



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DOCKET
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50-263

September 22, 1997

MEETING PARTICIPANT: NORTHERN STATES POWER COMPANY
SUBJECT: SUMMARY OF SEPTEMBER 11, 1997, MEETING WITH NORTHERN STATES POWER COMPANY REGARDING EQUIPMENT ENVIRONMENTAL QUALIFICATION PROGRAM

On September 11, 1997, representatives of Northern States Power Company (NSP) met with representatives of the Nuclear Regulatory Commission (NRC) at the NRC's offices in Rockville, Maryland. The enclosure provides a list of meeting attendees.

The meeting was requested by NSP representatives to discuss the methodology used in updating equipment environmental qualification (EQ) for the proposed power uprate program. NSP representatives described to the staff the method used to establish their EQ composite accident temperature profile and the extent to which the Arrhenius methodology was utilized to establish qualification. The NSP indicated that equipment test profiles envelop the EQ composite accident profile for about the first 15 days (i.e., the duration of testing for a specific piece of equipment) following a design-basis accident-LOCA [loss-of-coolant-accident]. To justify qualification of equipment beyond 15 days, NSP indicated that the Arrhenius methodology has been used to extend the equipment test profiles over relatively brief time intervals. The intervals were chosen to minimize the magnitude of temperature variation during the time period of interest to limit the potential for errors based on changes in activation energy.

The staff expressed some concerns with the use of Arrhenius methodology in EQ. The staff stated that the acceptance of the application of Arrhenius methodology is based on Regulatory Guide 1.89, Revision 1, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants," issued in June 1984, that essentially limits its use to evaluating aging effects during the largely steady-state temperatures that can be assumed prior to a postulated accident. The staff stated that a concern exists with using it during the accident sequence when temperatures can change over relatively short periods.

The staff also indicated that activation energy may be temperature dependent since reactions and aging mechanisms at high temperature and normal service temperatures may be different (i.e., activation energy may be a function of temperature, rather than constant) which could introduce the potential for an additional error. The staff indicated, therefore, that a reasonable time delay should be taken following the postulated accident before starting to use this method. The staff stated that the use of Arrhenius methodology should be acceptable as long as conservatism can be demonstrated. The staff stated that it recognizes that this is a generic concern independent of power uprate, and that additional guidance to the industry may be appropriate.

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Notwithstanding this generic concern, the staff determined that the licensee's approach appeared acceptable since it is consistent with the current licensing basis and is based on the licensee's description of its implementation of the methodology that includes updating all the existing EQ files to demonstrate qualification of each equipment for the proposed power uprate. However, the staff indicated that it may audit the updated EQ files in the future to verify that the licensee has adequately ensured qualification of each equipment for the proposed power uprate.

ORIGINAL SIGNED BY

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Enclosure: List of Attendees

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ENCLOSURE