Maintaining Station Batteries

Station batteries refer to large groups of linked batteries used as standby power for circuit breaker switching, generator starting power, or uninterruptable power supplies. A preventative maintenance program for station batteries can help ensure readiness and proper performance when power is needed. The following information may be used as a guideline to maintain this equipment.,

Installation

Consider the following when installing batteries:

- A battery acceptance test should be performed either at the factory or upon installation to ensure capacity is sufficient and meets the manufacturer's specifications.
- The batteries should be installed in a well-ventilated area as gasses produced by the batteries may otherwise accumulate and reach an explosive concentration.
- Prohibit the use of open flames near the batteries. Post applicable warning signs in the area.
- Place batteries so there is minimal temperature variation from cell to cell. For example, sunlight exposure on part of the bank, or placing heaters nearby, may cause uneven temperatures across cells.
- The area around the batteries should be clear to allow safe access. General cleanliness of the area is also essential, so dust does not accumulate on the batteries.
- Reference the NFPA 70: National Electric Code® for grounding and other electrical installation requirements.

Charging

Charging procedures can vary widely depending on battery type, configuration and charging equipment. The manufacturer's procedures and recommendations should be followed to ensure proper operation. The following conditions may merit investigation or maintenance:

- Heavy discharge
- Specific gravity is outside of limits
- Excessive battery voltage variation from cell to cell while charging
- A significant amount of water is required to restore electrolyte level

Check voltmeter and ammeter calibration on the charger annually.

Periodic Inspections

Weekly

- Visually check for damage or leakage from cells and that the electrolyte level is between the low- and high-level marks. Add water when any cell electrolyte reaches the low-level line and record the additions to each cell to detect increases of electrolyte consumption. The quality of the water should meet the manufacturer's specifications.
- Verify proper operation of the charger and check for normal voltage and ammeter readings on charger instrumentation.

Monthly

Check and record the following (for electrical measurements, use a digital voltmeter with a traceable calibration accuracy of 0.01 VDC and 0.01 Amps or better):

- General cleanliness of the battery cells and the battery area (clean as necessary)

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- Voltage
- Cells for cracks or electrolyte leakage
- Plates of cells (plates buckling, discoloration, grid cracks or plate growth)
- Ambient temperature and ventilation equipment operation
- Pilot cell (if used) -check voltage, specific gravity (in accordance with the manufacturer's instructions), and electrolyte temperature and level
- Terminals and connectors for evidence of corrosion

Quarterly

Check and record the following:

- Specific gravity readings of each cell
- Voltage reading of each cell and total battery terminal voltage (cell voltages must be post-to-post to include inter-cell connector)
- Float voltage
- Temperature of electrolyte of representative cells (suggested: every sixth cell). Determine and correct the cause of any temperature variation between cells
- Battery load with battery on float charge (charger current)

Annually

Check and record the following:

- Cell conditions (detailed visual inspection)
- Cell-to-cell and terminal connection resistance. Connections should be taken apart, cleaned and re-torqued if they show excessive resistance as defined by the manufacturer
- Integrity of battery rack
- Tightness of battery rack (Note: use only insulated tools)

5 Years

- A capacity test of the bank should be performed every five years. However, the test should be repeated annually if the capacity has dropped below 90 percent of the original rating.