CONTAINMENT SYSTEMS

AIR TEMPERATURE

LIMITING CONDITIONS FOR OPERATION

3.6.1.5 Primary containment average air temperature shall be maintained:

a. Between 75* and 100°F in the containment upper compartment, and

b. Between 100* and 120°F*** in the containment lower compartment.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the containment average air temperature not conforming to the above limits, restore the air temperature to within the limits within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.5.1 The primary containment upper compartment average air temperature shall be the weighted average** of ambient air temperature monitoring stations located in the upper compartment. Temperature readings will be obtained at least once per 24 hours from the elevation of 826 feet at the inlet of each upper containment ventilation unit.

4.6.1.5.2 The primary containment lower compartment average air temperature shall be the weighted average** of ambient air temperature monitoring stations located in the lower compartment. Temperature readings will be obtained at least once per 24 hours from the elevation of 745 feet at the inlet of each lower containment ventilation unit.

*Lower limit may be reduced to 60°F in MODES 2, 3, and 4.

**The weighted average is the sum of each temperature multiplied by its respective containment volume fraction. In the event of inoperative temperature sensor(s), the weighted average shall be taken as the reduced total divided by one minus the volume fraction represented by the sensor(s) out of service.

***Containment lower compartment temperature may be between 120 and 125°F for up to 90 cumulative days per calendar year provided the lower compartment temperature averaged over the previous 365 days is less than 120°F.

Justification and Safety Analysis

Technical Specification 3.6.1.5 currently establishes a maximum containment lower compartment temperature of 120°F. The proposed amendments would allow this limit to be increased for up to 90 cumulative days per calendar year provided the lower compartment temperature averaged over the pre ious 365 days is less than 120°F.

McGuire uses cooling water from Lake Norman to circulate through air handling units which cool the containment atmosphere. The cooling water is drawn from the hypolimnion region near the bottom of the lake which is much cooler than the water near the lake surface during the summer. As cooler weather approaches in early autumn, however, the hypolimnion region mixes with the surface water temporarily causing higher cooling water temperatures. Duke Power estimates, based upon historical temperature data, that the lower compartment temperatures at McGuire might exceed 120°F for a short period during the autumn until cool weather reduces the bulk temperature of the lake. During 1982, significant efforts were required on McGuire Unit 1 to maintain lower compartment temperature below 120°F. These efforts included throughly cleaning the coolers while the unit was shutdown, installing a water spray system to improve the efficiency of the coolers, and inspecting and improving insulation. Despite similar efforts on McGuire Unit 2, recent data indicates that the 120°F limit may still 'e exceeded.

The effect on the safety analyses of increasing the allowable containment lower compartment temperature limit to 130°F has been evaluated. The ECCS analysis for McGuire is not sensitive to the containment backpressure calculations because the peak clad temperature occurs very early in the transient. The containment peak accident pressure would be lower with a higher initial temperature.

Duke Power has evaluated the effects of the higher temperatures on safety-related structures, systems, and components inside the containment lower compartment. This included a review of mechanical and electrical equipment, pipe supports/restraints, instrumentation, structural steel, the containment vessel, and concrete. All essential mechanical and electrical components inside the lower compartment are capable of operation in at least a 125°F environment. Our evaluation determined that thermal stresses in the pipe supports/restraints, structural steel and the containment vessel are acceptable. Concrete properties and design were also determined to be acceptable.

Based upon the evaluations described above, it is concluded that the proposed amendments would not have any adverse impact upon public health and safety.

Analysis of Significant Hazards Consideration

Pursuant to 10 CFR 50.91, this analysis is provided to determine whether the proposed amendments involve significant hazards considerations, as defined by 10 CFR 50.92.

The effects of the proposed amendments on previously evaluated accidents have been evaluated and determined to be insignificant such that Peak Clad Temperature would not exceed the 2200°F limit. Also, the effects of the proposed amendments on structures, systems, and components have been evaluated and determined to meet all applicable requirements.

The Commission has provided examples of amendments likely to involve no significant hazards considerations (48 FR 14870). One example of actions likely to involve no significant hazards considerations is an amendment which either may result in some increase to the probability or consequences of a previously-analyzed accident or may reduce a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan. Because evaluations have shown that all affected systems and components would meet their respective requirements under the proposed amendments, this example can be applied to these proposed amendments.

Therefore, the proposed amendments do not involve a significant hazard consideration.