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

May 24, 2022 GA2022-02AVSR

Stanley W. Tehee Jr.
AVSR Operation and Maintenance Manager
49881 West 170th Street
Lancaster, CA 93536

SUBJECT: Audit of Antelope Valley Solar Ranch

Mr. Tehee,

On behalf of Electric Safety and Reliability Branch (ESRB) of the California Public Utilities Commission (CPUC), Calvin Choi and Kyle King conducted a powerplant audit of the Antelope Valley Solar Ranch from February 28, 2022 to March 4, 2022.

During the audit, my staff observed plant operations, inspected equipment, reviewed data, interviewed plant staff, and identified violations of General Order (GO) 167-B. A copy of the audit findings itemizing the violations is enclosed. Please advise me no later than June 24, 2022, by electronic or hard copy, of all corrective measures taken by Antelope Valley Solar Ranch to remedy and prevent the recurrence of such violations. Your response should include a Corrective Action Plan with a description and completion date of each action and measure completed.

If you wish to make a claim of confidentiality covering any of the information in the report, you may submit a confidentiality request pursuant to Section 15.4 of GO 167-B, using the heading "General Order 167-B Confidentiality Claim". The request should be sent to Calvin Choi with a copy to me and the GO 167-B inbox (GO167@cpuc.ca.gov), by June 24, 2022. If you have any questions concerning this audit, you can contact Calvin Choi at Calvin.Choi@cpuc.ca.gov or (213) 266-4730.

Sincerely,

Fadi Daye

Fadi Daye, P.E.
Program and Project Supervisor
Electric Safety and Reliability Branch
Safety and Enforcement Division
California Public Utilities Commission

Attachment: Findings

Cc: Lee Palmer, Director, Safety and Enforcement Division, CPUC
Nika Kjensli, Program Manager, ESRB, CPUC
Derek Fong, Senior Utilities Engineer, ESRB, CPUC
Kyle King, Utilities Engineer, ESRB, CPUC
Calvin Choi, Utilities Engineer, ESRB, CPUC

I. Findings Requiring Corrective Action

Finding No. 1: ESRB Staff witnessed plywood on ground near inverters.

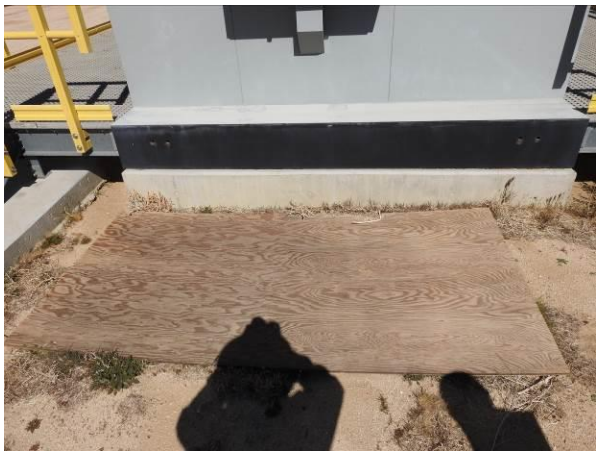
GO 167-B, Appendix D, Maintenance Standard 9: Conduct of Maintenance states:

> *Maintenance is conducted in an effective and efficient manner, so equipment performance and material condition effectively support reliable plant operation.*

GO 167-B, Appendix E, 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.*

ESRB staff observed sheets of plywood on the ground which can result in a tripping hazard.



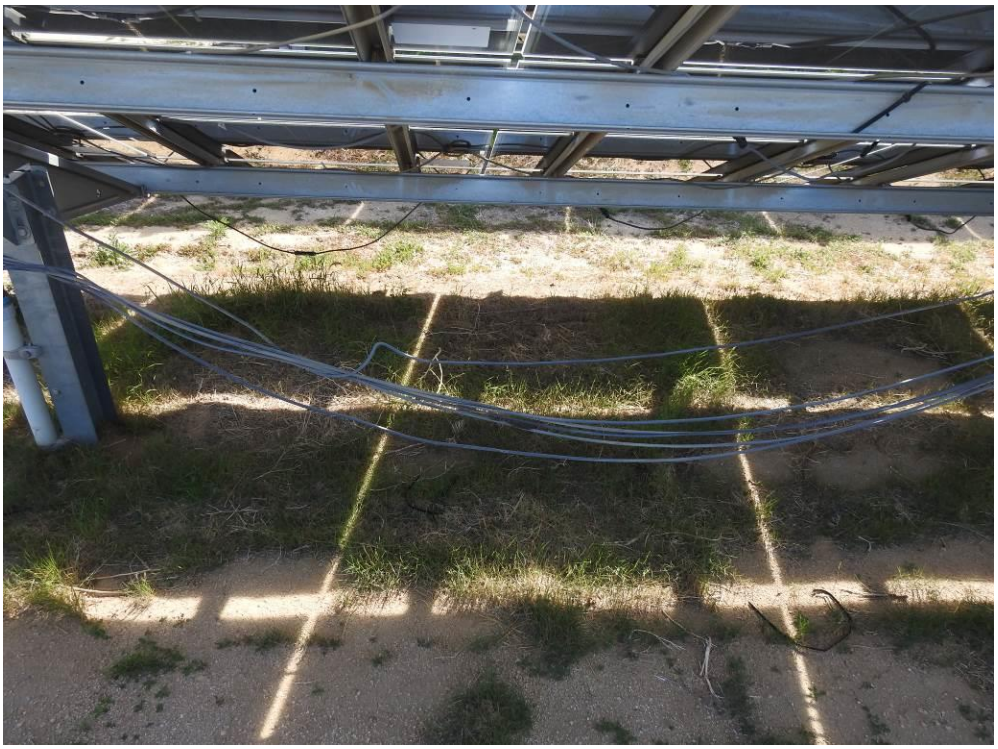
Sheets of plywood on ground creating tripping hazard.

Finding No. 2: ERSB Staff witnessed several areas with low cables near panels.

GO 167-B, Appendix D, 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.*

ESRB staff witnessed several areas with cables detached from the solar panels and dangling close to the ground from broken zip ties. Loose cables can be damaged by wildlife that is near the panels as well as from being caught in the tracker system.



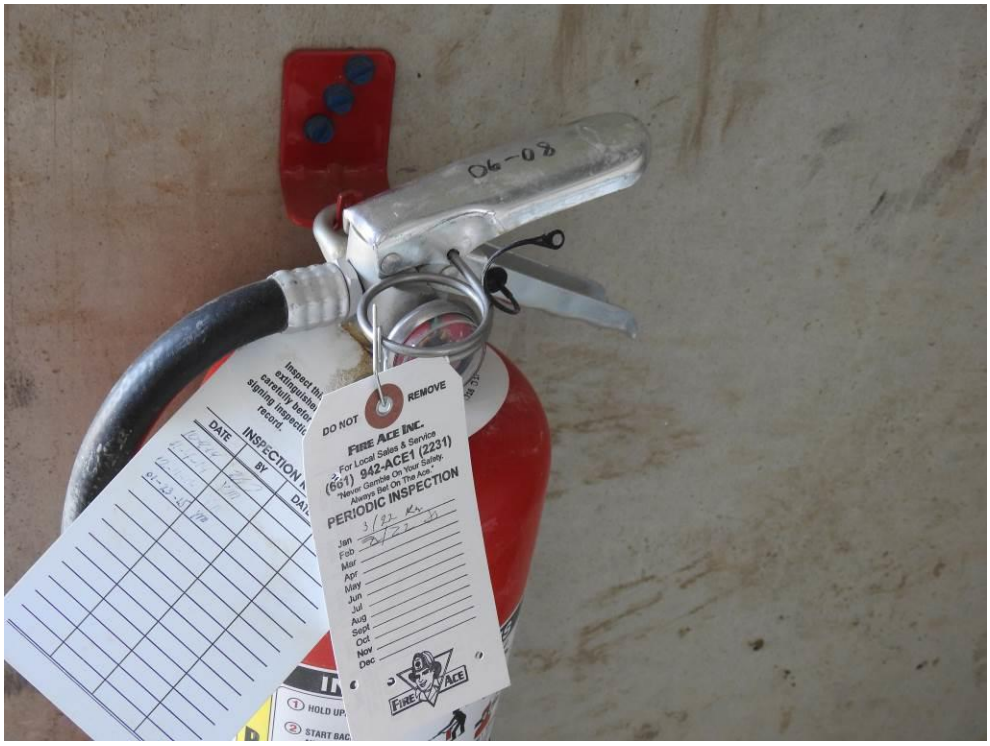
Cables detached from panels close to ground.

Finding No. 3: ERSB Staff witnessed a broken fire extinguisher retention pin.

GO 167-B, Appendix D, 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.*

ESRB staff witnessed a tamper seal not properly installed for a fire extinguisher in inverter 06-PCS-05, as required by NFPA 10, Sec. 7.3.2.2.1.



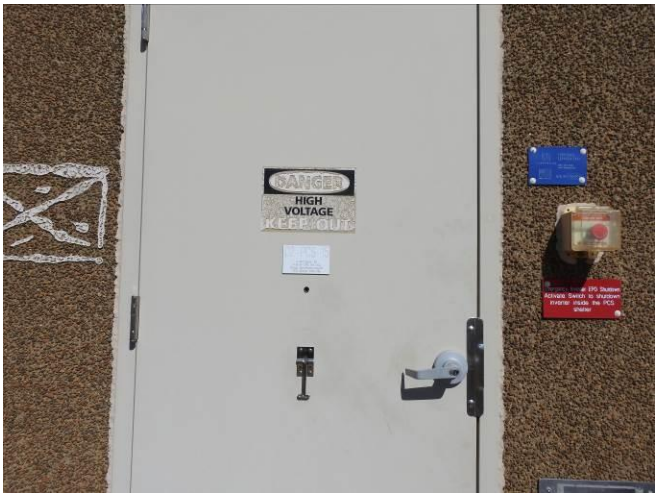
Tamper Seal not properly installed on Fire Extinguisher

Finding No. 4: The Plant is not keeping pace with sign damage and deterioration.

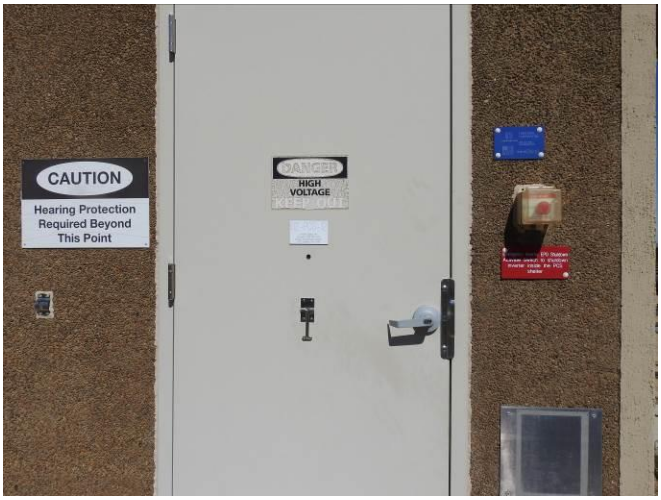
GO 167-B, Appendix D, Maintenance Standard 9: Conduct of Maintenance states:

> *Maintenance is conducted in an effective and efficient manner, so equipment performance and material condition effectively support reliable plant operation.*

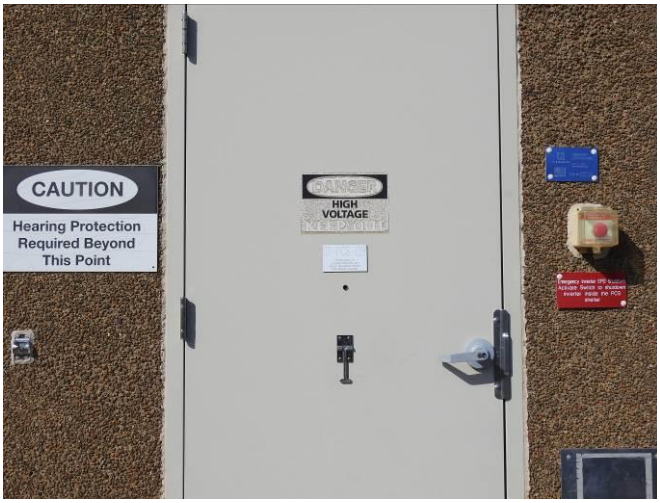
ESRB Staff observed high voltage warning signs deteriorated beyond recognition or missing. Damaged/missing warning signs prevent plant staff and contractors from recognizing dangers. These signs are important for the safety of the employees, and they make them aware of the surroundings and any potential safety hazards.



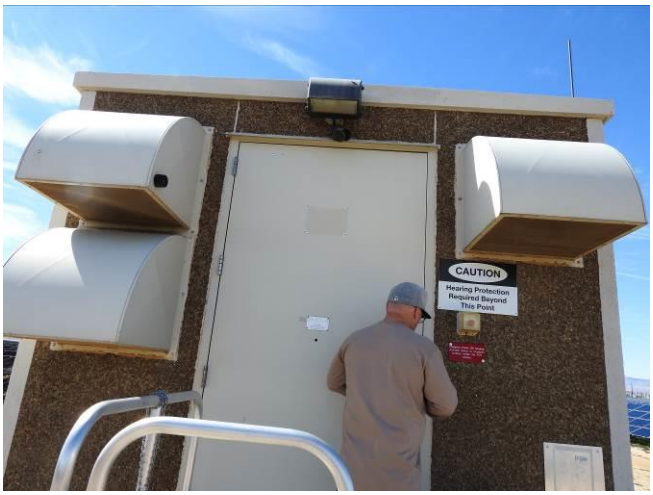
Faded High Voltage sign



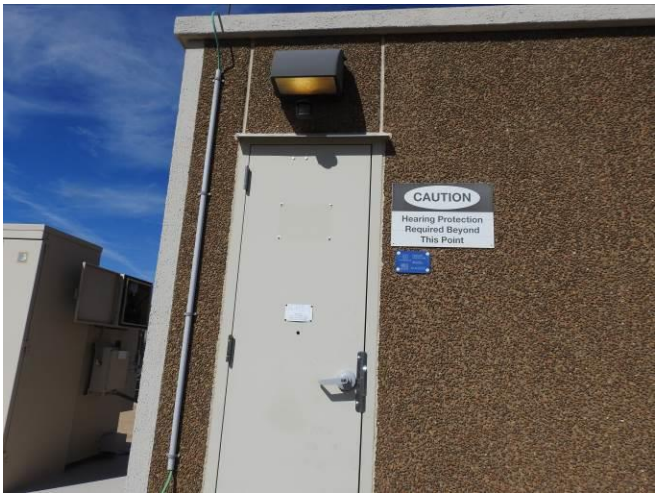
Faded High Voltage sign



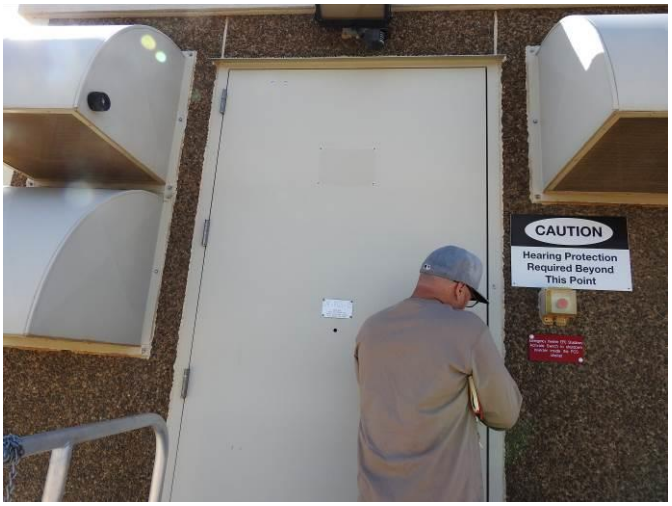
Faded High Voltage sign



Missing High Voltage sign



Missing High Voltage sign



Missing High Voltage sign

Finding 05: Missing NFPA Placard on the main gate.

GO 167-B, Appendix E, Operation Standard 10: Environmental Regulatory Requirements states in part:

> *Environmental regulatory compliance is paramount in the operation of the generating asset.*

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.*

ESRB staff 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. 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 emergencies.

II. 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	MSDS for All Hazardous Chemicals
	7	Injury & Illness Prevention Plan (IIPP) (last 3 years)
	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 (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	Safety Training Records*
	20	Skill-related Training Records*
	21	Certifications for Welders, Forklift & Crane Operators*
	22	Hazmat Training and Record*
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 (if applicable)
	29	Water Permit (if applicable)
	30	Spill Prevention Control Plan (SPCC) (if applicable)
	31	CalARP Risk Management Plan (RMP)
O&M	32	Daily Round Sheets / Checklists
	35	Logbook**
	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 (Demonstration Onsite)**
	40	All Root Cause Analyses (if any)
	41	Maintenance & Inspection Procedures (or Related Documents) (last 3 revisions, if applicable)
	42	SCADA system
	43	Maintenance and Inspection Records for Solar Inverters
	44	Maintenance and Inspection Records for Solar Trackers
	45	Maintenance and Inspection Records for Solar Arrays/Collectors/Solar Field
	46	Maintenance and Inspection Records for Mounting System
	47	Maintenance and Inspection Records for Switchgear/breaker/relays
	48	Maintenance and Inspection Records for Electrical System
	49	Maintenance and Inspection Records for Main Transformer(s)
	50	Maintenance and Inspection Records for Switchyard & Transmission Equipment
	51	Maintenance and Inspection Records for other equipment
Document	52	P&IDs*
	53	Vendor Manuals*
	54	Solar Firm Equipment Design Data
	55	Procedure Compliance Policy
Spare Parts	56	Spare Parts Inventory List
	57	Shelf-life Assessment Report
Instrumentation	58	Instrument Calibration Procedures and Records
Test Equipment	59	Calibration Procedures and Records
Internal Audit	60	Internal Audit Procedures and all Records