

IEEE
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IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Stationary Type Power Plant and Substation Lead Storage Batteries

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1. Scope

This document is limited to providing recommended practices of maintenance, test schedules, and testing procedures that can be used to optimize life and performance from large lead storage batteries. It also provides indications to determine when batteries should be replaced. There are other test procedures and replacement techniques used within the industry (especially for smaller substation batteries) that are equally as effective but are beyond the scope of this document. Sizing, installation, other battery types, and application are also beyond the scope.

2. Definitions

The following definitions apply specifically to the subject matter of this standard. For other definitions, see IEEE Std 380-1972, Definitions of Terms Used in IEEE Nuclear Power Generating Station Standards, and IEEE Std 100-1972, Dictionary of Electrical and Electronics Terms (ANSI C42.100-1972).

acceptance test (lead storage batteries). A capacity test made on a new battery to determine that it meets specifications and/or manufacturer's rating.

battery rack. A rigid structure used to accommodate a group of cells.

performance test (lead storage batteries). A capacity test made on a battery after being in service, as found on a random basis, to detect any change in the capacity determined by the acceptance test.

service test (lead storage batteries). A special capacity test made to determine whether the designer selected and/or specified the right battery for the system to which it is connected.

3. Maintenance

3.1 General. Proper maintenance will prolong the life of a battery and will aid in assuring that it is capable of supplying its design power requirements. A good battery maintenance program will serve as a valuable aid in determining the need for battery replacement. Station battery maintenance should be performed by personnel knowledgeable of batteries and the safety precautions involved.

3.2 Safety. The safety precautions listed herein should be followed in station battery maintenance. Work performed on batteries should be done only if the proper and safe tools are available with the protective equipment listed.

3.2.1 Methods. Work performed on a battery in service should use methods to preclude circuit interruption or arcing in the vicinity of the battery.

3.2.2 Protective Equipment. The following protective equipment should be available to personnel who perform maintenance work:

- (1) Either goggles or plastic face shield
- (2) Acidproof gloves
- (3) Protective aprons and overshoes
- (4) Water for rinsing in case of acid spillage
- (5) Bicarbonate of soda for neutralizing acid spillage

3.2.3 Precautions. The following protective procedures should be followed:

- (1) Insulate the handles of tools used for tightening connector bolts
- (2) Post a warning about smoking, open flame, or creating an arc in the vicinity of the battery
- (3) Ensure that the test leads shall be connected with sufficient length of cable to prevent accidental arcing in the vicinity of the battery
- (4) Use adequate fuses on all connections for test equipment