. The Plant should store spare components in the warehouse where they're properly tracked and inventoried. In response, the Plant relocated the spare part back into proper storage in the warehouse. Therefore, the Plant does not need to take further corrective action.

GO 167, Maintenance Standard 12: Spare Parts, Material and Services states:
"Correct parts and materials in good condition, are available for maintenance activities to support both forced and planned outages. Procurement of services and materials for outages are performed in time to ensure materials will be available without impact to the schedule. Storage of parts and materials support maintaining quality and shelf life of parts and materials."

GO 167, Operation Standard 4: Problem Resolution and Continuing Improvement states:
"The GAO values and fosters an environment of continuous improvement and timely and effective problem resolution."

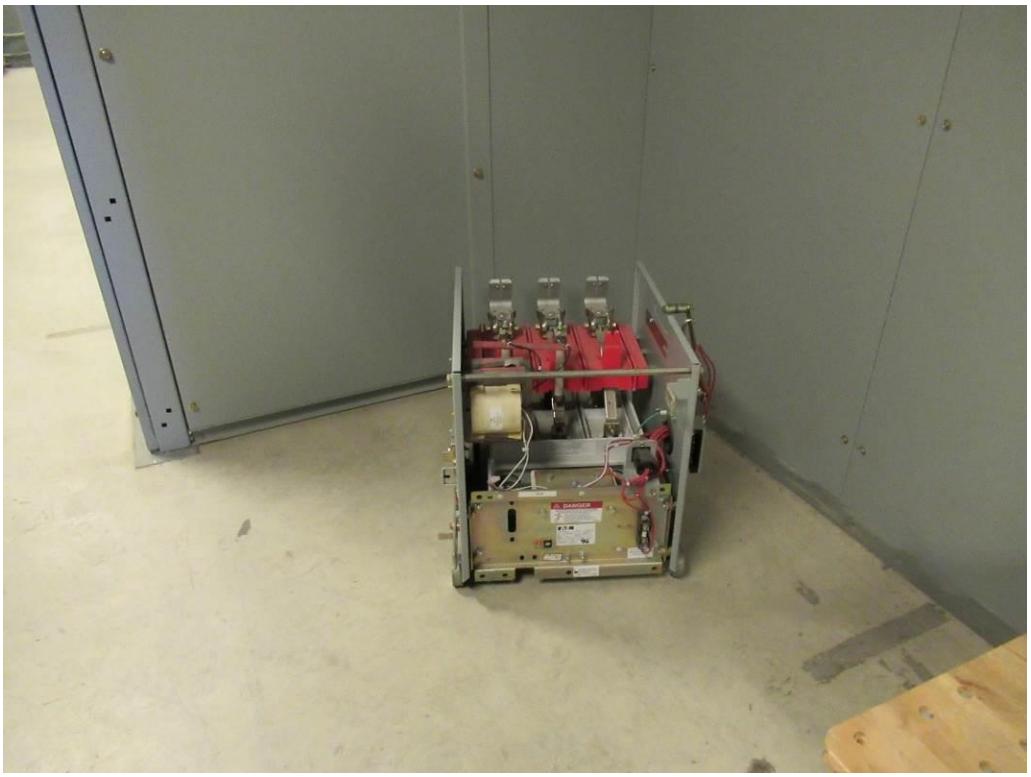

Figure 15: Improper storage of spare component.

V. Observations and Recommendations

Observation 1: Water ponding in secondary containments. ESRB observed water ponding in secondary containments of Unit 1's station transformer and phosphate storage tank. Due to recent storms, rainwater had accumulated in the containment. In response, the Plant tested the water with pH strips (confirming it was indeed storm water) prior to draining the water out of the containment. Containments are designed to hold certain fixed volume per the equipment in the event of a leak. Allowing water to pond in the containment displaces its design volume and defeats its purpose. While the amount of water in the containment did not appear to significantly lower the catch volume, ESRB nonetheless recommends the Plant to follow good industry practice to drain containments after major storms.

GO 167, Operation Standard 4: Problem Resolution and Continuing Improvement states: *"The GAO values and fosters an environment of continuous improvement and timely and effective problem resolution."*

GO 167, Operation Standard 8: Plant Status and Configuration states: *"Station activities are effectively managed so plant status and configuration are maintained to support safe, reliable and efficient operation."*

(Before)

(After)

(Before) (After)

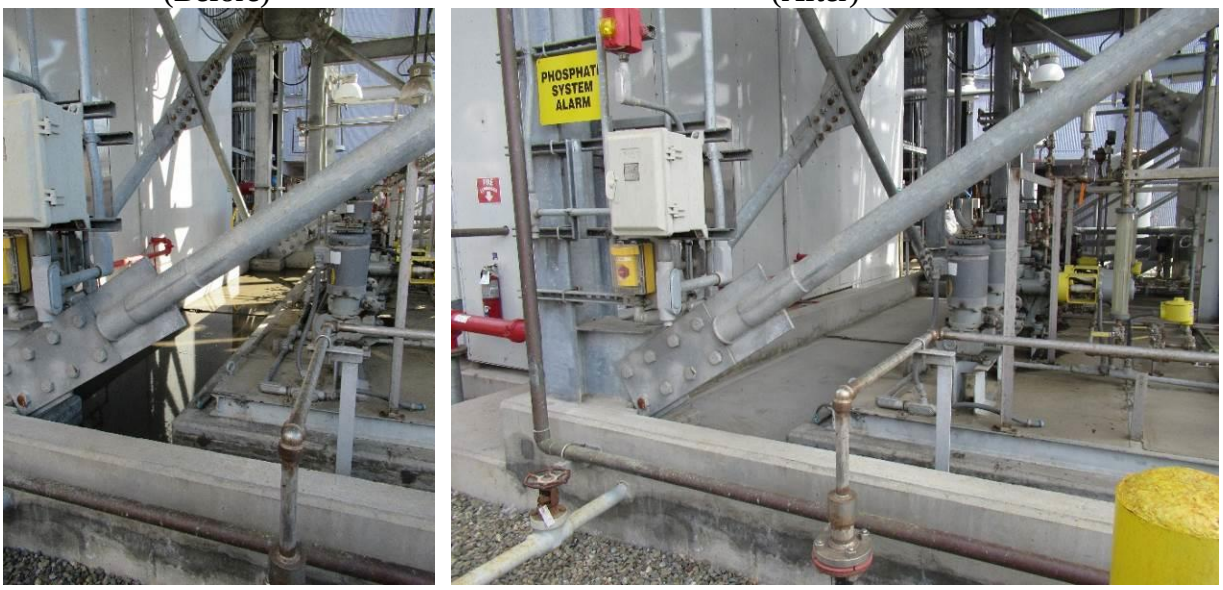

Figure 16: Before and after photos of water ponding in secondary containments.

Observation 2: Recommendations in Infrared Inspection Reports for HRSG 1 and 2 are not followed. ESRB reviewed the 2014 to 2018 Predictive Maintenance Reports (Infrared Inspection Reports) for HRSG 1 and 2 and found that the Plant did not follow the recommendations. In the July 29, 2014 report, the temperatures at the right and left sides of the expansion joints on both HRSGs exceeded 650°F and listed to be corrected as soon as possible per the HRSG Severity Chart. The temperatures at these locations continued to exceed 650°F up until 2018. Although the HSRG Severity criteria has changed in 2015 and subsequent reports have downgraded the recommendation to inspect as soon as possible, the Plant, nonetheless, did not take any action until 2018 (four years after the issue was first noted) when it finally created a work order[4] to repair the defect. At the time of the audit (March 2019), the Plant still has not yet repaired the defect. ESRB observed that the Plant did not follow the contractor recommendations from whom the Plant supposedly relied on for technical advice. ESRB recommends the Plant to document the evaluation of future contractor recommendations as proof that it has reviewed and seriously considered such recommendations, irrespective if it ultimately decides to adopt or decline the recommendations.

GO 167, Operation Standard 1: Safety states in part:
"The protection of life and limb for the work force is paramount."

Cal OSHA Title 8 §3308: Hot Pipes and Hot Surfaces states in part:
"Pipes or other exposed surfaces having an external surface temperature of 140 degrees F (60 degrees C) or higher and located within 7 feet measured vertically from floor or working level or within 15 inches measured horizontally from stairways, ramps or fixed ladders shall be covered

[4] Work Order #27205703

with a thermal insulating material or otherwise guarded against contact. This order does not apply to operations where the nature of the work or the size of the parts makes guarding or insulating impracticable.”

VI. Documents Reviewed

ESRB reviewed the following records and documents:

Safety
1 Orientation Program for Visitors and Contractors
2 Evacuation Procedure
3 Evacuation Map and Plant Layout
4 Evacuation Drill Report & Critique (last 3 years)
5 Hazmat Handling Procedure
6 MSDS for All Hazardous Chemicals
7 Injury & Illness Prevention Plan (IIPP)
8 OSHA Form 300 (Injury Log) in last 4 years
9 OSHA Form 301 (Incident Report) in last 4 years
10 List of all CPUC Reportable Incidents (last 5 years)
11 Root Cause Analysis of all Reportable Incidents (if any)
12 Fire Sprinklers Test Report (last 3 years)
13 Insurance Report / Loss Prevention / Risk Survey (last 3 years)
14 Lockout / Tagout Procedure
15 Arc flash Analysis
16 Confined Space Entry Procedure
17 Plant Physical Security and Cyber Security Procedures and Records
18 Fire Protection System Inspection Record
19 Job Safety Analysis Program
20 Hotwork Procedure

Training
21 Safety Training Records
22 Skill-related Training Records
23 Certifications for Welders, Forklift & Crane Operators
24 Hazmat Training and Record

Contractor Management
25 Latest list of Qualified Contractors
26 Contractor Selection / Qualification Procedure
27 Contractor Certification Records
28 Contractor Monitoring Program

Regulatory Compliance
29 Daily CEMS Calibration Records
30 Air Permit
31 Water Permit
32 Spill Prevention Control Plan (SPCC)
33 California Accidental Release Plan & Risk Management Plan (RMP)
34 Relative Accuracy Test Audit Results (past 5 years)

35 Hazardous Waste Transfer Manifests (past 5 years)

Operations and Maintenance (O&M)
36 Daily Round Sheets / Checklists
37 Feedwater Grab-sample Test Records
38 Water Chemistry Manual
39 Logbook
40 List of Open/Backlogged Work Orders
41 List of Closed/Retired Work Orders (last 4 quarters)
42 Work Order Management Procedure (last 3 revisions, if applicable)
43 Computerized Maintenance Management System (Demonstration Onsite)
44 All Equipment Failure Root Cause Analyses

Gas Turbine (GT)
45 Borescope Inspection Reports (last 2 years)
46 Maintenance & Inspection Procedures (or Related Documents) (last 3 revisions, if applicable)
47 Combustors Inspection (CI) Reports
48 Hot Gas Path (HGI) Inspection Reports
49 Bearing Lube Oil Analysis Reports
50 DC Lube Oil Pump Test Records
51 Over-speed Trip Test Records

Compressors
52 Inspection Procedures and Records
53 P&IDs
54 Vendor Manuals

Spare Parts
55 Spare Parts Inventory List
56 Shelf-life Assessment Report

Employee Management
57 Organizational Chart
58 Employee Performance Review Procedures and Verifications

Heat Recovery Steam Generator (HRSG)
59 Tube Analysis Report
60 Chemical Clean Report
61 Safety Valve Test Records
62 Hot Spots / IR Inspection Reports
63 Structural Integrity Assessment

High Energy Piping (HEP)
64 FAC Inspection Procedure & Measurements
65 Corrosion Under Insulation Inspection Program

66 Pipe Hangers / Support Calibration Records

Steam Turbine (ST)
67 NDE Reports
68 Over-speed Trip Test Records
69 Bearing Lube Oil Analysis Reports
70 DC Lube Oil Pump Test Records
71 Emergency Stop Valve Test Records on Main Steam Line
72 Borescope Inspection Records
73 Most recent Major/Minor STG inspection reports

Generators
74 Bearing Lube Oil Analysis
75 Maintenance & Inspection Procedures (or related documents)
76 Polarization Test Records

Transformers
77 Hot Spots / IR Inspection Reports
78 Oil Analysis Reports

Cathodic Protection
79 Procedures and Inspection Records

Air Cooled Condenser (ACC)
80 Cooling Fans & Motors Inspection Records
81 Air-Cooled Condenser Structural Integrity Assessment
82 Boiler Feed Pumps Maintenance Records

Instrumentation
83 Instrument Calibration Procedures and Records

Test Equipment
84 Calibration Procedures and Records

Emission Control System
85 Maintenance & Inspection Procedures and Records (SCR & CO Catalyst)
86 Constant Emission Control System Maintenance & Test Records
87 Relative Accuracy Test Audits (last five years)

Internal Audit
88 Internal Audit Procedures and all Records