

February 7, 2001

Mr. Alexander Marion
Director,
Licensing & Programs
Nuclear Generation Division
Nuclear Energy Institute
1776 I Street, NW Suite 400
Washington, DC 20006-3708

Dear Mr. Marion:

The staff has completed its review of the November 1, 2000, Nuclear Energy Institute Report "NEI Survey Results on Okonite Okolon Single Conductor Cables" that was provided with your letter of November 9, 2000. As described below, two concerns have been identified: the limited scope of information from the NEI survey, and the adequacy of the technical basis for the 60 degree C survey threshold temperature. The staff believes that these areas need to be further addressed by NEI in order for the NRC staff to reach closure in this matter.

Question 2 of the NEI survey asked licensees "whether the cables are in an average service environment of greater than 60 degrees C." As stated in NEI report, the word "average" was intended to recognize that operating temperature variations occur at a particular location in the plant and it was not intended to represent a computed average temperature based on variations along the length of a cable. Further, the report stated that "we assume licensees properly interpreted the intended meaning." The staff believes that Question 2 was limited in scope and the guidance provided did not necessarily focus on the fact that, in a limited number of localized areas (i.e., hot spots), the actual temperature environment may be more severe than the nominal (average) temperature at some location (such as a room or compartment) in the plant. Conductor insulation materials used in the Okonite Okolon bonded jacket single conductor cables may degrade more rapidly than expected in an adverse localized temperature environment. Therefore, the staff requests NEI to revisit this issue to determine if hot spots were properly accounted for and identified from the guidance given to licensees in the conduct of the NEI survey.

In addition, the NEI survey questions were focused on whether or not licensees have any single conductor bonded jacket Okonite Okolon cables in a service environment greater than 60 degrees C. The 60 degree C threshold was selected, rather than 90 degrees C (which was the basis for LOCA Test #5), based on other qualification and research test data. Figure 1 in the NEI report presents a family of curves that represent the calculated life values using the Arrhenius method and the accelerated thermal aging data from various qualification/research tests at an activation energy of 1.15 eV as a representative value. The resulting 60 degree C survey threshold temperature was apparently selected on the basis that, from the family of curves in Figure 1, one test report supports performance without splitting after thermal aging

equivalent to 60 degrees C for 40 years. However, in the attached memorandum dated December 10, 1992, from James M. Taylor, Executive Director for Operations, to the Commission, the staff identified a potential deficiency (based on Sandia National Laboratories cable LOCA test failures) in the environmental qualification of Okonite Hypalon bonded-jacket cables in environments with temperatures greater than 50 degrees C (122 degrees F). Therefore, the staff requests NEI to provide the technical basis for the 60 degree C threshold temperature in view of the fact that the previous Sandia tests indicate a potential for failure before 40 years if these cables are used at temperatures greater than 50 degrees C.

The NRC issued Regulatory Issue Summary 2000-25, "Potential Deficiency In Qualification of Single-Conductor Electrical Control Cables," on December 26, 2000, to present the current status of the NRC activities and the industry initiative to address this issue. NEI is requested to address the issues discussed above in order to reach closure in this matter. Your cooperation and the industry's initiative to address this issue is greatly appreciated.

Please contact Paul Shemanski at 301-415-1377, pcs@nrc.gov or Cornelius Holden at 301-415-1288, cfh@nrc.gov if you have any questions regarding the staff's comments on the results of the survey.

Sincerely,

Jack R. Strosnider, Director
Division of Engineering
Office of Nuclear Reactor Regulation

Attachment: As stated

Project No.: 689

cc See list

NEI Project No.: 689

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