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DUKE POWER

April 30, 1990

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Subject: McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370

Amendment to Fire Protection Program Involving Fireproofing
of Heating Ventilation and Air Conditioning (HVAC) Duct Supports

Gentlemen:

This letter provides a technical evaluation that concludes fireproofing of supports for safety related HVAC ducts penetrating fire barriers is not required in all cases, and amends our fire protection commitment regarding HVAC system support fireproofing. Generic Letter No. 86-10, Implementation of Fire Protection Requirements, issued by the NRC staff on April 24, 1986 allows amendments to the Fire Protection Program if the changes do not affect the ability to achieve and maintain safe shutdown conditions in the event of a fire. Find attached our engineering analysis that supports this amendment to our Fire Protection Program.

A copy of this letter is also being provided to NRC Region II and the NRC Senior Resident Inspector.

If there are any questions, please contact S.E. LeRoy at 704-373-6233.

Very truly yours,

Hal B. Tucker

Attachments

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cc: Mr. S.D. Ebnetter, Administrator
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Mr. D.S. Hood, Project Manager
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Mr. P.K. Van Doorn
Senior Resident Inspector, USNRC
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Attachment
Duke Power Company
McGuire Nuclear Station

Fireproofing Supports for Safety Related Heating,
Ventilation, and Air Conditioning (HVAC) Ducts

NUREG-0422 Supplement No. 6 of the McGuire Nuclear Station Safety Evaluation Report states that fireproofed supports are provided for safety related HVAC ducts.

The concern for fire damper installation in HVAC ducts penetrating fire barriers was first noted by NRC staff during the evaluation of the McGuire Fire Protection Review, as documented by NRC letters dated June 14, and September 6, 1978. Duke Power Company (DPCo) provided a response to these concerns by letter dated November 2, 1978, which also identified five different fire damper installation methods.

Due to the special duct construction methods required for the safety related ducts, it was necessary to deviate from the manufacturer's installation instructions for fire dampers. The ducts are continuously welded and the fire dampers are installed inside the ducts within the confines of the fire rated barrier. The ducts are seismically supported and restrained on either side of the fire walls. This type of installation provides the system necessary to assure uninterrupted air flow to the areas.

Information provided by the DPCo response resulted in an NRC staff response that continuously welded HVAC ducts should be supported by:

- 1) Fireproofing the structural supports within five feet of the penetration; or,
- 2) Fireproofing the HVAC duct and the first structural support if it is located more than five feet from the penetration, or add an additional support within five feet of the penetration.

Also, all fireproofing rating was required to be equivalent with the damper rating. DPCo chose to fireproof supports within five feet of the penetration.

During a recent DPCo Self Initiated Technical (SITA) Audit, hangers on the Control Area Ventilation (VC) system penetrating the floor were noted as not being fireproofed. To determine the operability of the penetration, a fire loading engineering analysis was performed. This analysis determined the increase in room air temperature as a result of a fire involving the available combustibles in the room. The effects of this elevated temperature were then evaluated in reviewing the structural adequacy of this duct support.

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This analysis is conservative because it assumes complete combustion of all combustibles in the room. The analysis also assumes that all of the energy produced is utilized to increase the room temperature. In reality, the boundaries of the area (concrete floor, walls, and ceiling) as well as the equipment in the area will absorb part of the heat; thereby, restricting the amount available for exposing the steel hangers.

Without any engineering evaluation, and being unable to follow all code requirements for fire damper installations, the previous commitment to fireproof the safety related hangers is considered valid. Based on subsequent engineering analysis, evidence is clear that the fireproofing is not necessary in all cases. Therefore, we propose to conduct a field survey of safety related ducts penetrating fire walls and floors. An engineering analysis will be performed to evaluate fire exposure to the steel hangers. In areas where the analysis indicates a need, we will maintain the existing fireproofing.

The McGuire Fire Protection Review will be revised to reflect this position at the time of the next revision.