

NRCREP Resource

From: John MacDonald [jmacdonald@istcorp.com]
Sent: Monday, September 15, 2008 4:41 PM
To: NRCREP Resource
Cc: sa@ieee.org; 'Malcolm, Scott'; John.Disosway@dom.com; 'BURSTEIN Nissen M (AREVA NP INC)'
Subject: IEEE NPEC Comments on Draft Regulatory Guide DG-1132
Attachments: DG-1149_NPEC-NRC_9-15-08.pdf

Dear Sir or Madam:

The attached comments on draft regulatory guide DG-1149 are submitted by the IEEE Nuclear Power Engineering Committee (NPEC). These comments were provided by the membership of NPEC Sub-committee 2 (SC-2, Qualification) that has responsibility for IEEE Standards relating to Equipment Qualification for Nuclear Power Generating Stations. The comments have been reviewed and approved by AdCom, the governing body of NPEC, and as such represent a consensus position of NPEC.

Very truly yours,
John MacDonald
Vice-Chair, IEEE Nuclear Power Engineering Committee

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September 15, 2008

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Attn: S. Aggarwal

Subject: Comments on Draft Regulatory Guide DG-1149
Qualification of Safety-related Motor Control Centers for Nuclear Power Plants™

Dear Sir or Madam:

The attached comments on draft regulatory guide DG-1149 are submitted by the IEEE Nuclear Power Engineering Committee (NPEC). The comments were provided by the membership of NPEC Subcommittee 2 (SC-2, Qualification) that has responsibility for IEEE Standards relating to Equipment Qualification for Nuclear Power Generating Stations. The comments have been reviewed and approved by AdCom, the governing body of NPEC, and as such represent a consensus position of NPEC.

As noted, these comments are the consensus position of the Nuclear Power Engineering Committee. For follow-up or questions, please contact Mr. Nissen Burstein, Chair of SC-2, at 434-832-2501, or by email to nissen.burstein@areva.com.

Very truly yours,

John D. MacDonald, for

J. Scott Malcolm
Chair, Nuclear Power Engineering Committee

cc: J. D. MacDonald, NPEC Vice-Chair
S. K. Aggarwal, NPEC Secretary
N. M. Burstein, NPEC SC-2 Chair
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September 15, 2008

NPEC Comments to Draft Regulatory Guide DG-1149

I. Introduction:

The IEEE Nuclear Power Engineering Committee (NPEC) appreciates the opportunity to comment on the proposed regulatory guide in the area of motor control center qualification prior to issuance as a regulatory position. We thank the U.S. NRC for their efforts in performing a comprehensive and thorough review of the document and their willingness to work with the technical bodies such as IEEE.

In SECY-99-029, "NRC PARTICIPATION IN THE DEVELOPMENT AND USE OF CONSENSUS STANDARDS," William D. Travers, Executive Director for Operations, outlined for the NRC Commissioners how the staff would use NRC resources to more effectively and efficiently participate in the development and use of consensus standards. In the DISCUSSION section of this paper, under "NRC Use of Consensus Standards", the NRC staff took the position that they will impose limitations and modifications to consensus standards when, in their view, the standard does not provide an adequate basis for regulatory requirements or guidance. The full text of this paragraph follows:

"The NRC imposes a limitation or modification on a consensus standard when, in its view, the consensus standard does not adequately address a specific regulatory issue, the standard is technically incorrect, or it is inconsistent with current regulations. NRC does not take lightly the limitations and modifications it sometimes imposes on consensus standards. Such exceptions are subject to stakeholder comment as part of the public review period conducted as part of proposed rulemaking or regulatory guide development. In this context, it should be understood that (1) SDOs are responsible for developing standards consistent with the consensus process and NRC representatives constitute only part of that process, and (2) the NRC is responsible for establishing regulatory requirements and may use appropriate consensus standards to complement those requirements, subject to public comment. Since the NRC has specific regulatory responsibilities, and consensus standards are sometimes written with a focus on burden reduction that in the judgment of the NRC staff does not provide an adequate basis for regulatory requirements or guidance, the NRC must reserve the right to limit or modify any consensus standard it uses as part of its regulatory process."

The review of DG-1149 has identified several areas that DG-1149 has imposed significant limitations on the IEEE Std 649-2006 guidance. The comments provided in this letter are to gain further insights and request clarifications to ensure consistent interpretation of the DG-1149 guidance. Additional dialogue to discuss comments and questions is welcome.

II. Response to Section B of U.S. NRC DG-1149

Comments to Section B:

The third paragraph of Section B, entitled DISCUSSION provides the NRC Staff position regarding high frequency concerns related to motor control centers (MCCs) for new nuclear power plant designs located on hard rock sites in the central and eastern United States.

The draft guide excludes the use of previous seismic testing of MCCs to address high frequency concerns because it may not have high frequency input. We believe an assessment of previous seismic test inputs should be conducted to verify the equipment had adequate content over the frequency range of interest before discounting any seismic test data. Seismic qualification testing of safety-related MCCs per IEEE Std 649-2006 is performed in compliance with IEEE Std 344-2004 requirements. Annex B of IEEE Std 344-2004 defines guidance for verifying the test data has sufficient content over the frequency range of interest.

DG-1149 should refer to COL/DC-ISG-1, "Interim Staff Guidance on Seismic Issues Associated with High Frequency Ground Motion in Design Certification and Combined License Applications" for NRC Staff guidance in evaluating whether high frequency ground motion has an impact on potential high frequency sensitive equipment.

We recommend the following updates to Section B:

Clarify that previous seismic testing is acceptable for high frequency nuclear plant sites when an evaluation of the seismic test inputs demonstrated there is sufficient content over the frequency range of interest in accordance with Annex B (Frequency Content and Stationarity) of IEEE Std 344-2004.

Reference should be made to COL/DC-ISG-1, "Interim Staff Guidance on Seismic Issues Associated with High Frequency Ground Motion in Design Certification and Combined License Applications" for the NRC Staff guidance in the evaluation of potential high frequency sensitive equipment at new nuclear power plants.

III. Response to Section C of U.S. NRC DG-1149

Comments to C.1.

The first item of Section C., entitled Regulatory Position provides the NRC Staff Position on the operational aging of control and distribution transformers located in motor control centers. The DG-1149 guidance requires operational aging to be considered for control and distribution transformers when located in a harsh environment.

Table 1 of IEEE Std 649-2006 is intended to provide users of the standard with typical operational aging parameters. The standard does not preclude incorporation of additional parameters if the end user or qualifying entity determines significant aging parameters are present in the installation.

However, in the case of Control and Distribution transformers, they do not have mechanically active components in their construction. Therefore, there are no

mechanical stressors contained in the devices. The transformers are typically rated to other industrial standards for electrical characteristics. The end user should consider these ratings in selecting transformers for the application.

Both control power and distribution transformers will typically see changes in the supplied load from a minimum value up to a maximum load, depending upon the state of the control circuit or the connected distribution loads. These changes in load produce a very limited magnetic stressor on the transformer windings in changes from minimum load to full rated load condition.

The primary degradation mechanism relative to transformers is heat and the effect of heat on the magnet wire and insulating materials used in the manufacturing process. The internal heat rise and other temperature effects on the winding insulation will be addressed by the thermal aging program. These determinations will include the effects of maximum load, or other specified load/time profiles on the transformer self-temperature rise as required by IEEE Std 649-2006, Section 9.4.1.d); however, this is not considered part of the operational aging parameters in IEEE Std 649-2006.

If NRC has information that conflicts with this consensus, IEEE will be pleased to evaluate this information.

We recommend that this item of DG-1149 be deleted.

Comments to C.2

The second item of Section C., entitled Regulatory Position provides the NRC Staff Position on the typical functional testing to be performed on motor control center components during and after a harsh environment test. The DG requires the mandatory compliance with additional functional parameters without regard to whether the requirements support the intended safety related function of the motor control center.

The purpose of the qualification program is to demonstrate that the motor control center is capable of performing its intended safety related function as required before, during and/or after a design basis event. There are applications where individual components do not support the safety related function of the motor control center. Examples could include items such as auxiliary contacts that provide power to local indicating lights and blown bulbs in local indicating lights. The inability of these items to function does not affect the safety related function of the motor control center.

The intent of the standard is that the specifier identifies the specific characteristics that support the safety related function of the motor control center as stated in paragraph Section 8.1(i) of the standard. Therefore, establishing acceptance criteria for MCC components for applications which do not support the safety-related function of the equipment is not appropriate.

We recommend that this item of DG-1149 be deleted or revised to read:

In addition to the typical functional tests specified in Table 2 of IEEE Standard 649-2006, the alternative criteria a, b, and c should be performed on all motor control center components that support or impact the intended safety related function of the motor

control center and that do not have a specific functional test during and after a harsh environment test.

Comments to C.3

The third item of Section C., entitled Regulatory Position provides the NRC Staff Position on the typical functional testing for timing devices in motor control centers during and after a harsh environment test. The DG indicates that the minimum drop-out voltage should be consistent with the plant specific voltage analysis.

The SC-2 Working Group 2.14 on Motor Control Centers agrees supply voltages and frequencies for all of the motor control center components is an important consideration in developing the service conditions for the equipment. This requirement is already addressed in Section 8.1(j) of IEEE Std 649-2006. Therefore, this section of DG-1149 is considered redundant with guidance established within the Standard.

We recommend that this item of the DG be deleted.