Duke Energy

H. B. Barron
Vice President

Duke Energy Corporation
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-9340
(704) 875-4800 OFFICE
(704) 875-4809 FAX

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Subject: McGuire Nuclear Station
Docket Nos. 50-369, 370
Supplemental Information
TAC Nos. M97262 and M97263

This letter transmits information related to a proposed technical specification amendment for McGuire Units 1 and 2 that would allow continued unit operation at elevated lower containment temperatures for a period not to exceed 72 cumulative hours. Submittal of this information was requested by the NRC during a teleconference discussing the subject amendment.

There are no regulatory commitments contained in this submittal. Any questions related to this matter should be directed to Julius Bryant, McGuire Regulatory Compliance at (704) 875-4162.

H.B. Barron, Vice President
McGuire Nuclear Station

Attachment

cc: L.A. Reyes, Regional Administrator
U.S. Nuclear Regulatory Commission
Region II
Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, GA 30323

Frank Rinaldi, Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Power Regulation
Mail Stop 14H25
Washington, D.C. 20555

Scott Shaeffer
Senior Resident Inspector
McGuire Nuclear Station

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Modeling Structure For Containment Temperature Analysis

The GOTHIC model used in the steam line break analysis to justify an initial lower containment temperature (LCT) of 135°F is identical to that utilized in Chapter 6 of the DPC-NE-3004-PA topical report. A three-dimensional lower containment mesh is used in both instances.

Nodalization (RETRAN,GOTHIC)

The same nodalization detail is used in the GOTHIC model for the 135°F LCT as in the earlier DPC-NE-3004-PA steam line break analysis. The mass and energy release data for the GOTHIC analyses is generated by the RETRAN code. The same mass and energy release data was used in the 135°F LCT case as was used in the topical report case (It was unnecessary to re-run the RETRAN analysis as a result of the increased LCT assumption).

Initial Conditions

The initial conditions assumed in the GOTHIC steam line break analyses are the maximum allowable values per McGuire Tech Specs. They are: Upper Containment Temperature = 100°F, Lower Containment Temp = 135°F(proposed), Ice condenser temp = 30°F. (Note: the actual ice bed maximum temperature allowed per Tech Specs is 27°F, so the assumed ice bed temperature in the analysis is conservatively higher by 3°F.) The containment pressure is assumed to be 0.3 psig throughout the containment building (This is also equal to the maximum allowable Tech Spec value).

Pressure/Temperature Response

The effect of an increased LCT initial value of 135°F on the containment response to a main steam line break is very slight compared with the case of an initial LCT of 120°F. The peak break compartment temperature increase is less than 1 degree °F higher for the 135°F case (from 316°F to 317°F). The maximum average lower containment temperature remains at about 302°F for both cases. These peaks occur about 22 seconds into the transient. Since the peak temperature is driven by superheat, the higher initial LCT has a limited impact on the temperature response.

The peak pressure following a steam line break actually decreases slightly for the case with an initial LCT of 135°F. This is due to the lower air mass in lower containment for the higher initial LCT (assuming the same initial pressure and relative humidity level from the case with an initial LCT of 120°F). The value of the peak pressure decreases from 6.9 psig (for 120°F LCT case) to 6.6 psig (for 135°F initial LCT case).

Relative Humidity Assumption

The assumed initial relative humidity in all cases analyzed is 100%. This maximizes the initial water vapor present in the containment atmosphere and increases all temperatures later in the transient. There is no Tech Spec requirement on humidity levels in containment. Actual humidity levels inside the containment building are generally much lower than this. The containment response following a LOCA/SLB is relatively insensitive to changes in this parameter.