PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

March 6, 2020

Ryan Brownsberger, Operations Manager
Great Valley Solar
ConEd Clean Energy Businesses, Inc.
34886 W Dinuba Ave #C
Cantua Creek, CA 93608

SUBJECT: **Audit of Great Valley Solar Power Plant**
Audit Number GA2019-04GV

Dear Mr. Brownsberger:

The Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission (CPUC) has completed and enclosed the audit report for the 2019 Great Valley Solar Plant audit that was conducted from December 9 through December 13, 2019.

During the audit, ESRB observed plant operations, inspected equipment, reviewed data, and interviewed plant staff. From these activities, ESRB identified violations of General Order (GO) 167, and observations and recommendations which are listed in Sections IV and V of the report. Please provide a written response within 30 days of your receipt of this letter. Please indicate the corrective actions and preventive measures taken and/or planned to be taken to resolve the violations and address the recommendations.

Your response should include a Corrective Action Plan with a description and completion date of each action and measure completed. For any violations not corrected within 30 days, please provide the projected completion dates to correct the violations and to achieve full compliance with GO 167. If you believe the report contains factual errors, you may discuss those in your response.

Please submit your response to Andie Biggs at andie.biggs@cpuc.ca.gov. After ESRB reviews your response, a follow-up meeting may be scheduled for further discussion. Please note that although Great Valley Solar has been given 30 days to respond, it has a continuing obligation to comply with all applicable GO 167 requirements. The 30-day period does not alter this continuing duty.

If you wish to make a claim of confidentiality covering any of the information in the report, please submit a confidentiality request pursuant to Section 15.4 of GO 167, using the heading "General Order 167 Confidentiality Claim". Please send the request to Charlyn Hook at charlyn.hook@cpuc.ca.gov of our Legal Division, with a copy to Andie Biggs and me.

Thank you for your courtesy and cooperation throughout the audit process. If you have any questions concerning this audit, please contact Andie Biggs at (415) 703-3305.

Sincerely,

Banu Acimis
Program and Project Supervisor
Electric Safety and Reliability Branch
Safety and Enforcement Division

Attachment:
2019 Audit Report of Great Valley Solar Power Plant

Cc:
Lee Palmer, Director, Safety and Enforcement Division, CPUC
Nika Kjensli, Program Manager, ESRB, SED, CPUC
Charlotte TerKeurst, ESRB, SED, CPUC
Charlyn Hook, Legal Division, CPUC
Rickey Tse, Senior Utilities Engineer, ESRB, SED, CPUC
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Andie Biggs, Utilities Engineer, ESRB, SED, CPUC

GO 167 Audit of the *Great Valley Solar Power Plant*

Audit Number GA2019-04GV

Audit Date: December 9-13, 2019

STAFF REPORT

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

Gavin C. Newsom, Governor

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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 Great Valley Solar Power Plant (Great Valley or the Plant) from December 9 through December 13, 2019. On February 8, 2019, ESRB notified the Operations Manager Ryan Brownsberger 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 and information gathered from the site visit. From these activities, ESRB evaluated the Plant for compliance with GO 167. Additional recommendations have also been made to improve the Plant's programs, procedures, and policies to enhance safety and reliability.

II. Background

Great Valley Solar Portfolio Holdings, LLC. (GVSPH 200), is a 200 MWAC solar powered poly-crystalline photovoltaic (PV) group of facilities located in Cantua Creek, CA. The facilities are constructed on leased land, and are operated and maintained by Con Edison (Con Ed) in a common onsite Operations and Maintenance (O&M) building and augmented by specialty contract services by other subcontractors and equipment suppliers for warranty related work. GVSPH 200 went into operation in 2017, first being operated by Sempra Renewable Services (SRS) until being purchased in 2018 by Con Ed, and its planned life is 35 years and was designed and constructed to meet this planned life expectancy. GVSPH 200 consists of:

Great Valley Solar 1- Rojo - 100 MW
Great Valley Solar 2- Verde - 60 MW
Great Valley Solar 3- Azul- 20 MW
Great Valley Solar 4- Amarillo - 20 MW

GVSPH 200 is a solar generation plant portfolio. As such its generation follows the irradiance of the sun and is impacted by cloud cover and storms. The generation output is forecasted based on previous weather patterns for this area and currently projected weather patterns for the area. The power generated by GVSPH 200 is connected to the Pacific Gas & Electric's (PG&E) grid through a collector station onsite (Ocho Switchyard, a GVS owned facility) and through interconnection facilities to include a generation tie line and interconnecting switchyard. The portfolio is within close proximity to the PG&E electrical transmission line and switchyard.

GVSPH 200 operates year-round. Generation output is impacted by seasonal variations. The seasonal impacts to generation output are as noted above based on cloud cover and storms, soiling, as well as elevated temperatures during the summer months resulting in minor output restrictions. To the greatest extent practicable, maintenance activities that would affect production are scheduled for non-production hours (night).

The Plant is expected to operate every day during its planned 35-year life except for planned system outages on the transmission system and system disturbances. Facility maintenance is scheduled to occur during normal plant operation or planned system outages, as necessary. Work activities that require major system outages are conducted during periods of low irradiance or at night to the extent practicable.

Full plant operations commenced upon Facility Commercial Operation on April 14, 2018. The test and commissioning activities have been completed and the Plant is being operated by the O&M staff.

III. Conclusions

ESRB identified 31 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 4 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. Operation and Maintenance Findings Requiring Corrective Action

Finding 1: The Plant must develop a Work Order procedure. A work order procedure will codify current practices and must prioritize and follow-up on incomplete items. The Plant uses a system "EAM10" as a work order management system to create work orders. The Plant staff then follow up on work orders using a separate spreadsheet. This is based upon original equipment manufacturer's recommendations with no additional documentation. If current management were to become unavailable the process could also be in jeopardy. The current process also does not ensure that Plant staff do not drop or forget follow-up items. The system does not include "finish-by" dates for many of its work orders, making it difficult to track work or ensure work is completed in a timely manner. The Plant also fails to prioritize work orders forcing staff into a reactive mode. Most of the entries in the EAM10 spreadsheets show Corrective Maintenance tasks being assigned while Preventative Maintenance remain largely unassigned.

Additionally, ESRB noticed that the Plant often did not populate the notes section of the work order management system, making it difficult to understand the history of a work order. The Plant must also attach any relevant documents, such as filled-out inspection checklists or inventory orders, to the work orders.

GO 167, Operation Standard 7: Operation Procedures and Documentation states:
"Operation procedures exist for critical systems and states of those systems necessary for the operation of the unit including startup, shutdown, normal operation, and reasonably anticipated abnormal and emergency conditions. Operation procedures and documents are clear and technically accurate, provide appropriate direction, and are used to support safe and reliable plant operation. Procedures are current to the actual methods being employed to accomplish the task and are comprehensive to ensure reliable energy delivery to the transmission grid."

GO 167, Operation Standard 16: Participation by Operations Personnel in Work Orders states in part:
"Operations personnel identify potential system and equipment problems and initiate work orders necessary to correct system or equipment problems that may inhibit or prevent plant operations. Operations personnel monitor the progress of work orders affecting operations to ensure timely completion and closeout of the work orders, so that the components and systems are returned to service."

"C. Personnel responsible for prioritizing work orders consult operations personnel to assure that work orders affecting the operations of the Plant are properly prioritized.
D. Appropriate personnel are trained in and follow procedures applicable to work orders. Guidelines for Standard 16: Participation by Operations Personnel in Work Orders"

"B. The work order procedure includes but is not limited to:

1) *A process to identify operating issues that are or have the potential to become problematic for maintaining unit performance, reliability, or safety.*
2) *Determining and assessing the impact of continued operation without resolving the issue.*
3) *Creating a "work order" to document the problem and to plan the corrective action.*
4) *Monitoring the progress of work order tasks, formal closeout of the work order upon completion, and assessing success of the work order actions.*
5) *A written or electronic, trackable system that can be checked by personnel."*

Finding 2: The Plant must develop an over-arching procedure for Document Management. A Document Management Plan or a Management of Change Document should, among other things, designate:

- Who is in-charge of controlling each Plant Document
- Supervisory roles for the management for reviewing and updating of All Procedures
- Timelines for the review, and revision of Plant Documents
- Processes for monitoring procedural changes, such as a "Memorandum of Change" (MOC) recording when changes have been adopted.
- Procedures for processing OEM Procedural changes, e.g. service bulletins or technical information letters
- Procedures for adding procedural changes due to lessons Learned, Near-Misses, or Observations from Field Personnel.
- Procedures for Plant Personnel to make improvements or changes.
- A procedure for the dissemination of changes

GO 167, Operation Standard 3: Operations Management and Leadership states in part:
"B. Management Direction and Expectations

> *Administrative controls are implemented for activities that affect safe and reliable plant operations. Examples of activities that should be controlled include job turnovers, use of procedures, use of special tools and lifting equipment, and use and traceability of measuring and testing equipment."*

Finding 3: The Plant must develop a hazardous materials (HAZMAT) Procedure. The Plant does not currently have any sort of HAZMAT procedure or plan as the Plant claims there are no hazardous materials on-site. However, the Plant does have high pressure tanks that need special handling, transformer oil that can cause skin irritation, fuel and batteries, which all present hazards. The in-lieu reference to the Spill Prevention Containment and Countermeasure (SPCC) Program is inadequate. A HAZMAT Procedure must provide for (but not limited to):

1) An assessment spreadsheet or database of all hazardous materials on site,
2) A timeline for the updating or removal of Safety Data Sheets,
3) Procedures for the introduction of new hazardous materials,
4) The general use of where's and when's for proper HAZMAT Storage
5) A general "when and where" procedure for appropriate secondary containment,
6) Provide an outline for rules for the labeling of buildings or structures,
7) Proper labeling of barrels for the general handling of liquids and fuels,
8) Guidelines for the proper labeling, handling and storage of high-pressure tanks and gases,
9) Provide a timeline for enforcement of a HAZMAT shelf life assessment program,
10) Provide for the general control of hazardous materials such as battery acids and neutralizing agents,
11) Other provisions as appropriate.

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 …

Among other things, the GAO:

C. Ensures provision of emergency information and materials to personnel."

Finding 4: The Plant does not properly inspect and maintain spill kits. The Plant has multiple spill kits spread around its facilities. However, the Plant does not inspect these spill kits and their contents. In the event of an emergency spill, the Plant would want to know that they have enough materials that are in a usable condition to contain the spills. Without proper inspections, Plant Personnel do not know the quantity and quality of materials inside each kit. For example, ESRB noted that some spill kit accessory bags were missing gloves. The Plant requires procedures to ensure the regular inspection of its spill kit contents. The SPCC kit provided in the substation visited did not have an inventory checklist, absorbent powder, safety googles, or gloves.
Furthermore, the Plant does not document the storage location of each spill kit. In addition to the spill kits at its substations and main office, the Plant places spill kits at select Inverter Blocks and medium voltage step-up transformer locations. Since the Plant facilities cover over 1,000 acres of land and contain 82 Inverter Blocks, it may be difficult to locate a spill kit in the event of an emergency spill. The Plant must document the location of the spill kits on a map to ensure the kits are easy to locate for use and inspection.

Figure 1: A spill kit and its accessories

GO 167, Operation Standard 10: Environmental Regulatory Requirements states:
"Environmental regulatory compliance is paramount in the operation of the generating asset. Each regulatory event is identified, reported and appropriate action taken to prevent recurrence."

GO 167, Operation Standard 11: Operation Facilities, Tools and Equipment states in part:
"A. Facility size and arrangement promote safe and effective work and training activities. Human factors are considered when designing and arranging equipment. Appropriate facilities are provided for work on equipment involving hazardous materials.
D. Tools, equipment, and consumable supplies are available to support work"

40 CFR 112 Appendix F, Section 1.8.1.2 Response Equipment Inspection states in part:
"*Describe each type of response equipment, checking for the following:*

Response Equipment Checklist
1. Inventory (item and quantity);

2. *Storage location;*
3. *Accessibility (time to access and respond);*
4. *Operational status/condition;*
5. *Actual use/testing (last test date and frequency of testing); and*
6. *Shelf life (present age, expected replacement date).”*

Finding 5: The Plant lacks adequate spill prevention measures for the substation battery system. The Plant’s substation control rooms contain backup DC-voltage battery systems. These batteries consist of flooded lead-acid cells that contain corrosive electrolytic solutions such as sulfuric acid. According to the Material Safety Data Sheet (MSDS) for the battery system, contact with the battery fluid causes acute tissue destruction and may cause 2nd and 3rd degree burns or blindness. In the event of a spill, the MSDS instructs to neutralize any spilled electrolyte or exposed battery parts with soda ash or sodium bicarbonate. ESRB did not observe any chemicals in nearby spill kits that could neutralize the battery fluid in the event of a spill. Plant Management needs to supply a Chemical Spill Kit in this area that addresses SDS handling procedure.

Great Valley Solar’s SPCC Plan, page 13 states in part:
“Spill cleanup kits that include absorbent material, booms, and other portable barriers are located within close proximity of the oil product storage and handling areas for rapid deployment in the event of a discharge outside the containment area.”

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 11: Operation Facilities, Tools and Equipment states in part:
“*A. Appropriate facilities are provided for work on equipment involving hazardous materials…*
D. Tools, equipment, and consumable supplies are available to support work.

GO 167, Operation Standard 20: Preparedness for On-Site and Off-Site Emergencies states in part:
“C. Ensures provision of emergency information and materials to personnel.”

Finding 6: The Plant must develop a Transformer Maintenance Procedure. Transformer Maintenance relies heavily on oil testing, thermography, cleaning and constant visual inspections. Accordingly, the Plant must implement a maintenance procedure to provide timely inspection intervals and proper assessment techniques and parameters as developed by Original Equipment Manufacturer’s recommendations.

GO 167 Operation Standard 8: Plant Status and Configuration states in part:
“Station activities are effectively managed so plant status and configuration are maintained to support safe, reliable and efficient operation.
A. Personnel are cognizant of the status of plant systems and equipment under their control.”

Finding 7: The Plant must develop an Instrument Calibration Procedure. The Plant must develop a procedure to regularly calibrate all monitoring gauges and testing instrumentation. For example, Plant Staff rely on gauges to monitor oil, winding temperature and tank pressure of the main step-up transformers. ESRB noted that these gauges have a calibration sticker dated November and April 2017 (see Figures 2 and 3). It is an industry best practice to calibrate critical component instrumentation annually.

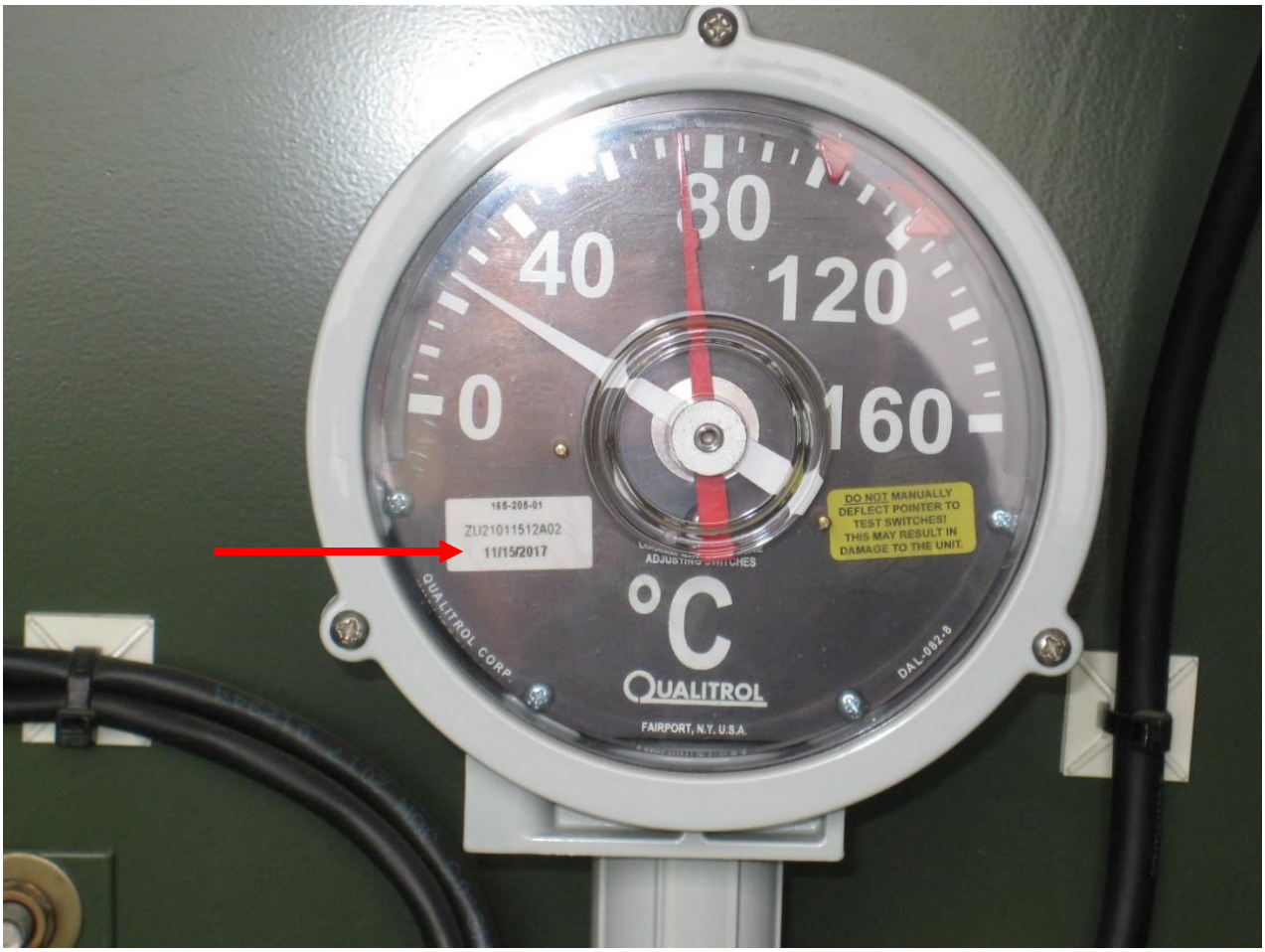

Figure 2: Transformer Temperature Gauge with a calibration sticker dated November 15, 2017. Critical gauges should be calibrated annually.

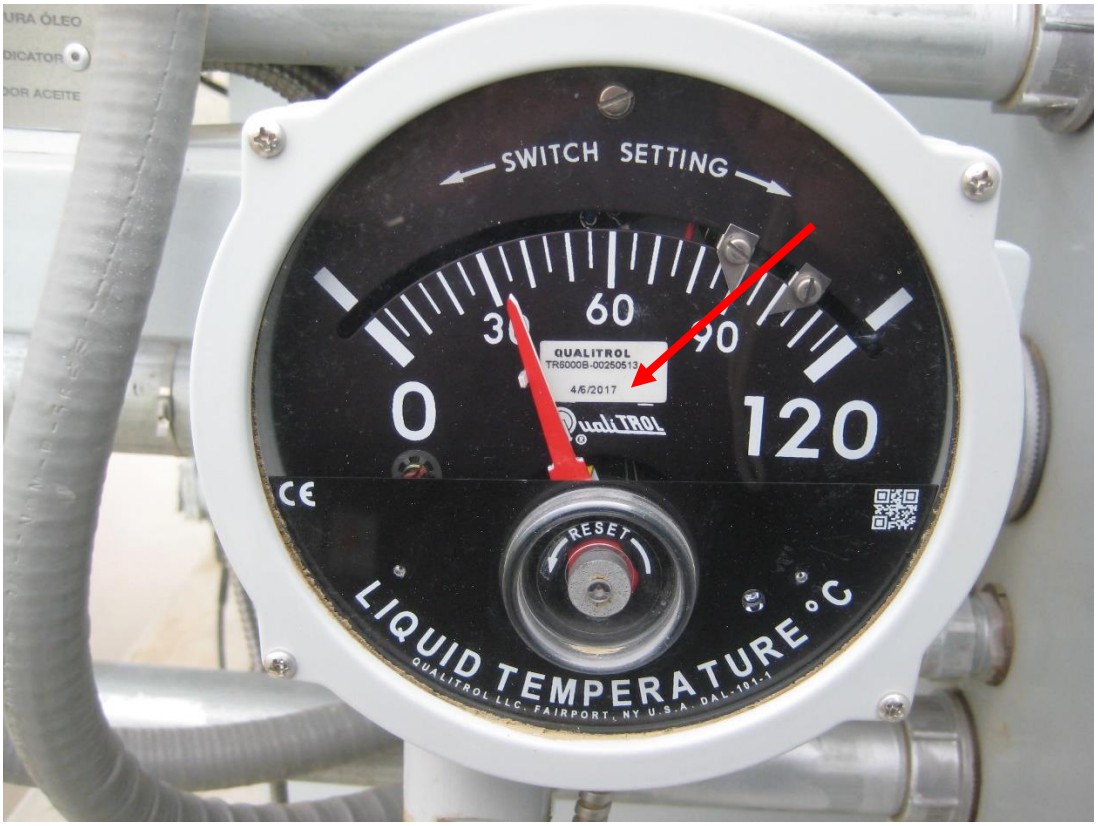

Figure 3: Transformer Temoerature Gauge with a calibration sticker dated April 6, 2017. Critical gauges should be calibrated annually.

GO 167, Operation Standard 8: Plant Status and Configuration states in part:
"A. Plant Status Control

6. Controls for infrequently performed tests and evolutions maintain the Plant within the design basis.

8. Independent (or concurrent, if appropriate) verification of component position is performed for equipment important to safety and/or critical to reliable plant operation.

GO 167, Guidelines for Standard 11: Operation Facilities, Tools and Equipment states in part:
"H. Measuring and test equipment is calibrated and controlled to provide accuracy and traceability. Out-of-tolerance test equipment is removed from service. Plant equipment maintained with out of tolerance test equipment is evaluated in a timely manner for operability, and deficiencies are corrected as necessary."

Finding 8: The Plant must modify the Lock Out Tag Out (LOTO) procedures. A robust LOTO procedure is very critical to the safety and reliability operation of the Plant. The GAO is required to comply with this requirement. A LOTO ticket should include the followings:

1) LOTO procedure,
2) Brief description of the job that in need of the LOTO mechanism,
3) Initiator of the LOTO mechanism,
4) Person to verify the LOTO mechanism,
5) Closure of the LOTO when the job is complete

GO 167, Operation Standard 7: Operation Procedures and Documentation states:
"Operation procedures exist for critical systems and states of those systems necessary for the operation of the unit including startup, shutdown, normal operation, and reasonably anticipated abnormal and emergency conditions. Operation procedures and documents are clear and technically accurate, provide appropriate direction, and are used to support safe and reliable plant operation. Procedures are current to the actual methods being employed to accomplish the task and are comprehensive to ensure reliable energy delivery to the transmission grid."

Finding 9: The Plant must implement a Shelf Life Assessment Program. The Plant does not currently perform any sort of shelf life assessment for spare parts. While the Plant routinely checks inventory, it does not currently have a system in place to keep track of an items shelf life. This should include the dates for when parts were obtained, manufactured, and its expected shelf life. Additionally, this procedure should include a disposal or recycling scheme for expired items, such as batteries.

GO 167, Maintenance Standard 12: Spare Parts, Material and Services states in part:
"Storage of parts and materials support maintaining quality and shelf life of parts and materials."

Finding 10: The Plant's measuring and testing equipment list is incomplete. ESRB received an incomplete list of measuring and testing equipment used to support operation activities. The list includes, but is not limited to, external gloves, hot sticks, grounds, hard hats, fire extinguishers, and eye wash stations. The plant must keep this list up-to-date and ensure all testing and measuring equipment are properly calibrated and regularly maintained.

GO 167, Operation Standard 11: Operations Facilities, Tools and Equipment states:
"Facilities and equipment are adequate to effectively support operations activities.

Finding 11: The Plant's electrical drawings are missing some inverter blocks. The Plant is missing electrical drawings for Motor Wiring; DC Collection; and Trenching and CAB Routing for Blocks 2, 3, 4, 8, 27, 28, 30, 31, 34, 37, 38, 45, 50, 52, 56, 61, 62, 65, 71, 72, 73, 74, 79, and 80. Plant staff explained that certain Inverter Blocks share the same drawings, but the drawings provided no such indication. The Plant must have clear drawings that indicate each Blocks that the drawing applies to.

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."

Finding 12: The Plant lacks an adequate contractor management program. The current contractor procurement procedures lack enough detailed information on how the Plant actually prequalifies and selects contractors. Currently, the Plant's Contractor Selection and Qualification Procedure explains that the Plant evaluates contractors based on its safety records and OSHA 300A logs. To ensure contractors are trained and qualified to perform work on Plant facilities, the Plant

must include additional contractor evaluation processes, such as reviewing the contractor's Experience Modification Rate (EMR), and obtain the contractor's training records. Furthermore, the Plant lacks any procedures to monitor its contractors' work. Monitoring a contractor's work is necessary to verify worker safety and work quality. The Plant must adopt a robust contractor management program to ensure the proper oversight, qualification, and safety of its contractors.

GO 167, Operation Standard 1: Safety states in part:
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Finding 13: The Plant lacks an adequate Confined Space Entry program. The current Confined Space Entry program is incomplete and lacks supporting documentation. The program is listed as a "draft" and has yet to be finalized by plant management. There are no records of confined space locations, training records, list of authorized employees, a written rescue plan, an annual "Hands-On Drill" and a written equipment list specific to the Plant.

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."

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Finding 14: The Plant does not mark and identify evacuation assembly areas. The Plant designates three assembly areas for workers to gather in emergency evacuations (see Figure 4). ESRB observed that the main muster point located to the west of the entrance gate is not marked and identified. ESRB did not verify whether the other two assembly points are identified. Furthermore, ESRB did not observe evacuation maps in any of the power blocks. The Plant encompasses approximately 1,600 acres, equivalent in size to about 1,200 football fields. In the event of an emergency, contractors and visitors who are unfamiliar with such a large site may get disoriented

easily. A clearly marked and identified assembly point as well as the posting of a map showing the evacuation route at each block may mean the difference between life and death. The Plant must mark all assembly points with permanent signs and post evacuation maps on the entrance gate of all power blocks (see Figure 5).

Additionally, the Emergency Evacuation Map and Safety Assembly Area locations are difficult to read due to the use of "muddy" pre-existing site plans. The Plant must develop a new simplified map showing asset designations (such as field arrays or sub-stations) with clearly drawn escape routes and assembly areas. This allows the map to more clearly be understood, especially by visitors unfamiliar with the site.

It is also not clear where the Plant's Tornado Shelter muster point location is relative to the map as described in Attachment B of the Great Valley Solar Emergency Action Plan.

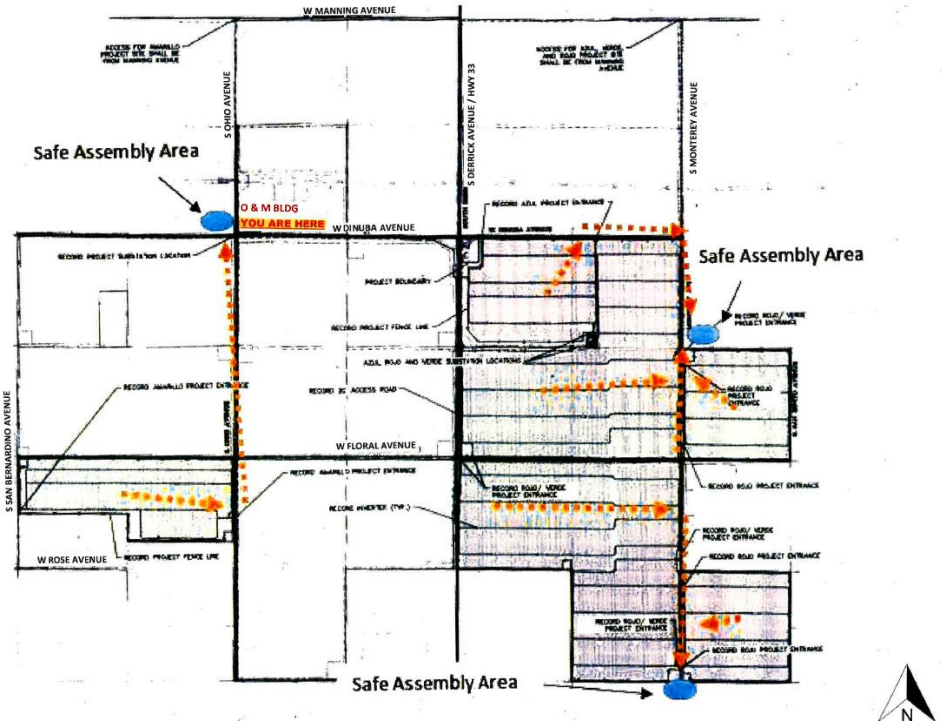

Figure 4: The Plant designates three Safe Assembly Areas for emergency evacuations.

Figure 5: Main muster point to the west of the entrance gate is not marked and identified.

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, 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 15: The Plant is missing a hazardous materials warning sign on the front gate. The Plant uses various hazardous materials as part of its normal operation, including flammables such as propane and diesel, as well as FR-3[1], nitrogen, and sulfur hexafluoride. For example, FR-3 (though less flammable) causes irritation and redness if it contacts the eyes or skin according to its MSDS. However, ESRB observed no posting of a HAZMAT warning sign on the entrance gate nor on the roll gate of the container where the Plant stores these materials (see Figure 5). National Fire Protection Association (NFPA) establishes industry consensus standards for fire protection. NFPA

[1] FR-3 is a dielectric [insulating] coolant derived from renewable vegetable oil. It provides improved fire safety, transformer life, and environmental benefits that are superior to mineral oil and other dielectric coolants (https://www.cargill.com/bioindustrial/envirotemp/fr3)

704[2] is the standard system for identifying hazards of materials for emergency response (see Figure 6). The posting of an NFPA placard is a common industry practice to alert first responders of the risks posed by a facility's hazardous materials. This helps emergency workers determine what safety precautions and equipment to use and how best to respond to different scenarios. The Plant must install a HAZMAT warning sign at the front gate and on the roll gate where the bulk of its hazardous materials are stored.

Figure 6: A typical NFPA 704 HAZMAT placard.

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."

NFPA 704: 4.3 Location of Signs states:
"*Signs shall be in locations approved by the authority having jurisdiction and as a minimum shall be posted at the following locations:*

1) *Two exterior walls or enclosures containing a means of access to a building or facility.*
2) *Each access to a room or area.*
3) *Each principal means of access to an exterior storage area."*

Finding 16: The Plant is missing a hazardous materials sign for the Flammable Liquids Storage Area. ESRB found flammable liquid storage cabinet is in use. The storage area housing this cabinet needs a large banner on the door header with the words "Hazardous Materials Storage" and an appropriate NFPA 704 sign at eye level on the door jamb (see Figure 7).

[2] NFPA 704 is a widely-used standardized system for identifying materials hazards for emergency response. It identifies a material's health, flammability, and chemical reactivity hazards.

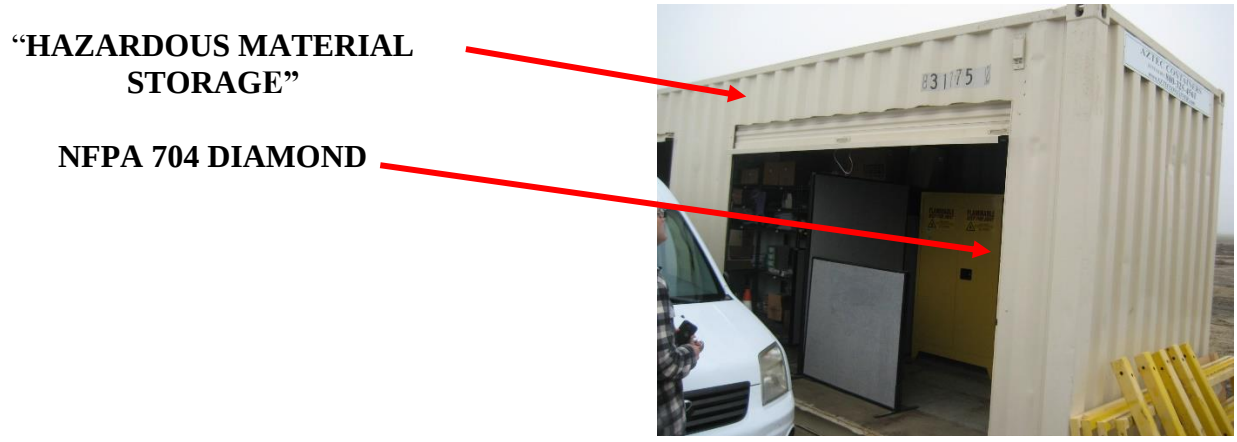

Figure 7: Storage area housing a flammable liquid storage cabinet.

GO 167 Operation Standard 8: Plant Status and Configuration states in part:
"9. Procedures are implemented to control the placement of caution, warning, information and other similar tags on plant equipment and operator aids in the Plant."

NFPA 704: 4.3 Location of Signs states:
"*Signs shall be in locations approved by the authority having jurisdiction and as a minimum shall be posted at the following locations:*

1) *Two exterior walls or enclosures containing a means of access to a building or facility.*
2) *Each access to a room or area.*
3) *Each principal means of access to an exterior storage area."*

Finding 17: The Plant does not keep Material Safety Datasheets (MSDS) up-to-date. ESRB reviewed the Plant's MSDS binder and observed missing datasheets for FR-3, nitrogen, and sulfur hexafluoride. Each of these chemicals poses health and/or environmental hazards. For example, prolonged or repeated skin contact with FR-3 may cause drying, cracking, or irritation to the skin. And direct contact with the eyes may cause temporary irritation. The Plant must keep current MSDS for all chemicals stored onsite and maintain its MSDS binder up-to-date.

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, Operation Standard 12: Operation Conduct states in part:
"To ensure safety, and optimize plant availability, the GAO conducts operations systematically, professionally, and in accordance with approved policies and procedures. The GAO takes responsibility for personnel actions, assigns personnel to tasks for which they are trained, and requires personnel to follow plant and operation procedures and instructions while taking responsibility for safety."

Finding 18: The Plant needs to improve site security. Plant staff do not man the Plant 24/7 and are only on-site during normal business hours or for scheduled repairs. Adjacent to the Plant's O&M building is where the Plant stores in cargo containers its hazardous materials, replacement parts, tools and equipment essential to safe and reliable operation. Similarly, the substation centralizes many of the Plant's high voltage electrical equipment. While the Plant uses security cameras, they are ineffective because the Plant has had multiple break-ins and thefts. In fact, just two days prior to us arriving onsite, the Plant had another break-in. An intruder cut a chain-link fence, gained access (see Figure 8), and attempted to steal from a cargo container (see Figure 9). Luckily, the thief failed to pry open a door lock that the Plant had installed after the last break-in. However, the thief was able to pry open an adjacent roll-gate container, but apparently found its items of little value to steal. Due to the frequent and recurring break-ins, the Plant must evaluate and take proactive measure to improve its site security, particularly to secure the O&M building area but also to secure the substations from intruders and vandals.

Figure 8: The cut gate from the Plant's recent December 7, 2019 trespassing incident

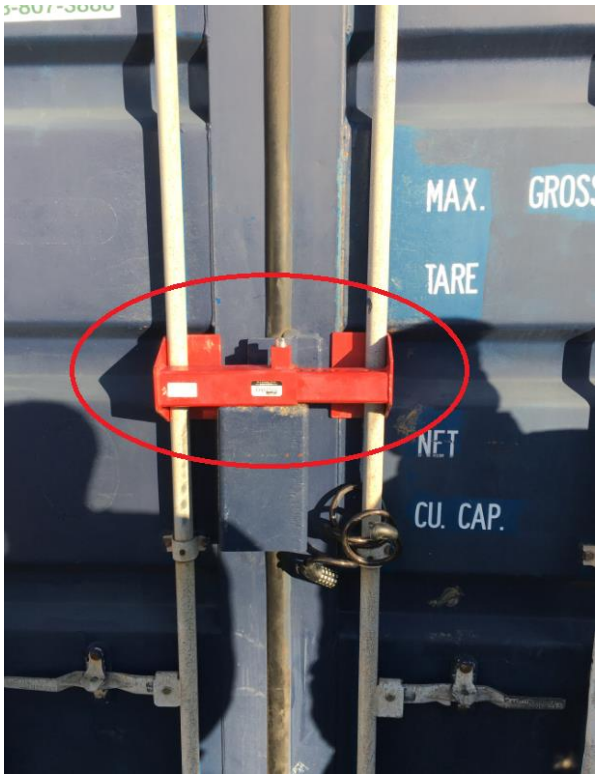

Figure 9: Thief failed to pry open a door lock the Plant had installed after the last break-in.

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, Operation Standard 21: Plant Security states:
"To ensure safe and continued operations, each GAO provides a prudent level of security for the Plant, its personnel, operating information and communications, stepping up security measures when necessary."

Finding 19: The Plant needs to resolve inverter hardware faults. The Plant uses SunGrow inverters[3] (see Figure 10). Since commercial operation in December 2017, the Plant has had a higher-than-industry-average failure of inverters. The Plant explained that approximately 59 inverters had registered what is called a "PDP fault". The Plant attributed the fault to bad power modules within the inverters. During the audit, the Plant stated that SunGrow had already identified the serial numbers of the affected modules. The Plant needs work with the manufacturer to promptly replace all faulty modules to prevent future inverter failures of this type.

[3] An inverter converts direct current into grid-compatible alternating current and feeds it to the grid.

Figure 10: SunGrow inverter.

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 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 20: The Plant fails to keep inverter enclosures locked and secured. ESRB observed multiple inverter enclosures unsecured. The enclosures are equipped with a latch for installing a pad lock. However, ESRB observed locks were not installed, but rather, laying on the ground in front of the enclosures (see Figure 11). Inverter contains live energized parts. The arc flash warning label affixed to the enclosure indicates a potential arc flash energy as high as 69 calories per centimeter square. Given the recent break-ins and intrusions, the Plant must secure the inverters at all times.

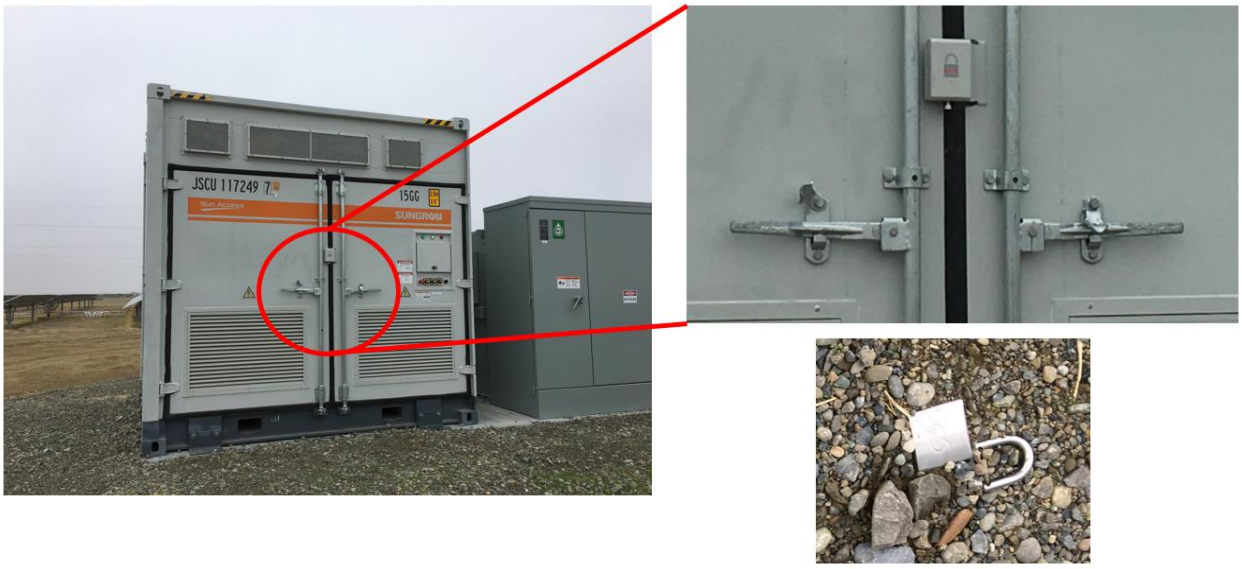

Figure 11: Inverter enclosures are not kept locked and secured.

GO 167, Operation Standard 21: Plant Security states:
"To ensure safe and continued operations, each GAO provides a prudent level of security for the Plant, its personnel, operating information and communications, stepping up security measures when necessary."

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."

Finding 21: The locking mechanism on several medium voltage transformers are in disrepair. ESRB observed that the site operator was unable to secure the cabinet door after opening it for inspection. ESRB noticed this defect on at least two transformers (see Figure 12). In addition, ESRB reviewed inspection checklists which noted the same problem on multiple transformers. The Plant must repair the locks and always secure all transformers.

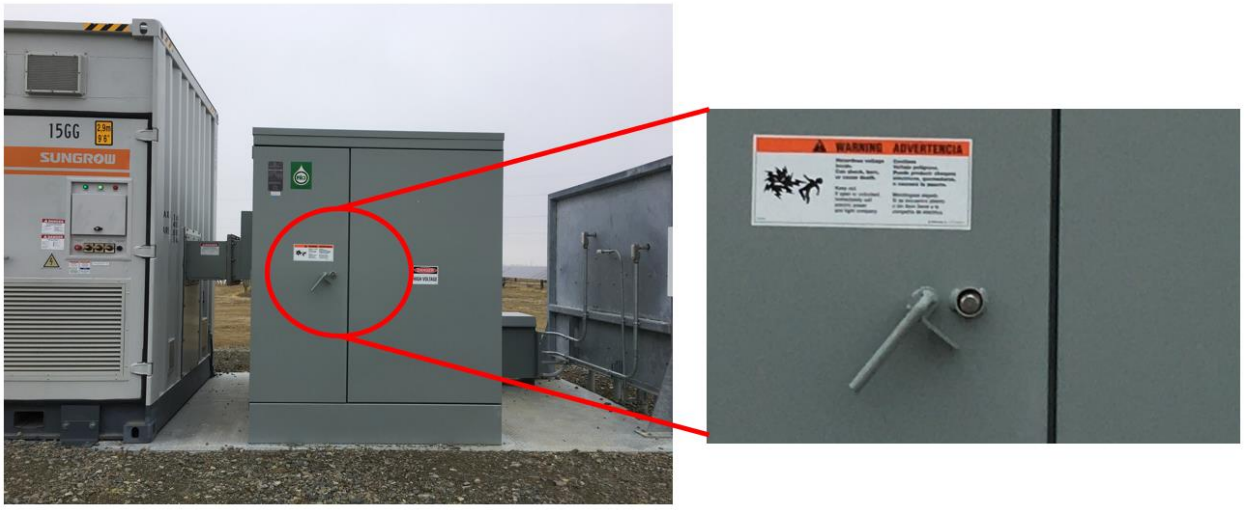

Figure 12: Broken lock on medium voltage transformer rendering the cabinet unsecured.

GO 167, Operation Standard 21: Plant Security states:
"To ensure safe and continued operations, each GAO provides a prudent level of security for the Plant, its personnel, operating information and communications, stepping up security measures when necessary."

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."

Finding 22: The Plant practices unsafe handling and storage of the substation hydrometer. The Plant's substation control rooms contain a hydrometer for measuring the specific gravity of the battery system's electrolyte. This is to verify the concentration of acid and confirm the state of charge. ESRB noticed that Plant Staff store the used hydrometer inside a cardboard box, placed in a plastic tote with safety glasses and gloves (see Figure 13). This practice unsafe. Battery acid from the hydrometer has contaminated the safety equipment in the tote rendering them unusable. The Plant must place the hydrometer in a separate location that will not contaminate or interact with other equipment.

Figure 13: The soiled hydrometer box and its storage tote

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."

Finding 23: The Plant's Safety Orientation Presentation given to visitors and contractors is inadequate. The Plant must provide the following information:

- Slide 7: Clothing requirements must be clearly defined. For example, synthetics vs. cotton and whether Fire Resistant (FR) clothing with appropriate category rating is required.
- A clearer "Site Map" must be used to "show" where the evacuation assembly areas are including ground level pictures to help orient visitors and contractors to the assembly areas' exact location (See Finding 2 on Evacuation Assembly Areas).
- Additional emergency phone numbers must be provided in the absence of Kyle Higgins (i.e. include the Operations Manager or the remote-control center phone numbers).
- The visual location of Safety Data Sheets (SDS) must be provided.
- Slide 32 must be followed with examples of live specimens that are a threat to human health and safety.
- The importance of "Good House Keeping" must be emphasized (i.e. To avoid trip and fall hazards, to avoid harboring disease bearing vectors such as mice with Hanta Virus)

In addition, the Plant only has one orientation presentation for both visitors and contractors. Typically, a separate orientation is given for contractors that holds more technical details about safety and Plant logistics. A contractor orientation must provide the following information:

- Give examples of task appropriate FR clothing and Category Ratings.
- Present a "Job Safety Analysis" form with a demonstration of its use.
- An "Incident Reporting" form must be provided with a demonstration of its use.
- A "Stop Work" order form must be provided with a demonstration of its use.
- A "Near Miss" reporting form must be presented and explained with a demonstration of its use and submittal.

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

"Safety 1.B. Managers in the organization contribute to the safety culture of the work environment through:

1. *Establishing standards and clearly communicating expectations that safety is the highest priority."*

Finding 24: The Plant must develop a safety training spreadsheet or database to properly track employee Safety Training. Plant Management sent the CPUC fourteen separate documents of varying subject matter, lists of attendees and certifications. It was difficult, if not impossible, to fully assess the training provided. More importantly it was impossible to identify which staff needed specific training, refreshers or recertification. Plant management must keep a central spreadsheet or database to properly track Staff training and certifications.

GO 167, Maintenance Standard 6: Training Support states in part:

"A systematic approach to training is used to achieve, improve, and maintain a high level of personnel knowledge, skill, and performance."

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

"Safety 1.B. Managers in the organization contribute to the safety culture of the work environment through:

4. Training reinforces safety practices and expected behaviors."

Finding 25: The Plant is in violation of its own SPCC Plan. The Plant did not supply the CPUC any SPCC training records. Appendix H of the SPCC Plan was found to be blank and had no record of training (see Figure 14). The CPUC must also be added to the list of incident reporting agencies.

Great Valley Solar's SPCC Plan (dated May 18, 2018) states in part:

"Records of the briefing and discharge prevention training shall be kept on the form contained in Appendix H and maintained with this SPCC Plan for a period of three years from the briefing/training date."

Appendix H

Discharge Prevention Briefing and Training Log

Annual discharge prevention briefings will be held to ensure adequate understanding of the SPCC Plan. The briefings will also highlight and describe known discharge events or failures, malfunctioning components and any recently developed precautionary measures. Oil-handling personnel shall be trained in the operation and maintenance of oil pollution prevention equipment, discharge procedure protocols, applicable pollution control laws, rules and regulations, general facility operations, and the content of the SPCC Plan.

Date	Subjects Covered	Employees in Attendance	Instructor(s)

Figure 14: SPCC Appendix H: Missing entries in the SPCC training log.

GO 167, Operation Standard 2: Organizational Structure and Responsibilities states in part: *"The organization with responsibility and accountability for establishing and implementing an operation strategy to support company objectives for reliable plant operation is clearly defined, communicated, understood and is effectively implemented. Reporting relationships, control of resources, and individual authorities support and are clearly defined and commensurate with responsibilities.*

Guideline E: Administrative controls such as policies, procedures, and schedules are implemented for activities affecting safe and reliable plant operation, including personnel fitness for duty."

Finding 26: The Plant has not performed a proper Emergency Evacuation Drill. Plant Management has not conducted an emergency drill in its two-year operating history. While Management hosted a meeting with the local fire department on May 16, 2019, no emergency drill took place. Plant Management needs to conduct an emergency drill to validate the adequacy of its emergency response plan and actual activities. The emergency drill must describe each step taken to ensure all plant personnel and responders conduct their roles in a safe and efficient manner. A review and critique of the emergency drill is required to evaluate and improve the Plant's Emergency Action Plan (EAP).

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, Operation Standard 20: Preparedness for On-Site and Off-Site Emergencies states:
"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 27: The Plant failed to fill out Incident Reports for the three fires that occurred on-site. In the past two years, the Plant has had three fire incidents: one on May 24, 2018, one on June 15, 2018 (see Figure 15) and one on January 6, 2019. While the Plant maintained notes and lessons learned for the first two fires, the Plant has never completed a proper Report of Accidents and Incidents for any of the three fires as required by its own Safety Manual. Additionally, the Plant has not completed a root cause analysis for any of the fires as required its own O&M Manual. In order to mitigate fire risk, the Plant must fully document and investigate its past fires.

Figure 15: Photo of the June 15, 2018 fire, provided by Great Valley.

Great Valley Solar's Facility Safety Manual, Section 8.01: Written Safety Program/Lost Time Accident/Injury states in part:
"3.4.1 Any accident causing bodily injury, property damage, or had the potential to cause bodily injury or property damage, will be investigated. The personnel involved will fill out an Initial Report of Accident, Incident or Near Miss Form (PPM 8.01 E1 Initial Report of Accident, Incident, or Near Miss form). The investigation team will complete a final Report of Accidents and Incidents (PPM 8.01 E2 Report of Accidents and Incidents) after review of the initial incident."

Great Valley Solar's Operations and Maintenance Manual, OS4/MS4 Problem Resolution and Continuing Improvement, Section B: Problem Reporting, Root-Cause Analysis, and Corrective Actions states:
"A systematic approach and process is used to identify and report problems, determine the cause(s) and establish corrective actions to prevent recurrence. Attributes of successful programs include:

1. Encouraging personnel to report problems at low thresholds of significance.
2. Using a graded approach to significance, and performing more extensive root cause determination
to those problems having high significance, and trend and track those with low significance.
3. Trending capability on information such as cause code or equipment or process involved.
4. Tracking of corrective actions to closure."

GO 167, Operation Standard 4/Maintenance 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 17: Records of Operation states:
"The GAO assures that data, reports and other records reasonably necessary for ensuring proper operation and monitoring of the generating asset are collected by trained personnel and retained for at least five years, and longer if appropriate."

Finding 28: The Plant's Emergency Action Plan (EAP) needs to be updated to include the CPUC as an emergency contact. The Plant should include the CPUC as a contact as any injuries, incidents, and emergencies need to be reported. The contact information should include the following:

- CPUC reporting website: https://ia.cpuc.ca.gov/safetyevents/
- CPUC incidents reporting number: 1-415-355-5503

GO 167, Section 10.4: Safety-related Incidents states in part:
"Within 24 hours of its occurrence, a Generating Asset Owner shall report to the Commission's emergency reporting web site any safety-related incident involving a Generating Asset."

Finding 29: The Plant has not inspected smoke detectors in two years. The Plant currently has smoke detectors within the control houses. When asked to procure records on smoke detector inspections, the Plant stated that an inspection for the smoke detectors would occur before the year end. The Plant did not perform any other smoke detector inspections in 2019, nor did the Plant complete an inspection in 2018. The Plant needs to complete inspections at least annually and keep records, following the testing requirements of NFPA-72.[4]

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

[4] Testing frequencies for fire detection systems are outlined in NFPA-72 Table 10.4.3, depending on the type of equipment and local ambient conditions.

organization consider safety as the overriding priority. This is manifested in decisions and actions based on this priority."

GO 167, Operation Standard 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."

Finding 30: The Plant should fill out fire extinguisher inspection tags. While the Plant does complete monthly inspections of fire extinguishers, the inspections are only tracked via an Excel spreadsheet. To ensure extinguishers are not overlooked, Operators should also mark the physical tags on the extinguishers with the inspection dates (see Figure 16).

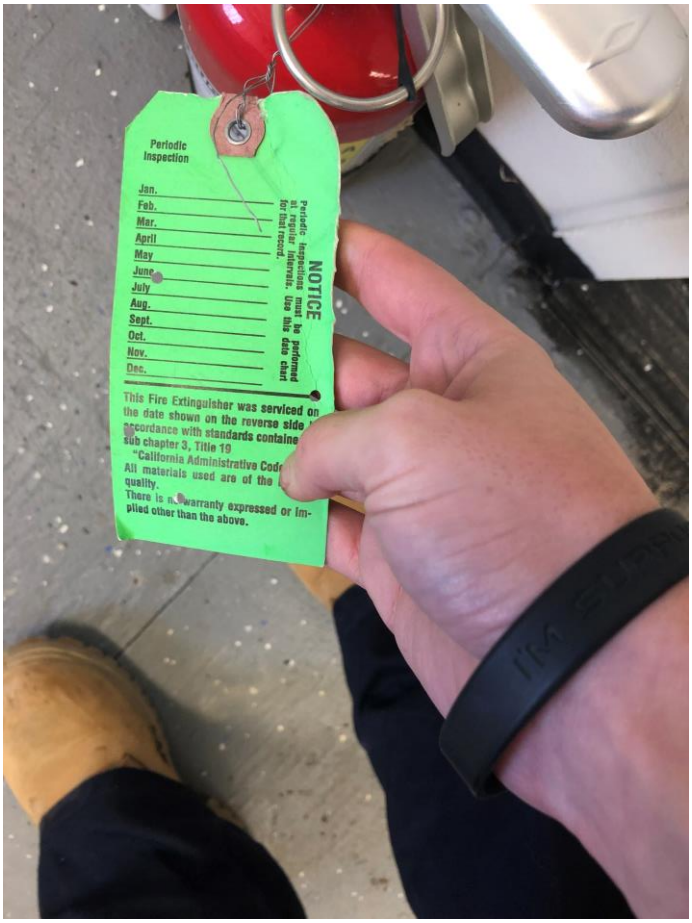

Figure 16: Unfilled fire extinguisher inspection tag.

GO 167, Operation Standard 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."

Finding 31: The Plant has not properly inspected eyewash stations. ESRB noticed that the Plant had not marked the inspection tag for water replacement of the eye wash station in the Amarillo

substation since June 15, 2018 (see Figure 17). Per the guidelines given with the eye wash station, the water should be replaced at least every six months. Additionally, the Plant must inspect the eye wash stations weekly and keep records to ensure safe and useable stations are available in the event of an emergency.

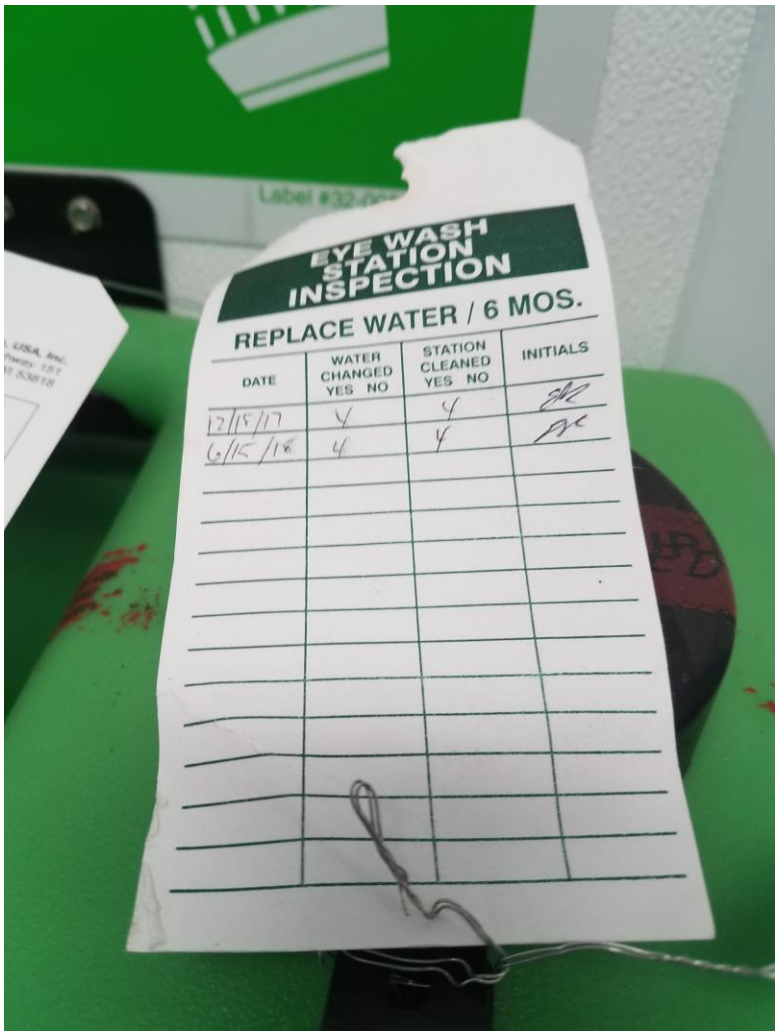

Figure 17: Inspection tag for the eyewash station in the Amarillo substation control room.

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

ANSI Z358.1 Eyewash Standard, Section 4.6.3 states:
"Self-contained units shall be visually checked weekly to determine if flushing

fluid needs to be changed or supplemented. Such inspection shall be conducted in accordance with manufacturer's instructions."

ANSI Z358.1 Eyewash Standard, Section 5.5.3 states:
"Self-contained units shall be visually checked weekly to verify that adequate flushing fluid is available. Such inspection shall be conducted in accordance with manufacturer's instructions."

V. Observations and Recommendations

Observation 1: The Plant entry is missing a prohibited weapon sign. The Plant prohibits the use of firearms and/or weapons onsite and explicitly states so in its safety orientation (see Figure 18). However, ESRB observed no posting of a prohibited items sign anywhere onsite, particularly at the entrance gate. The Main Gate is the primary point of entry (see Figure 19) for Contract workers, vendors, and visitors. A well-posted and conspicuous sign helps reinforce this company policy. ESRB recommends the Plant to post a prohibited weapon sign at the entrance gate.

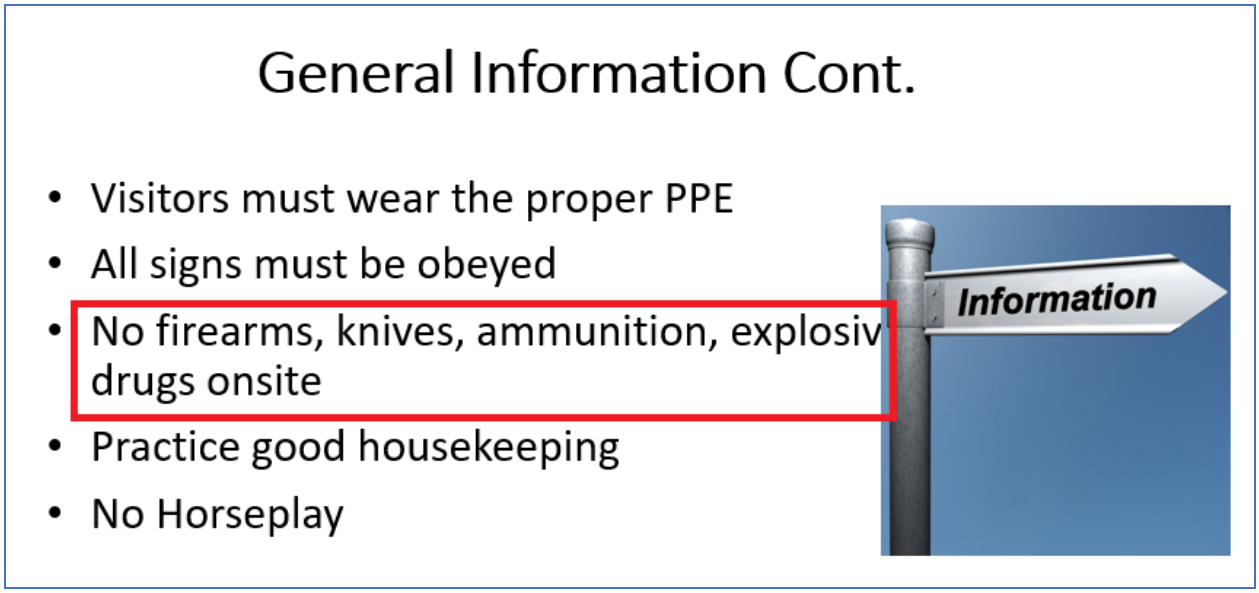

Figure 18: The Plant's safety orientation explicitly states firearms and weapons are prohibited onsite.

Figure 19: Entrance gate is missing a prohibited weapon sign.

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

Observation 2: The Plant's fire protection system is solely dependent upon handheld extinguishers and improvements can be made. The CPUC recommends that Plant Management consider compliance with Industry Best Practices and NFPA 850 .7.8.6. by installing a sprinkler system on the Main Step-up Transformers (see Figure 20). Transformer Sprinkler systems are not intended to extinguish a fire. Instead, they maintain the structural integrity of the transformer, minimize loss and prevent collateral damage.

Figure 20: Existing Sept-up Tansformers w/o Sprinklers

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."

Observation 3: The Plant's substation buildings are missing exterior "DANGER: High Voltage" signs. Although the Plant installed high voltage signs on the insides of the doors, the control rooms should have the signs on the outside of the doors, warning operators that a voltage hazard exists within the control room, and that proper personal protective equipment is needed (see Figure 21).

Figure 21: Outside of the Rojo/Verde substation control center.

GO 167, Operation Standard 8: Plant Status and Configuration states in part:
"9. Procedures are implemented to control the placement of caution, warning, information and other similar tags on plant equipment and operator aids in the Plant."

Observation 4: The Plant should relocate "Confined Space" signs to be more accessible.
Currently, the only confined space on the premises is the water tank next to the O&M building. The tank currently has a label identifying the tank as a confined space on the side opposite from the side in which someone would use to enter the tank (see Figure 22). The Plant should relocate the current label or install a new sign on the side of the tank in which access would occur so that the sign is less likely to be missed.

Figure 22: Confined space sign on the water tank.

GO 167, Operation Standard 1: Safety states in part:
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Occupational Safety and Health Administration Standard 1910.146(c)(2): Permit-required confined spaces states:
"If the workplace contains permit spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces."

VI. Documents Reviewed

ESRB Staff reviewed the following records and documents:

Category	#	Document
Safety	1	Orientation Program for Visitors and Contractors
	2	Evacuation Procedure
	3	Evacuation Map and Plant Layout
	4	Evacuation Drill Report & Critique (last 2 years)
	5	Hazmat Handling Procedure
	6	SDS for All Hazardous Chemicals
	7	Injury & Illness Prevention Plan (IIPP) (last 2 years)
	8	OSHA Form 300 (Injury Log) in last 2 years
	9	OSHA Form 301 (Incident Report) in last 2 years
	10	List of all CPUC Reportable Incidents (last 2 years)
	11	Root Cause Analysis of all Reportable Incidents (if any)
	12	Fire Sprinklers Test Report (last 2 years)
	13	Insurance Report/Loss Prevention/Risk Survey (last 2 years)
	14	Lockout/Tagout Procedure (last 3 revisions, if applicable)
	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
Training	19	Conduct of Training Procedures
	20	List of Training Programs and Descriptions
	21	Onboarding Procedure and Records
	22	Safety Training Records
	23	Skill-related Training Records
	24	Certifications for Welders, Forklift & Crane Operators
	25	Hazmat Training and Record
Contractor	26	List of Qualified Contractors
	27	Contractor Selection/Qualification/Procurement/Monitoring Procedure
	28	Contractor Safety Data Sheets
	29	Contractor Safety Program Procedure and Training Records
Regulatory	30	Water Permit (if applicable)
	31	Spill Prevention Control and Countermeasures Plan (SPCC)
	32	Spill Prevention and Response Plan (SPRP)
	33	Storm Water Pollution Prevention Plan (SWPPP)
	34	CalARP Risk Management Plan (RMP)
O&M	35	Daily Round Sheets/Checklists
	36	List of Open/Backlogged Work Orders
	37	List of Closed/Retired Work Orders (last 4 quarters)
	38	Work Order Management Procedure (last 3 revisions, if applicable)
	39	Computerized Maintenance Management System (CMMS) (Demonstrate Onsite)

	40	Conduct of CMMS
	41	All Root Cause Analyses (if any) Operating Procedures
	42	Conduct of Maintenance Procedures
	43	Site Operating Plan/Procedures
	44	SCADA System (Demonstration Onsite)
	45	Maintenance & Inspection Records for Solar Inverters
	46	Maintenance & Inspection Records for Solar Trackers
	47	Maintenance & Inspection Records for Solar Arrays/Collectors/Solar Field
	48	Maintenance & Inspection Records for Mounting System
	49	Maintenance & Inspection Records for Electrical System
	50	Maintenance & Inspection Records for Switchgear/Breaker/Relays
	51	Maintenance & Inspection Records for Main Transformer(s)
	52	Maintenance & Inspection Records for Switchyard & Transmission Equipment
	53	Maintenance & Inspection Procedures for other equipment
Document	54	P&IDs (if applicable)
	55	Vendor Manuals for Major Equipment
	56	Solar Farm Equipment Design Data
	57	Procedure Compliance Policy
Spare Parts	58	Spare Parts Inventory List
	59	Shelf-life Assessment Report
Management	60	Employee Performance Review Procedures and Verifications
	61	Organizational Chart
	62	Job Titles and Job Descriptions (of Plant Staff)
Instrumentation	63	Instrument Calibration Procedures and Records
Test Equipment	64	Measuring & Testing Equipment List
	65	Test Equipment Calibration Procedures and Records
Internal Audit	66	Internal Audit Procedures and Reports