P535

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Type of Project: Modify Existing Approved PAR
PAR Request Date: 16-Jan-2013
PAR Approval Date: 06-Mar-2013
PAR Expiration Date: 31-Dec-2013
Status: Modification to a Previously Approved PAR for the Revision of a Standard
Root PAR: P535 **Approved on:** 17-Jun-2009
Root Project: 535-2006

1.1 Project Number: P535
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard for Qualification of Class 1E Vented Lead Acid Storage Batteries for Nuclear Power Generating Stations

3.1 Working Group: Nuclear Battery Qualification Working Group (PE/SB/WG_535)
Contact Information for Working Group Chair
Name: Robert Beavers
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None

3.2 Sponsoring Society and Committee: IEEE Power and Energy Society/Stationary Batteries Committee (PE/SB)
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4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 09/2012
4.3 Projected Completion Date for Submittal to RevCom: 10/2013

5.1 Approximate number of people expected to be actively involved in the development of this project: 25
5.2 Scope: 1. Overview
1.1 Scope
This standard describes qualification methods for Class 1E vented lead acid batteries and racks to be used in nuclear power generating stations outside primary containment. Qualification required by IEEE Std 308(TM) can be demonstrated by using the procedures in this standard in accordance with IEEE Std 323(TM). Application of batteries in Nuclear Power Generating Stations can be divided into two sections; duty cycles equal to or less than 8 hours and duty cycles greater than 8 hours. This standard provides a process to demonstrate qualification for both applications.
This standard is based on the user demonstrating the predominant failure mechanism is positive plate grid corrosion. The following technologies have been demonstrated to meet this criterion for full float service:
a)lead-calcium
b)lead-antimony
c)Lead-selenium low antimony

To apply this standard to vented lead-acid technologies other than those listed above, the user is required to demonstrate the following for full float service:
a)The predominant failure mechanism is positive plate grid

Changes in scope: 1. Overview 1.1 Scope This standard describes qualification methods for Class 1E vented lead acid batteries and racks to be used in nuclear power generating stations outside primary containment. Qualification required by IEEE Std 308(TM) ~~or IEEE Std 765(TM)~~can be demonstrated by using the procedures in this standard in accordance with IEEE Std 323(TM). Application of batteries in Nuclear Power Generating Stations can be divided into two sections; duty cycles equal to or less than 8 hours and duty cycles greater than 8 hours. This standard provides a process to demonstrate qualification for both applications. This standard is based on the user demonstrating the predominant failure mechanism is positive plate grid corrosion. The following technologies have been demonstrated to meet this ~~criteria~~criterion for full float service: a)~~Pasted plate~~ lead-calcium b)~~Pasted plate~~ lead-antimony c)~~Tubular~~Lead-selenium ~~plate~~ low antimony ~~lead-selenium alloy~~ To apply this standard to vented lead-acid technologies other than those listed above, the user is required to demonstrate the following for full float service: a)The predominant failure mechanism is positive plate grid corrosion b)The accelerated aging factors ~~in~~shall ~~Table~~be ~~1~~determined ~~are~~using ~~applicable~~section ~~to the battery being tested~~8.2.1e. Battery sizing, maintenance, capacity testing, installation, charging equipment, and consideration of other

corrosion
b)The accelerated aging factors shall be determined using section 8.2.1e.

Battery sizing, maintenance, capacity testing, installation, charging equipment, and consideration of other type batteries are beyond the scope of this standard.

type batteries are beyond the scope of this standard.

5.3 Is the completion of this standard dependent upon the completion of another standard: No
5.4 Purpose: This document will not contain a purpose clause.

5.5 Need for the Project: The existing standard was based on the light water nuclear reactor power plants with duty cycles of up to 8 hours. The new proposed nuclear reactor designs have Class 1E battery duty cycles of 24 to 72 hours. Additional qualification activities are needed to demonstrate that a battery will meet its design function at the end of life. This revision will address the significantly longer duty cycle requirements of the proposed new Nuclear Power Generating Stations designs.

5.6 Stakeholders for the Standard: The people that would use this standard are the utilities, engineers, and consultants that qualify batteries for use in Nuclear Power Stations. In addition the NRC references this standard in Regulatory Guide 1.158 and uses this standard when reviewing licensee submittals regarding safety related batteries.
Groups within the IEEE interested in this standard would be the Nuclear Power engineering committee (NPEC), specifically the group responsible for the environmental qualification (addressed in IEEE 323) and the seismic qualification (addressed in IEEE 344).

Intellectual Property
6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No
6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

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7.1 Are there other standards or projects with a similar scope?: No
7.2 Joint Development
Is it the intent to develop this document jointly with another organization?: No

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8.1 Additional Explanatory Notes (Item Number and Explanation): 5.2: During the resolution of ballot comments at the January 2013 meeting, a need to revise the scope was identified. The revision to the scope deletes the pasted plate and tubular from the plate types and specifies the section in the standard to be used to determine the aging factors (8.2.1e).