

BVES Operations and Planning Department Policy and Procedure 15: Substation Inspection Program

Purpose: This procedure provides process guidance and requirements for BVES' substation inspection program.

Definitions:

1. **Discrepancy:** A noteworthy anomaly, material or structural deficiency.
2. **Inspection:** A basic evaluation generally performed using visual and auditory senses, but which could be conducted by other means.
3. **Substation:** An assemblage of equipment, (e.g., switches, circuit breakers, buses, and transformers), under the control of qualified persons, through which electric energy is passed for the purpose of switching or modifying its characteristics.
4. **Customer Substation:** A Substation that functions as the main source of electric power supply for a single customer, including those that provide feed through for additional customers.

Background: General Order 174, *Rules for Electric Utility Substations*, provides guidelines for uniform requirements for substation inspection programs, the application of which will promote the safety of workers and the public and enable adequacy of service. The order requires that substations shall be designed, constructed and maintained for their intended use, regard being given to the conditions under which they are to be operated, to promote the safety of workers and the public and enable adequacy of service. Furthermore, design, construction and maintenance of BVES substations are performed in accordance with accepted good practices for the given local conditions known at the time by those responsible. The inspection process will have additional benefits in identifying preventative maintenance that will allow us to get more life from our substation assets, and increase system reliability.

Responsibility:

1. The Field Operations Supervisor has overall responsibility for the safe and adequate operation of BVES substations and is responsible for managing the BVES Substation Inspection Program. Additionally, the Field Operations Supervisor is responsible for:
 - a. Ensuring substations are inspected by qualified personnel at the required intervals and to the level of detail required by this procedure.
 - b. Reviewing completed inspection checklists.
 - c. Working closely with the Engineering & Planning Supervisor to coordinate the disposition and correction of noted discrepancies.
 - d. Performing corrective action as assigned by the Engineering & Planning Supervisor.
2. The Engineering & Planning Supervisor has overall technical responsibility for the safe and adequate operation of BVES substations and is responsible for:

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- a. Reviewing substation inspection reports, assigning appropriate priority and corrective action to discrepancies noted during inspections and tracking the progress of corrective actions for the noted discrepancies.
 - b. Recording, trending, reviewing, and analyzing substation operating parameters and assigning corrective measures were appropriate.
 - c. Resolving technical issues regarding substations.
 - d. Retaining inspection records and databases in accordance with this procedure and making them available to Field Operations personnel as needed.
3. The Field Inspector is responsible to the Field Operations Supervisor for ensuring the BVES Substation Inspection Program is managed in accordance with this procedure and GO-174 and providing technical recommendations for the safe and adequate operation of BVES substations.
4. Operations & Planning Department supervisors and foremen have the responsibility and authority to carry out the activities described in this procedure and to provide the necessary training to all affected employees.
5. Operations & Planning Department employees have the responsibility to follow the requirements and guidelines as defined in the process portion of this procedure.

Applicability: This procedure is applicable to all BVES substations and employees assigned to the Operations & Planning Department.

Process:

1. Visual inspections will be completed for each BVES substation at least 9 times per calendar year. Qualified personnel will fill out the Substation Inspection Sheet (Attachment A) during each inspection cycle to record applicable substation operating parameters and note substation conditions. The equipment checked and monitored includes:
 - a. Batteries
 - b. Buses
 - c. Support Structures
 - d. Capacitor Banks
 - e. Circuit Breakers
 - f. Fire Detection and Suppression System (Where applicable)
 - g. Grounding System
 - h. Insulators/Bushing/Arrestors
 - i. Perimeter Fences and Gates
 - j. Transformers
 - k. Reactors

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- I. Voltage Regulators
2. Qualified inspectors will annotate the General Conditions section of the Substation Inspection Sheet to document inspection of every item in 1 above as follows:
 - a. If an inspection of an asset indicates no need for any corrective maintenance, the line corresponding to that asset will be marked with an “X” to indicate that it was inspected, but requires no corrective actions at this time.
 - b. If corrective action is needed it is split into 3 categories based on priority:
 - **Priority 1:** Indicates the discrepancy is an immediate risk to reliability of substation equipment and/or worker and/or public safety. Priority 1 discrepancies are to be corrected “As Soon As Possible” and within 30 days.
 - **Priority 2:** Indicates the discrepancy must be corrected but does not pose an immediate risk to reliability of substation equipment and/or worker and/or public safety. Priority 2 discrepancies are to be corrected within 36 months.
 - **Priority 3:** Indicates the discrepancy could result in a possible loss of reliability or other undesirable outcome if not corrected. These discrepancies will be corrected when there is an opportunity to do so.
 - c. When is discrepancies are noted, they should be further explained in the “Notes for Items Needing Attention” section.
3. Completed Substation Inspection Sheets will be routed and reviews (reviews documented on Attachment B) as follows:
 - a. Field Inspector:
 - Performs an initial review to ensure completeness of the inspection performed and to ensure proper documentation of results on the Substation Inspection Sheets.
 - Seeks clarification from inspection personnel on any discrepancies noted.
 - Performs technical review of inspection and provides recommendations as applicable.
 - Evaluates any priority 1 discrepancies that may require immediate corrective action and recommends appropriate action(s) to Field Operations Supervisor.
 - b. Field Operations Supervisor:
 - Performs a review of the inspection performed and ensures proper documentation of results on the Substation Inspection Sheets.
 - Evaluates any priority 1 discrepancies that may require immediate corrective action and initiates the appropriate actions.

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- Ensures discrepancy priorities are properly assigned and adjusts priorities as appropriate.
- c. Engineering & Planning Supervisor:
 - Ensures applicable information from the Substation Inspection Sheets is recorded in the Substation Inspection Database.
 - Reviews Substation Inspection Sheets to evaluate results of inspection performed.
 - Evaluates any priority 1 discrepancies that may require immediate corrective action and assigns the appropriate actions to the Field Operations Supervisor.
 - Ensures discrepancy priorities are properly assigned and adjusts priorities as appropriate. The Engineering & Planning Supervisor is the final authority for assigning discrepancy priorities.
 - Assigns corrective action for all discrepancies as applicable. The Engineering & Planning Supervisor is the final authority for assigning required corrective action.
 - Ensures discrepancy corrective action is entered and tracked in "Substation Inspection Database," which is an excel spreadsheet that documents inspection discrepancy details.
 - Produces a list of active substation discrepancies and corrective action progress. The list is routed to the Field Operations Supervisor and the Operations & Planning Manager (monthly).
 - Tracks the progress of corrective action to ensure corrective action is taken within the applicable timeframe according the discrepancy priority.
 - Produces substation operating parameters trend report. The report is routed to the Field Operations Supervisor and the Operations & Planning Manager (monthly).
 - Reviews and analyzes substation operating parameters and trends. Assigns corrective action for anomalies and/or abnormal conditions.
- d. Operations & Planning Manager
 - Reviews completed Substation Inspection Sheets.
 - Reviews list of active substation discrepancies and corrective action progress (monthly).
 - Reviews substation operating parameters (monthly).

4. Document Retention:

- a. All Substation Inspection Sheets will be retained at BVES Office 42020 Garstin Dr., Big Bear Lake, CA 92315 as follows:
 - At least 12 months of inspection records will be maintained in the Substation Inspection Book.
 - Inspection records greater than 12 months old may be filed in the Engineering & Planning Files if not retained in the Substation Inspection Book.

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- b. All substation inspection documents will be held for a minimum of 5 years from the date of inspection.
- c. Engineering & Planning Group is responsible for maintaining the Substation Inspection Book and the Substation Inspection Database.

Implementing Instructions:

1. This Operations and Planning Department Policy and Procedure is effective September 30, 2014 and upon approval by the Operations and & Planning Manager. The Field Operations Supervisor and Engineering & Planning Supervisor will go over this procedure with their employees prior to September 30, 2014.
2. All employees in the Operations and Planning Department will review this procedure by September 30, 2014 and will sign a sheet acknowledging their review of this policy and procedure. This sheet shall be retained by the Office Administrator during the period of the employee's employment.

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