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Review of Draft Regulatory Guide DG-1155, "Maintenance, Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," by Richard T. Bolgeo, BSEE, Chairman of IEEE Standard 450-2002

Review of Draft Regulatory Guide DG-1155, "Maintenance, Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants."

I have reviewed Draft Regulatory Guide DG-1155 and the following are my comments.

COMMENT 1

DG-1155, Page 4, Paragraph 4 states: "In addition, IEEE Std 450-2002 introduces the practice of allowing users to transition from correcting for temperature before conducting the discharge test to correcting for temperature after conducting the discharge tests. However, the standard does not provide any supportive information to evaluate the impact of this practice."

This paragraph is incorrect. IEEE Standards 450-1972 and 1975 both contained constant current and time base corrected tests in which the time duration of the test was corrected after the completion of the test. In 1987, IEEE Standard 450 was issued that eliminated that reference to that type of test. It is my understanding that at that time, the IEEE was trying to align its standards with those produced in Europe that cover the same areas. During that time period, Europeans used current rate adjusted testing versus the constant current testing in the United States. Since that time however, the United States has stayed with constant current and time base corrected tests because of their ease of use, repeatability, and accuracy.

While drafting IEEE Standard 450-2002, it was determined that all manufacturers agreed that both types of testing methods, Rate Adjusted and Constant Current, were valid for times 1 hour or greater. Also, to improve the accuracy of both tests, new K factors were calculated, approved by the manufacturers, and incorporated into IEEE Standard 450-2002.

Therefore, temperature correction of time for a Constant Current Discharge Rate Capacity Test has been around since the first version of IEEE Standard 450 and is more accurate today than it was originally.

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COMMENT 2

DG-1155, Page 5, Item 2 states: "2. Subsection 5.2, "Inspections," should be supplemented with the following: "For nuclear power generating station Class 1E batteries, battery float current and voltage should be measured and recorded weekly.""

IEEE 450-2002, section 5.2.1 specifies that these two type of inspections, battery float current and voltage, should be performed monthly. However because of the nature of safety concerns in US nuclear plants, this surpra-compliance of the IEEE document could be deemed prudent and would be acceptable.

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COMMENT 3

DG-1155, Page 5, Item 3, Subsection 5.4.1 (d) states: "(d) For nuclear power generating station Class 1E batteries, the use of stabilized charging current to determine a fully charged condition should (1) be limited to lead-calcium batteries and (2) verified by measurements during charging. ..."

This statement recognizes the difference in technologies between lead-calcium batteries and other types and is technically accurate. Therefore, this recognition could be deemed to be prudent and would be acceptable.

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COMMENT 4

DG-1155, Page 5, Item 5, states: "In Subsection 6.1, "Acceptance test," a second sentence should be added to state as follows: "However, a test of the battery's capability (see 7.5) shall be made upon initial installation.""

There is no technical basis for this change. IEEE Standard 450-1972,1975,1987,1995 and 2002 are all in agreement with this issue in that if an acceptance test is performed at the manufacturers, then it is not necessary to perform this test upon initial installation of the battery. See Section 6.1, paragraph 1 of IEEE Standard 450-2002.

The user has 2 years to test the newly installed battery by a Performance Test (or a Modified Performance Test) in accordance with section 6.2(a) of IEEE Standard 450-2002 after the battery has been installed.

Since the advent of IEEE Standard 450-1972, this has been the recommended method and through out the past 4 reviews, no changes have been approved in the IEEE Standard 450 documents. Numerous times when this issue was brought up by the NRC representative, we have asked for documented evidence from the committee as a whole that we can review, that would show where our recommendations in this case are lacking. **At no time has anyone presented any evidence to prove the case for the need to change this recommendation. This proposed requirement has not been shown that have any technical merit**

A review or DG-1155 shows no technical basis for this change for this recommendation presented in IEEE Standard 450-1972, 1975, 1987, 1995 and 2002. Also, for some nuclear plants that are limited on outage times, this change will cause a significant problem and could cause extended and unnecessary outages.

Therefore, I find this recommended change to be imprudent, not supported by engineering data and unacceptable.

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COMMENT 5

DG-1155, Page 6, Item 7, states: "In Subsection 7.2.2, "Discharge Rate," the last paragraph allows users to transition from correcting for temperature *before* conducting the discharge test to correcting for temperature *after* conducting the discharge test. This statement should be supplemented with the following: "For nuclear power generating station Class 1E batteries, the preferred method is to adjust the discharge rate for the time-adjusted method for temperature before conducting the test.""

See the Comment 1 for the technical discussion.

DG-1155 is requiring a change to the test methodology of all types of capacity tests specified in IEEE Standard 450-2002 with out giving any technical reasons other than the incorrect assumption put forth in DG-1155, Page 4, Paragraph 4.

Therefore, I find this recommended change to be imprudent, not supported by engineering data and unacceptable.

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In my review of this document I have tried to be objective and apply reasonable engineering principles to the information presented.

Richard T. Bolgeo

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