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Subject: Westinghouse Comments on Draft Regulatory Guide DG-1149

Dear Sir or Madam:

Attached are Westinghouse comments on Draft Regulatory Guide DG-1149 (Proposed New Regulatory Guide) entitled, "Qualification of Safety-Related Motor Control Centers for Nuclear Power Plants." Westinghouse comments are being provided to request further clarification and understanding of the DG-1149 regulatory guidance.

Very truly yours,

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Enclosures

cc: S. Aggarwal (NRC)
J. Parello (Westinghouse)

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Westinghouse Electric Company Review of
U.S. NRC Draft Regulatory Guide DG-1149

Qualification of Safety-Related Motor Control Centers for Nuclear Power Plants

(Proposed New Regulatory Guidance)

This document provides Westinghouse Electric Company review and comments to the proposed revision to U.S. Nuclear Regulatory Guide (NRC) Regulatory Guide (R.G.) DG-1149, "Qualification of Safety-Related Motor Control Centers for Nuclear Power Plants" which is a regulatory review of IEEE Std 649-2006, "IEEE Standard for Qualifying Class 1E Motor Control Centers for Nuclear Power Generating Stations."

I. Draft Regulatory Position – Section B. (DISCUSSION)

Section B. provides general information regarding the purpose and scope of IEEE Std 649-2006 and NRC Staff input regarding specific items which may influence or impact the use of the standard.

I.1 Page 2, 3rd Paragraph

The third paragraph of Section B. 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. DG-1149 states the following:

"The vast majority of seismic qualification tests on motor control centers for operating plants were performed with input frequencies up to only 33 hertz (Hz). As a result of improved understanding gained in the high frequency seismic input motions, the NRC staff does not consider attempts to use past testing data for seismic qualification of motor control centers to be adequate for new nuclear power plants.¹ Recent studies related to the early site permit applications at certain east coast hard-rock-based plants indicate that the site-specific spectra may exceed the certified design spectra of new proposed plants in the very high frequency range (from 20 Hz up to 100 Hz). Plants located in the central and eastern United States on hard rock should evaluate whether high-frequency earthquake ground motion could affect motor control center components (such as digital components)."

The above statement excludes the use of previous seismic testing of MCCs to address high frequency concerns because it may not have high frequency input. Before rejecting valuable test data, a review of the test data should be performed to determine if past seismic test motions used for qualification had adequate content over the frequency range of interest. Sub-clause 9.5.1.1 of IEEE Std 649-2006 specifies that the test input motion shall be in accordance with IEEE Std 344-2004 (IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations). Annex B of IEEE Std 344-2004 defines the guidelines to verify that the seismic test data has sufficient content over the frequency range of interest.

It is also recommended that COL/DC-ISG-1, "Interim Staff Guidance on Seismic Issues Associated with High Frequency Ground Motion in Design Certification and Combined License Applications" be referenced to in DG-1149 for NRC Staff guidance on the subject of evaluating the impact of postulated high frequency ground motion on potentially high frequency sensitive equipment.

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The following recommend updates are suggested to Section B.:

1. Provide further wording that clarifies past seismic testing may be used to demonstrate seismic qualification for nuclear power plant sites with postulated high frequency ground motion when it can be demonstrated that the past seismic test data had sufficient content over the frequency range of interest in accordance with Annex B (Frequency Content and Stationarity) of IEEE Std 344-2004.
2. 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 the NRC Staff guidance for evaluating the impact of postulated high frequency ground motion on potentially high frequency sensitive equipment.

II. Draft Regulatory Position – Section C. (Regulatory Position)

Section C. provides the NRC Staff position regarding the qualification of safety-related MCCs for nuclear power plant per IEEE Std 649-2006.

II.1 Page 3, Section C.1

The first position statement of Section C. requires operational aging of control and distribution transformers located in motor control centers when located in a harsh environment. DG-1149 states the following:

1. *"The operational aging of transformers (control power and distribution) should be considered for 'Test per 5 year aging period' (Table 1 of IEEE Standard 649-2006), if the motor control centers are located in 'harsh environments.'"*

Control and distribution transformers are passive components (no moving parts) and are design rated based on industrial/commercial standards for electrical performance characteristics. For control and distribution transformers, high temperature environments and self-heating may affect the performance and life of the wiring and insulating materials. Environmental temperature and self-heating are addressed during the thermal aging phase of an environmental qualification program performed per IEEE Std 649-2006. Therefore, operational aging parameter associated with control and distribution transformers is not necessary since this equipment has no moving parts and environmental temperature and self-heating are presently being addressed in IEEE Std 649-2006.

Recommendation: Please clarify what operational aging is being required for control and distribution transformers or delete Regulatory Position Number 1 of Section C. of DG-1149.