CPUC AUDIT FINDINGS OF METCALF ENERGY CENTER JULY 15 – JULY 18, 2024

I. Findings Requiring Corrective Action

Finding 1: The Plant must address various equipment and housekeeping issues.

General Order (GO) 167-B, Appendix D, Maintenance Standard (MS) 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-B, Appendix D, MS 11: Plant Status and Configuration states:

> *"Station activities are effectively managed so plant status and configuration are maintained to support reliable and efficient operation."*

GO 167-B, Appendix D, MS 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."*

GO 167-B, Appendix E, Operation Standard (OS) 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."*

GO 167-B Appendix E, OS 13: Routine Inspections states in part:

> *"Routine inspections by plant personnel ensure that all areas and critical parameters of plant operations are continually monitored, equipment is operating normally, and that routine maintenance is being performed…"*

During the tour of the Metcalf Energy Center (the Plant), the Electric Safety and Reliability Branch (ESRB) audit team observed conditions that require corrective actions. These included findings such as leaks, corrosion, and improper storage of equipment. The Plant must continue to conduct thorough routine inspections during its normal course of work to identify abnormal conditions. The following findings must be addressed if not already done so during the audit:

1. The nuts and bolts that secure [redacted] are severely corroded. Following the audit, the Plant created the Work Order [redacted] to repaint the [redacted] during the [redacted].

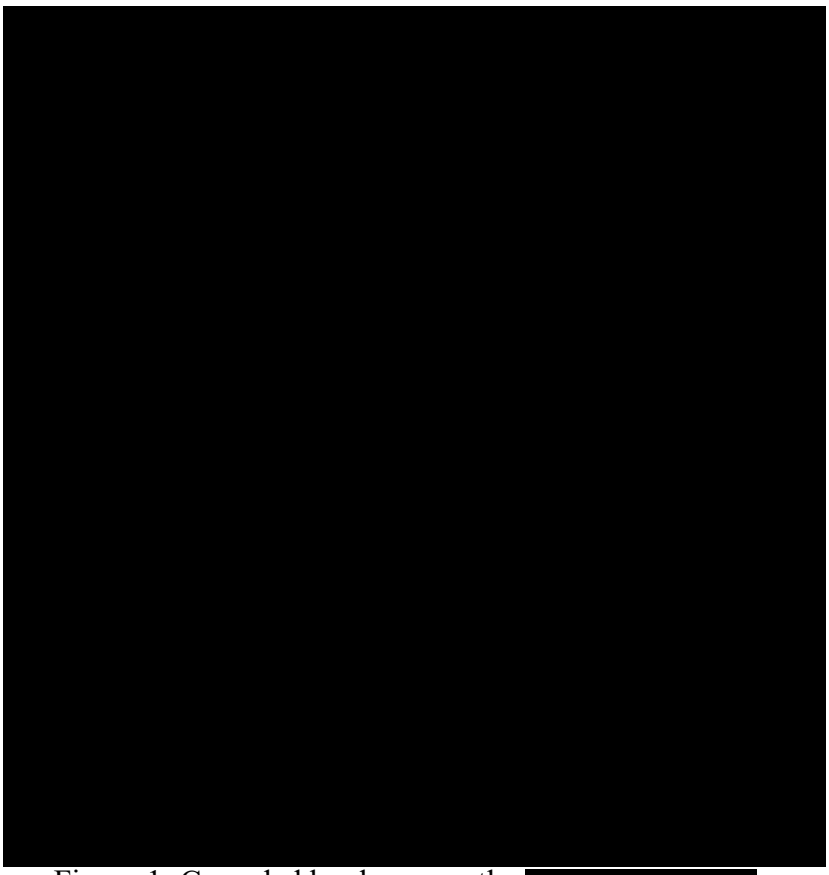

Figure 1: Corroded hardware on the [redacted].

2. Grounding grid cables are exposed above ground in multiple locations around the Plant. The Plant immediately buried all the identified ground grid cables during the audit.

Figure 2: (Left) Exposed ground grid near the [redacted]. (Right) The Plant immediately buried the grounding cable.

Figure 3: (Left) Exposed ground grid near the [redacted]. (Right) The Plant immediately buried the grounding cable.

3. The bonding wire on an [redacted] near the [redacted] is disconnected.

Figure 4: Disconnected bonding wire.

4. There is a hole in the [redacted] that covers the [redacted] near the [redacted]. This poses as a safety hazard if personnel were to step into the hole and fall. During the audit, the Plant immediately installed a new [redacted] to mitigate the hazard.

Figure 5: (Left) There is a hole in one quadrant of the [redacted]. (Right) The Plant immediately installed a new [redacted].

5. There is a [redacted] leak on one of the [redacted] on the [redacted].

Figure 6: [redacted] leak on the [redacted] on [redacted].

6. Under the [redacted], there is an energized extension cord lying directly beneath an [redacted], causing condensate to drip onto the extension cord. The cord must be moved to a dry location to avoid accidental short circuits or potential shock hazards from becoming wet.

Figure 7: The extension cord is getting water in it.

7. There are left over parts and materials from prior construction or outage work being left around the Plant. Spare or unused parts must be stored in their appropriate storage areas.

Figure 8: (Left) There is wood on the cable tray in the [redacted].
(Right) The Plant immediately removed the wood.

Figure 9: (Left) There are [redacted] materials and wood being stored near the [redacted]. (Right) The Plant immediately removed the materials.

Finding 2: Pipe support and hangar issues.

GO 167-B, Appendix D, MS 11: Plant Status and Configuration states:

"Station activities are effectively managed so plant status and configuration are maintained to support reliable and efficient operation."

GO 167-B, Appendix E, OS 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."

GO 167-B Appendix E, OS 13: Routine Inspections states in part:

"Routine inspections by plant personnel ensure that all areas and critical parameters of plant operations are continually monitored, equipment is operating normally, and that routine maintenance is being performed…"

ESRB observed pipe supports and hangars that were missing labels or had illegible labels. These labels are essential to ensure pipes are being supported within their designed limits. The Plant must maintain the condition of its pipe supports and hangar labels and must routinely inspect its piping structures to ensure they are operating within safe limits.

Figure 10: The hot and cold position labels on a pipe hangar under [redacted] are missing.

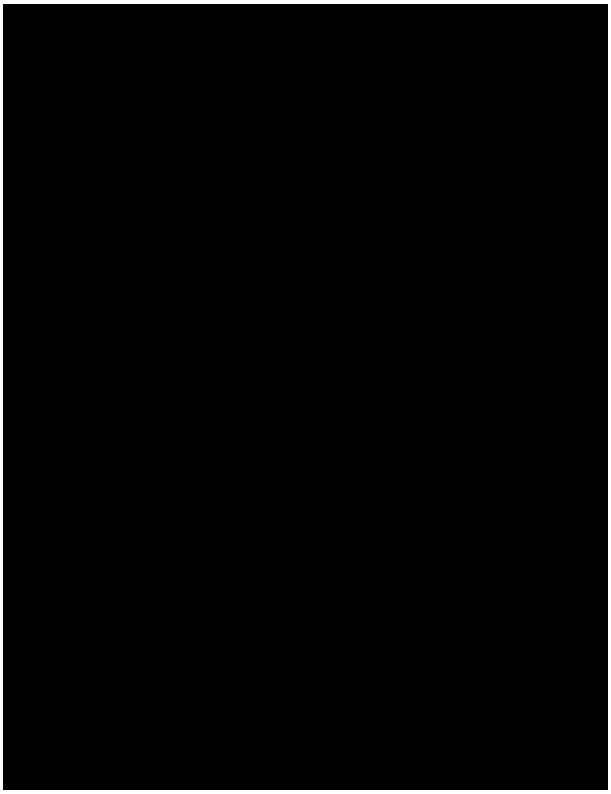

Figure 11: The hot and cold position labels on a pipe hangar under [redacted] are missing.

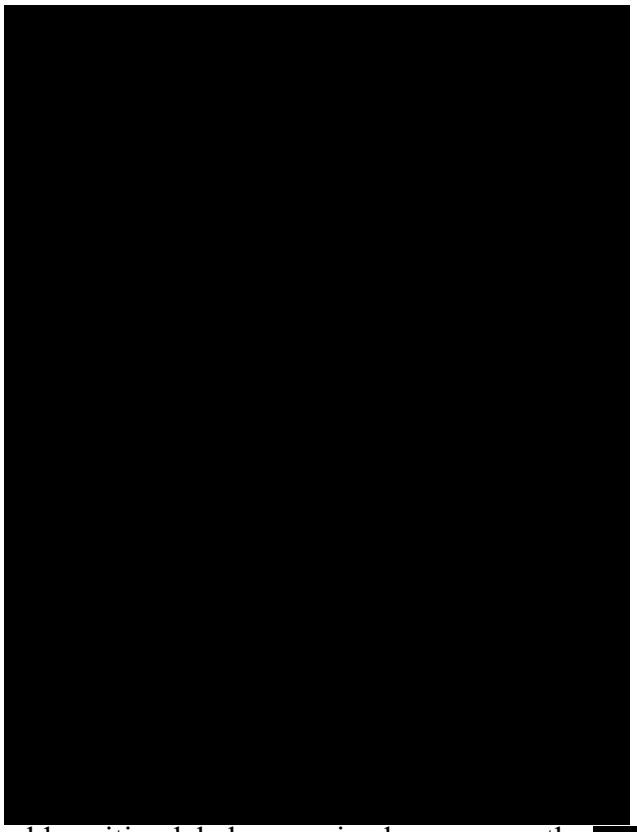

Figure 12: The hot and cold position labels on a pipe hangar near the [redacted] are missing.

Finding 3: One of the [redacted] valves is not secured by physical means.

GO 167-B, Appendix E, OS 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."*

National Fire Protection Agency (NFPA) 25 13.3.1.3, 2020 Edition, states:

> *"Each normally open valve shall be secured by means of a seal or a lock or shall be electronically supervised in accordance with the applicable NFPA standard."*

One of the normally open valves that supplies [redacted] is not physically locked open. The locking cable was installed, but the lock was missing. Locking normally open [redacted] valves prevents the accidental closure or tampering of the valves and ensures the availability of [redacted] during emergency situations when the [redacted] is needed. During the audit, the Plant immediately installed a lock on the valve.

Figure 13: (Left) The [redacted] valve is not locked. (Right) The Plant immediately installed a lock.

Finding 4: [redacted] **Fire Suppression must be made compliant with GO 167-B.**

GO 167-B Guidelines for Appendix E, OS 28: Equipment and Systems states in part:

> *"GAO complies with these Operation Standards (1-27) considering the design bases (as defined in the Appendix) of plant equipment and critical systems. The GAO considers the design basis of power plant equipment when as required by other standards it, among other things:*
>
> *Z. Fire Protection System*
>
> *f. Fire Protection Equipment Markings*
>
> *1. Locations employing low-pressure and high-pressure water systems clearly differentiate each system.*
>
> *2. Fire protection equipment, including but not limited to fire blanket boxes, pumps, hose locations, hydrants, sirens, and extinguishers, are painted red."*

All the [redacted] that have [redacted] fire suppression systems are missing proper demarcation. The Plant must properly identify the fire suppression system, specifically having them labeled or painted red.

Figure 14: The [redacted] system needs labeling.

Figure 15: The [redacted] system needs labeling.

Finding 5: The Plant must continue to maintain and replace missing or deteriorated signage.

GO 167-B, Appendix D, MS 1: Safety states in part:

> *"The protection of life and limb for the work force is paramount. The company behavior ensures that individuals at all levels of the organization consider safety as the overriding priority."*

GO 167-B, Appendix D, MS 4: Problem Resolution and Continuing Improvement states:

> *"The company values and fosters an environment of continuous improvement and timely and effective problem resolution."*

GO 167-B, Appendix D, MS 11: Plant Status and Configuration states:

"Station activities are effectively managed so plant status and configuration are maintained to support reliable and efficient operation."

GO 167-B, Appendix E, OS 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."

ESRB observed several deteriorating and missing signs and labels. These signs help inform employees, contractors, and visitors who may be unfamiliar with the equipment of their inherent dangers. The Plant must continue to perform routine inspections to identify damaged, degraded, or missing signs and it must immediately replace the following missing or deteriorated signs:

1. Degraded signs on the [redacted].

Figure 16: Damaged signage on the [redacted].

2. The [redacted] contains flammable gases ([redacted]) and is missing an NFPA diamond. During the audit, the Plant immediately installed a new NFPA diamond.

Figure 17: (Left) The [redacted] contains flammable gas. (Right) The Plant immediately installed an NFPA diamond.

3. The labels on the [redacted] are faded. From left to right, the labels should read [redacted]

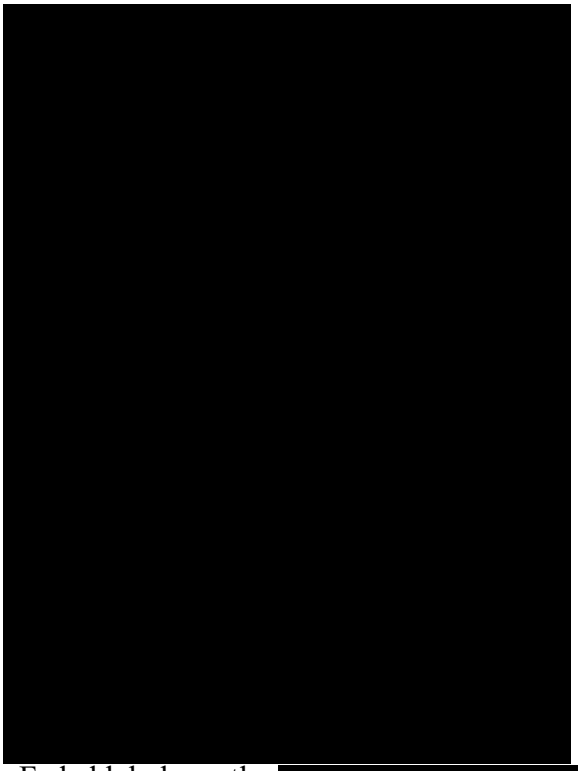

Figure 18: Faded labels on the [redacted].

4. There are tags on the outside the [redacted] that are worn out and no longer show their information.

Figure 19: (Left) Blank information tag outside one of the [redacted] (Right) Blank work order tag on [redacted].

Finding 6: The Plant requires improvements to its storage practices of [redacted] chemicals.

GO 167-B, Appendix E, OS 1: Safety states**:**

> *"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. The work environment and the policies and procedures foster such a safety culture, and the attitudes and behaviors of personnel are consistent with the policies and procedures."*

GO 167-B, Appendix E, OS 4: Problem Resolution and Continuing Improvement states:

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

The Plant's [redacted] storage cabinets require improved housekeeping and maintenance. ESRB observed cabinets with spilled chemicals mixing and pooling in the bottom of the cabinet containment, chemical bottles leaking and corroding shelves, and chemical containers haphazardly stacked on top of each other. During the audit, the Plant immediately cleaned up the [redacted] storage cabinets. The Plant must continue to maintain these cabinets in safe conditions.

Figure 20: (Left) The [redacted] storage cabinet near [redacted] has chemicals pooling in the bottom. (Right) The Plant immediately cleaned the cabinet.

Figure 21: (Left) The [redacted] storage cabinet in the [redacted] has a leaking chemical. (Right) The Plant immediately removed the leaking bottle and cleaned the cabinet.

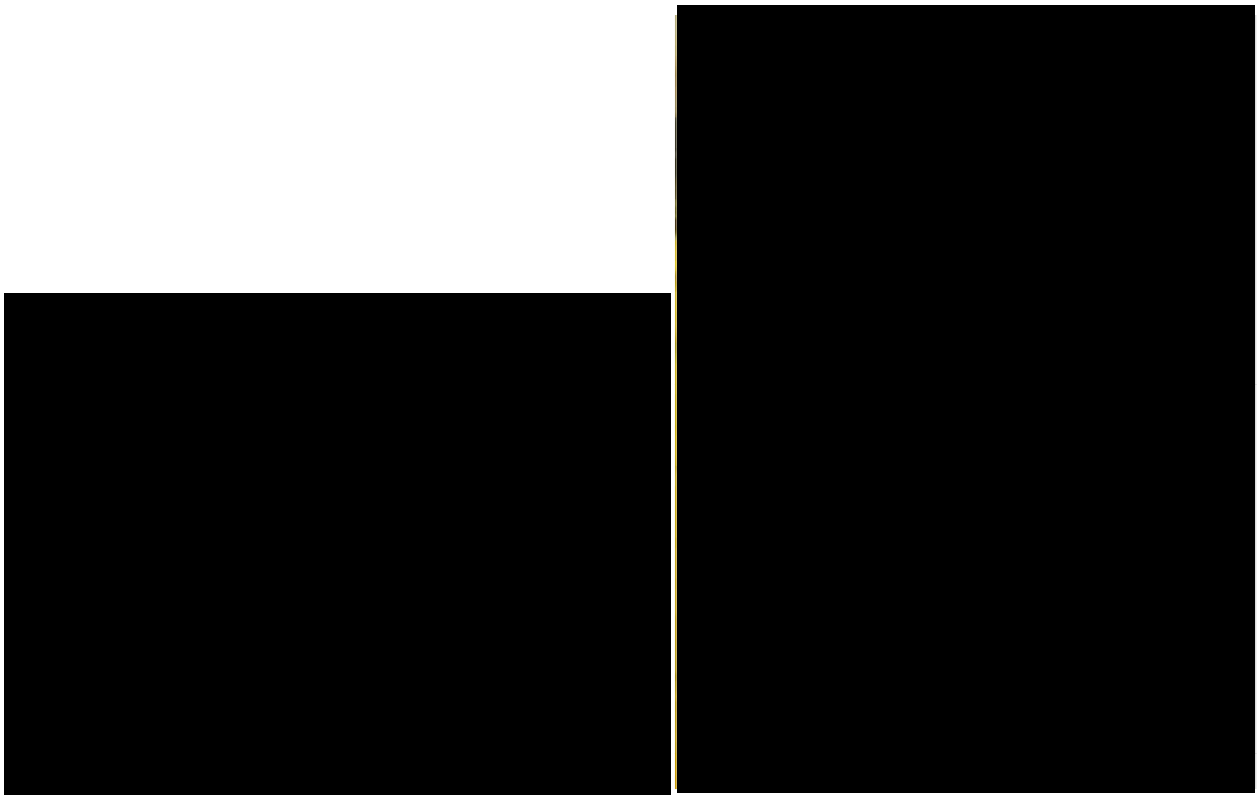

Figure 22: (Left) The [redacted] storage cabinet in the [redacted] is in disarray. (Right) The Plant immediately cleaned and organized the cabinet.

Finding 7: Portable eyewash bottles are not being maintained.

GO 167-B, Appendix D, MS 12: Spare Parts, Materials and Servies 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-B, Appendix E, OS 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 portable eyewash bottles that are being stored in one of the [redacted] storage cabinets are expired. ESRB acknowledges there are several eyewash stations around the Plant; however, maintaining access to portable eyewash bottles is necessary when work is done in areas without quick access to these eyewash stations.

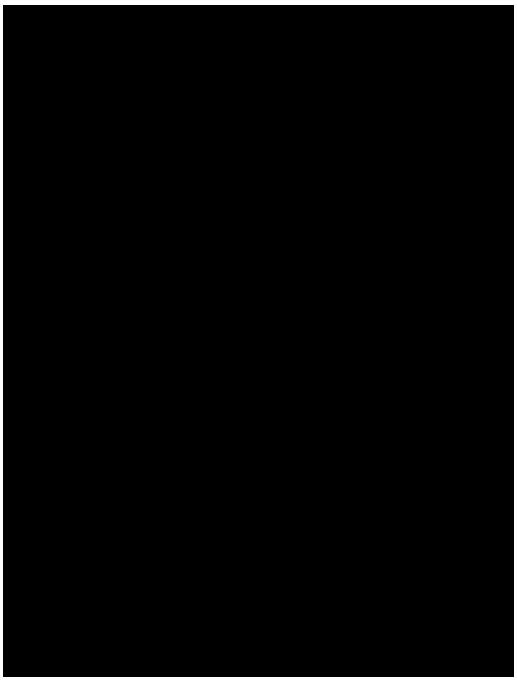

Figure 23: The portable eyewash bottles expired in December 2018.

Finding 8: The Plant must address active oil leaks on its equipment.

GO 167-B, Appendix D, MS 1: Safety states in part:

"The protection of life and limb for the work force is paramount. The company behavior ensures that individuals at all levels of the organization consider safety as the overriding priority."

GO 167-B, Appendix D, MS 4: Problem Resolution and Continuing Improvement states**:**

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

GO 167-B, Appendix D, MS 11: Plant Status and Configuration states:

"Station activities are effectively managed so plant status and configuration are maintained to support reliable and efficient operation."

GO 167-B, Appendix E, OS 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."

ESRB observed oil actively leaking from [redacted] near the [redacted]. Oil leaks must be addressed to ensure workers are not exposed to slip hazards and to ensure equipment is being supplied with enough lubrication oil.

1. Oil is leaking from the [redacted]. ESRB noted the oil levels were below the [redacted] normal levels, but this was because the [redacted] were operational during the audit. The information tag states to check the oil level [redacted]. The Plant must continue to routinely check the [redacted] oil levels to ensure they are in safe operating ranges and address any active oil leaks.

Figure 24: Oil level and leaks on one of the [redacted].

2. Oil is leaking from an [redacted] near the [redacted]. The entire [redacted] is coated in oil and poses as a slip hazard for personnel working in the area. At a different [redacted], there is also an oil leak that is causing oil to leak onto walkways.

Figure 25: Oil leak near the [redacted].

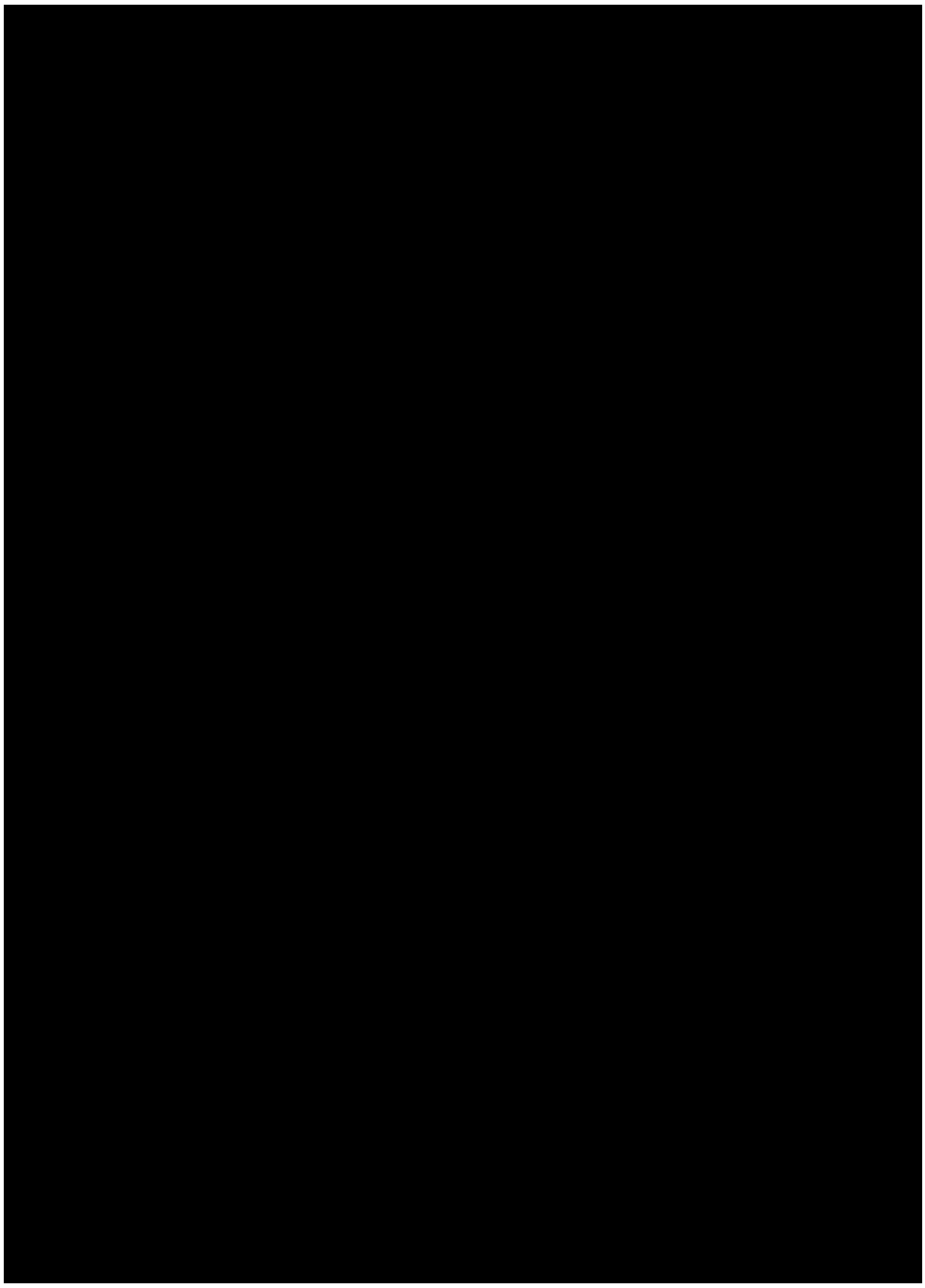

Figure 26: (Top) Oil leak at a different [redacted] under the [redacted]. (Bottom) Oil is spilling onto the walkway.

Finding 9: The Plant must address damaged insulation.

GO 167-B, Appendix D, MS 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-B, Appendix D, MS 11: Plant Status and Configuration states:

"Station activities are effectively managed so plant status and configuration are maintained to support reliable and efficient operation."

ESRB observed instances of damaged insulation around the facility. Damaged or missing insulation can result in degraded thermal efficiency or expose personnel to dangerously hot surfaces. In worst case scenarios, water and moisture may potentially enter through damaged portions of the insulation and cause corrosion under insulation. The observed locations included, but were not limited to:

1. Crushed insulation at the bottom of [redacted]

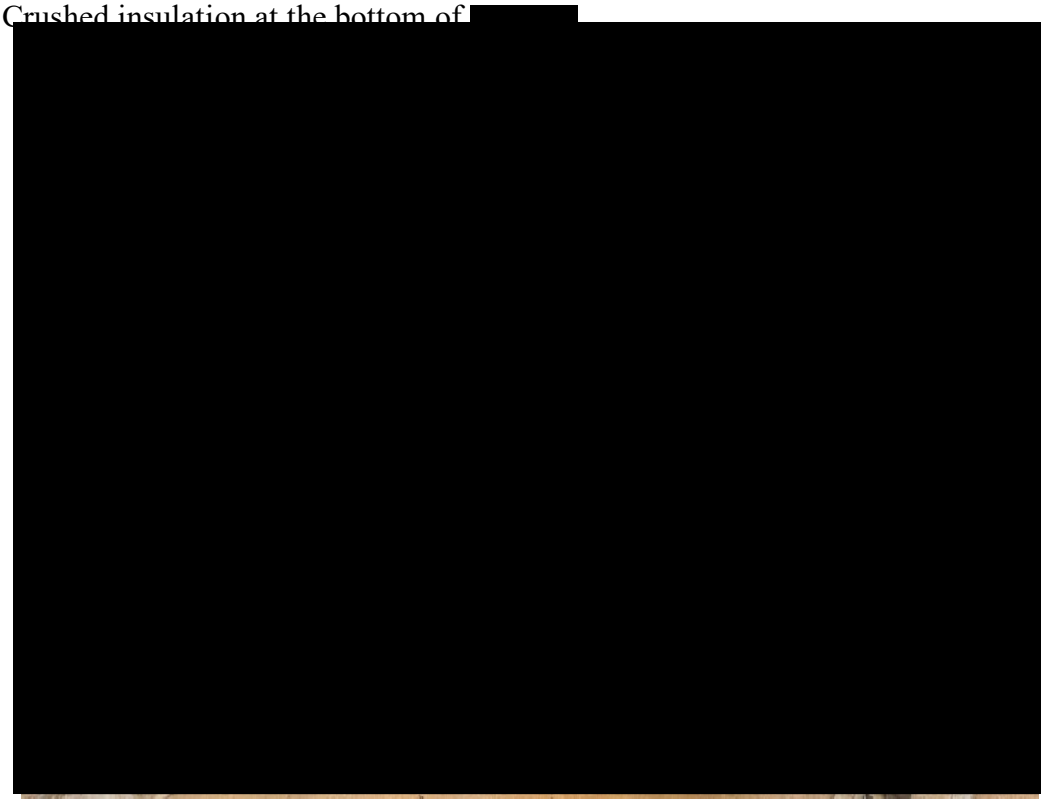

Figure 27: Crushed insulation.

2. Crushed elbow insulation on the [redacted].

Figure 28: Crushed insulation.

3. Crushed and damaged elbow insulation on the [redacted].

Figure 29: Crushed insulation.

Finding 10: Water chemistry compliance limits are not set properly in the Plant's data collection tool.

GO 167-B, Appendix B, Generator Logbook Standards states in part:

"The events recorded in the Control Operator log shall include, but are not limited to, the following:

17) All out-of-limit water chemistry conditions including duration and remedial actions, as well as all boiler chemical feeds and boiler drum blowdowns where applicable."

GO 167-B, Appendix E, OS 3: Operations Management and Leadership states**:**

"Operations management establishes high standards of performance and aligns the operations organization to effectively implement and control operations activities."

ESRB identified that some water chemistry parameters, such as [redacted], were out of their normal operating limits, but were not flagged as such in the Plant's [redacted]). Since the system did not consider these values as being out of compliance, the values were not being reported in the Plant's [redacted]. During the audit, the Plant immediately reevaluated the parameters for the water chemistry entries and corrected the issue.

Finding 11: The Spill Prevention Control and Countermeasures (SPCC) Plan is missing a map that identifies the location of spill kits.

GO 167-B, Appendix E, OS 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-B, Appendix E, OS 7: Operation Procedures and Documentation states in part:

"Procedures are current to the actual methods being employed to accomplish the task."

[redacted] of the Plant's SPCC indicates that there is a [redacted], that identifies the location of emergency response spill kits. ESRB reviewed [redacted] and identified that the Figure only shows the general arrangement of the Plant and does not include the location of any spill kits. During the audit, the Plant immediately added a map showing the location of its spill kits to the physical version of the SPCC. The Plant still needs to update the electronic version of the SPCC.

Finding 12: The documentation of the Plant's overspeed trip test records require improvement.

GO 167-B, Appendix E, OS 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-B, Appendix E, OS 7: Operation Procedures and Documentation states in part:

> *"Procedures are current to the actual methods being employed to accomplish the task."*

The [redacted] for the [redacted] overspeed tests requires personnel to [redacted]. ESRB reviewed overspeed test records from the last five years and noted that none of them [redacted]. Additionally, this practice was not included for [redacted] overspeed tests.

Finding 13: [redacted] is not being inspected on the [redacted] infrared inspection form.

GO 167-B, Appendix E, OS 4: Problem Resolution and Continuing Improvement states:

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

The Plant's [redacted] and [redacted] are included in the [redacted] infrared thermography predictive maintenance reports but have not been inspected [redacted]. [redacted] was last inspected on August 25, 2017, [redacted] was last inspected on October 30, 2015, and the [redacted] was last inspected on October 31, 2013. If this equipment and their respective electrical panels are not part of routine [redacted] infrared inspections, the Plant should consider adding a note under the Comments section or create a separate inspection tracking form.

II. List of Documents Reviewed

Category	Reference #	CPUC-Requested 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	SDS 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	All Root Cause Analyses (last 5 years)
	12	Fire Protection System Test Report and Inspection Record (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
	18	5-year Water Based Fire Protection System Inspection Record
Training	19	Safety Training Records
	20	Skill-related Training Records
	21	Certifications for Welders, Forklift & Crane Operators
	22	Hazmat Training and Records
Contractor	23	Latest list of Qualified Contractors
	24	Contractor Selection / Qualification Procedure
	25	Contractor Certification Records
	26	Contractor Monitoring Program
Regulatory	27	Daily CEMS Calibration Records
	28	Air Permit
	29	Water Permit
	30	Spill Prevention Control Plan (SPCC)
	31	CalARP Risk Management Plan (RMP)
O&M	32	Daily Round Sheets / Checklists
	33	Feedwater Grab-sample Test Records

	34	Water Chemistry Manual
	35	Logbook
	36	List of Open/Backlogged Work Orders
	37	List of Closed/Retired Work Orders
	38	Work Order Management Procedure
	39	Computerized Maintenance Management System
Gas Turbine	40	Maintenance & Inspection Procedures for CTG, STG, Generator, HRSG, Condenser & Transformer
	41	Borescope Inspection Reports (last 2 years)
	42	Hot Gas Path Inspection Reports
	43	Combustors Inspection Reports
	44	Intercooler Inspection Reports (if applicable)
	45	Overspeed Trip Test Records
	46	Bearing Lube Oil Analysis Reports
	47	DC Lube Oil Pump Test Records
Main Plant Air Compressors	48	Inspection Procedures and Records
Document	49	P&IDs
	50	Vendor Manuals
Spare Parts	51	Spare Parts Inventory List
	52	Shelf-life Assessment Procedures and Reports
Management	53	Employee Performance Review Procedures and Verifications
	54	Organizational Chart
HRSG	55	Tube Analysis Report
	56	Tube Clean Records (Internal and/or external)
	57	Safety Valve Test Records
	58	Hot Spots / IR Inspection Reports
	59	Structural Integrity Assessment
HEP	60	FAC Inspection Procedure & Measurements
	61	Pipe Hangers / Support Calibration Records
Steam Turbine	62	NDE Reports
	63	Borescope Inspection Records
	64	Most recent major STG inspection report
	65	STG inspection reports
	66	Overspeed Trip Test Records
	67	Bearing Lube Oil Analysis Reports
	68	DC Lube Oil Pump Test Records
	69	Emergency Stop Valve Test Records on Main Steam Line

	70	Steam Turbine Water Induction Prevention Procedures
Generator (Combustion and Steam Turbine Generators)	71	Bearing Lube Oil Analysis
	72	Maintenance & Inspection Procedures (or related documents)
	73	Electrical Test Records (Reactive power verification, excitation control modeling, polarization, etc.)
Transformers (All)	74	Hot Spots / IR Inspection Reports
	75	Oil Analysis Reports
Cathodic Protection	76	Procedures and Inspection Records
Condenser System	77	Cooling Fans & Motors Inspection Records
	78	Cooling Tower Structural Integrity Assessment
	79	Circulating Water Pumps Maintenance Records
Instrumentation	80	Instrument Calibration Procedures and Records
Test Equipment	81	Calibration Procedures and Records
Emission Control Equipment (SCR, Ammonia, NOx, CO)	82	Maintenance & Inspection Procedures and Records
Internal Audit	83	Internal Audit Procedures and all Records