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# REGULATORY GUIDE

OFFICE OF STANDARDS DEVELOPMENT

REGULATORY GUIDE 1.129

## MAINTENANCE, TESTING, AND REPLACEMENT OF LARGE LEAD STORAGE BATTERIES FOR NUCLEAR POWER PLANTS

### A. INTRODUCTION

Criterion 18, "Inspection and Testing of Electric Power Systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires that electric power systems important to safety be designed with a capability to test periodically the operability and functional performance of the components of the systems, such as on-site power sources. Criterion XI, "Test Control," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50 requires that a test program be established to ensure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures that incorporate the requirements and acceptance limits contained in applicable design documents. Paragraph 50.34(b)(6) of 10 CFR Part 50 requires that the final safety analysis report include, among other things, plans for conduct of normal operations, including maintenance, surveillance, and periodic testing of structures, systems, and components. This regulatory guide describes a method acceptable to the NRC staff for performing the maintenance, testing, and replacement of large lead storage batteries for all types of nuclear power plants. The Advisory Committee on Reactor Safeguards has been consulted concerning this guide and has concurred in the regulatory position.

### B. DISCUSSION

IEEE Std 450-1975, "IEEE Recommended Practice for Maintenance, Testing and Replacement of Large Lead Storage Batteries for Generating Stations and Substations," dated May 29, 1975, was prepared

by the Working Group on Batteries, Station Design Subcommittee, of the Power Generation Committee and was approved by the Institute of Electrical and Electronics Engineers Standards Board on February 27, 1975. It was subsequently approved and designated N41.15-1976 by the American National Standards Institute on January 8, 1976.

The provisions of the standard include maintenance, test schedules, testing procedures, and replacement criteria for large lead storage batteries. The standard does not include surveillance and testing of the d.c. system, even though the battery is part of that system. This standard contains requirements indicated by the verb "shall" and recommendations indicated by the verb "should." The recommendations as well as the requirements of the standard were evaluated with respect to importance to safety. All recommendations are considered to be of sufficient importance to safety to be endorsed along with the requirements given in the standard.

### C. REGULATORY POSITION

Conformance with the requirements and recommendations for the maintenance, testing, and replacement of large lead storage batteries for nuclear power plants that are specified by IEEE Std 450-1975, "IEEE Recommended Practice for Maintenance, Testing and Replacement of Large Lead Storage Batteries for Generating Stations and Substations,"<sup>1</sup> provides an adequate basis for complying with the requirements of the Commission's regulations with respect to the maintenance, testing, and replacement of large lead storage batteries, subject to the following:

<sup>1</sup>Copies may be obtained from the Institute of Electrical and Electronics Engineers, United Engineering Center, 345 East 47th Street, New York, New York 10017.

\*Lines indicate substantive changes from previous issue.

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Comments and suggestions for improvements in these guides are encouraged at all times and guides will be revised, as appropriate, to accommodate comments and to reflect new information or experience. This guide was revised as a result of substantive comments received from the public and additional staff review.

Comments should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

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1. The battery service test discussed in Subsection 4.3, "Service," and described in Subsection 5.6, "Service Test Description," should be performed in addition to the battery performance discharge test. The battery service test should be performed during refueling operations or at some other outage, with intervals between tests not to exceed 18 months. In addition, if the system design is changed so that the previous service test is no longer a valid test of the capability of the battery to meet the changed design requirements of the system, the user should conduct the service test for the new system design.

2. Section 8, "Standards References," of IEEE Std 450-1975 lists additional standards. The specific applicability or acceptability of these referenced

standards has been or will be covered separately in other regulatory guides, where appropriate.

#### **D. IMPLEMENTATION**

The purpose of this section is to provide information to applicants and licensees regarding the NRC staff's plans for using this regulatory guide.

This guide reflects current NRC staff practice. Therefore, except in those cases in which the applicant or licensee proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein is being and will continue to be used in the evaluation of submittals in connection with construction permit applications until this guide is revised as a result of suggestions from the public or additional staff review.