



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001**

April 21, 2009

Mr. R. W. Borchardt
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: DRAFT FINAL REGULATORY GUIDE 1.211, "QUALIFICATION OF SAFETY-RELATED CABLES AND FIELD SPLICES FOR NUCLEAR POWER PLANTS"

Dear Mr. Borchardt:

During the 561st meeting of the Advisory Committee on Reactor Safeguards, April 2 - 4, 2009, we completed our review of the Draft Final Regulatory Guide (RG) 1.211, "Qualification of Safety-Related Cables and Field Splices for Nuclear Power Plants." We reviewed a previous version of this Guide, RG 1.131, during our 555th meeting in September 2008. During these reviews, we had the benefit of discussions with representatives of the NRC staff and industry. We also had the benefit of the document referenced.

RECOMMENDATION

1. Regulatory Guide 1.211 should be issued after the scope for cable condition monitoring is clarified.

DISCUSSION

The Institute of Electrical and Electronics Engineers, Inc. (IEEE) Standard 383-1974, "Standard for Type Test of Class 1E Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations," has been the primary Standard for qualification of safety-related cables and field splices in the nuclear industry. Although widely used, this Standard was never endorsed by the NRC staff in regulatory guidance documents. This Standard has now been updated and issued as IEEE Standard 383-2003, "Standard for Qualifying Class 1E Electric Cables and Field Splices for Nuclear Power Generating Stations." This version of the Standard is more consistent with the staff's position on acceptable qualification methods and guidance. Therefore, the staff is proposing to endorse IEEE Standard 383-2003 in RG 1.211 with some exceptions and clarifications.

RG 1.211 provides a method acceptable to the staff for qualification of safety-related cables and field splices. It emphasizes the need to use type testing to the extent practical to demonstrate qualification and does not allow analysis alone as a basis for qualification. RG 1.211 further identifies when operating experience or analysis is appropriate for supplemental qualification.

One of the key regulatory positions taken by the staff in this Guide identifies the need for programs that monitor the environment and condition of safety-related power, instrument, and

control cables. Periodic monitoring of parameters such as temperature, radiation, and other key environmental parameters is important to ensure the environment is consistent with that used as the basis for qualification. Condition monitoring of the cables includes the use of one or more techniques to assess the actual condition of the cable.

The industry questioned the need for condition monitoring of the cables. They argued that the current methods available to monitor the condition of cables provide marginal information and benefit. They further stated that industry experience did not support the need for condition monitoring. The staff believes that industry experience justifies condition monitoring and that techniques are available to provide meaningful data for use in assessing the condition of the cables.

We agree with the staff that condition monitoring is needed. Condition monitoring does not have to be capable of demonstrating qualification. It is useful as long as it can detect unexpected degradation requiring further evaluation. However, there may be situations in which condition monitoring may not provide meaningful data. For these cases, the staff should approve exceptions where reasonable testing techniques would not provide useful information or would be detrimental to the cable or other equipment.

Draft Final RG 1.211 states that condition monitoring may be limited to safety-related cables within the scope of the Maintenance Rule. Since the intended focus is on safety-related cables, introduction of the Maintenance Rule is unnecessary. The staff agreed and stated it would revise the wording to clarify that the scope was for safety-related cables and remove the reference to the Maintenance Rule.

The staff should issue RG 1.211 after clarifying the scope for condition monitoring. We encourage the staff to remain cognizant of advances in condition monitoring techniques and industry experience so it can refine future guidance in this area.

Sincerely,

/RA/

Mario V. Bonaca
Chairman

Reference:

1. Memorandum from Michael J. Case, Division of Engineering, Office of Nuclear Regulatory Research, to Edwin M. Hackett, Executive Director, ACRS, Subject: Regulatory Guide 1.211, "Qualification of Safety-Related Cables and Field Splices for Nuclear Power Plants," dated February 6, 2009, with enclosures (ML090970173)

control cables. Periodic monitoring of parameters such as temperature, radiation, and other key environmental parameters is important to ensure the environment is consistent with that used as the basis for qualification. Condition monitoring of the cables includes the use of one or more techniques to assess the actual condition of the cable.

The industry questioned the need for condition monitoring of the cables. They argued that the current methods available to monitor the condition of cables provide marginal information and benefit. They further stated that industry experience did not support the need for condition monitoring. The staff believes that industry experience justifies condition monitoring and that techniques are available to provide meaningful data for use in assessing the condition of the cables.

We agree with the staff that condition monitoring is needed. Condition monitoring does not have to be capable of demonstrating qualification. It is useful as long as it can detect unexpected degradation requiring further evaluation. However, there may be situations in which condition monitoring may not provide meaningful data. For these cases, the staff should approve exceptions where reasonable testing techniques would not provide useful information or would be detrimental to the cable or other equipment.

Draft Final RG 1.211 states that condition monitoring may be limited to safety-related cables within the scope of the Maintenance Rule. Since the intended focus is on safety-related cables, introduction of the Maintenance Rule is unnecessary. The staff agreed and stated it would revise the wording to clarify that the scope was for safety-related cables and remove the reference to the Maintenance Rule.

The staff should issue RG 1.211 after clarifying the scope for condition monitoring. We encourage the staff to remain cognizant of advances in condition monitoring techniques and industry experience so it can refine future guidance in this area.

Sincerely,
 /RA/
 Mario V. Bonaca
 Chairman

Reference:

- Memorandum from Michael J. Case, Division of Engineering, Office of Nuclear Regulatory Research, to Edwin M. Hackett, Executive Director, ACRS, Subject: Regulatory Guide 1.211, "Qualification of Safety-Related Cables and Field Splices for Nuclear Power Plants," dated February 6, 2009, with enclosures (ML090970173)

Distribution:

See next page

Accession No: ML090960332 Publicly Available (Y/N): Y Sensitive (Y/N): N
 If Sensitive, which category?

Viewing Rights: NRC Users or ACRS only or See restricted distribution

OFFICE	ACRS	SUNSI Review	ACRS	ACRS	ACRS
NAME	C. Antonescu	C. Antonescu	C. Santos/A.Dias	E. Hackett	E. Hackett for M. Bonaca
DATE	4/21/09	4/21/09	4/21/09	4/21/09	4/21/09

OFFICIAL RECORD COPY

Letter to the Honorable Dale E. Klein, Chairman, NRC, from Mario V. Bonaca, Chairman, ACRS, dated April 21, 2009

SUBJECT: DRAFT FINAL REGULATORY GUIDE 1.211, "QUALIFICATION OF SAFETY-RELATED CABLES AND FIELD SPLICES FOR NUCLEAR POWER PLANTS"

Distribution:

ACRS Branch A
ACRS Branch B
E. Hackett
H. Nourbakhsh
J. Flack
C. Jaegers
T. Bloomer
B. Champ
A. Bates
S. McKelvin
L. Mike
J. Ridgely
RidsSECYMailCenter
RidsEDOMailCenter
RidsNMSSOD
RidsNSIROD
RidsFSMEOD
RidsRESOD
RidsOIGMailCenter
RidsOGCMailCenter
RidsOCAAMailCenter
RidsOCAMailCenter
RidsNRROD
RidsNROOD
RidsOPAMail
RidsRGN1MailCenter
RidsRGN2MailCenter
RidsRGN3MailCenter
RidsRGN4MailCenter