

June 16, 1997

Mr. H. B. Barron
Vice President, McGuire Site
Duke Power Company
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING MCGUIRE NUCLEAR
STATION, UNITS 1 AND 2, GRINELL HYDRAULIC SNUBBERS
(TAC NOS. M97753 AND M97754)

Dear Mr. Barron:

The Region II staff has raised an issue (see Unresolved Item URI 50-369, 370/96-11-03 in NRC Report 50-369,370/96-11) regarding the Grinell hydraulic pipe supports (snubbers) that McGuire purchased in August of 1996. The Region II Office has requested that the Office of Nuclear Reactor Regulation (NRR) staff provide information to assist in the Region's review of this snubber issue. In order for the NRR staff to provide the requested information, the enclosed additional information is needed from Duke Power. We would appreciate your response by July 30, 1997.

If you have any questions regarding this request, please contact me at (301) 415-1484.

Sincerely,

ORIGINAL SIGNED BY:

Victor Nerses, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosure: As stated

cc w/encl: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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A handwritten signature in cursive script, reading "Victor Nerses", is written over the typed name.

Victor Nerses, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosure: As stated

cc w/encl: See next page

McGuire Nuclear Station
Units 1 and 2

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REQUEST FOR ADDITIONAL INFORMATION

MCGUIRE NUCLEAR STATION GRINELL HYDRAULIC SNUBBERS

1. Based on the staff's review of the information provided in McGuire's Final Safety Analysis Report (FSAR), it appears that the affected Grinell hydraulic snubbers at McGuire do not meet their design or licensing basis pertinent to the design and qualification requirements for snubbers. General Design Criterion (GDC) 2, "Design Bases for Protection Against Natural Phenomena" of Appendix A requires, in part, that the design bases for structures, systems, and components important to safety reflect appropriate combinations of the effects of normal and accident conditions with the effects of natural phenomena such as earthquakes. Part 100 of Appendix A further requires that a suitable dynamic analysis or a suitable qualification test be used to demonstrate that structure, systems, and components can withstand the seismic and other concurrent loads. In addition, GDC-4, "Environmental and Dynamic Effects Design Bases" requires that structures, systems, and components important to safety be designed to accommodate the effects of, and to be compatible with, the environmental conditions associated with normal operation, maintenance, testing, and postulated accident conditions.

McGuire FSAR Tables 3-49 and 3-50 require that all safety-related pipe supports be designed for the concurrent dynamic loadings resulting from safe-shutdown earthquake (SSE) and pipe ruptures for the faulted condition. This is consistent with the staff's position on the loading combination criteria for the pipe support design as described in Standard Review Plan 3.9.3 to meet the above described GDCs requirements. McGuire's safety-related snubbers should be designed and qualified for the concurrent dynamic loadings as well as the associated environmental conditions resulting from SSE and pipe ruptures. However, it is noted that the affected Grinell hydraulic snubbers do not meet their purchased (design) specifications for environmental conditions. The temperature specification was 350°F. The temperature specification is a concern because according to FSAR Figure 6-24, the anticipated containment temperature following a postulated main steamline break (MSLB) would reach approximately 315°F and the licensee states that these Grinell snubbers will significantly deform above 250°F. Duke Power has not adequately demonstrated the capability of these safety-related snubbers to perform their design safety functions under the accident environments either by a qualification test or a suitable analysis. Duke Power is requested to demonstrate how these Grinell hydraulic snubbers comply with the pertinent licensing basis and the GDC requirements for design and qualification for the concurrent dynamic loadings as well as the associated environmental conditions resulting from SSE and postulated pipe ruptures.

Enclosure

2. In its assessment of the snubbers' operability during a postulated MSLB event, the licensee relies upon a time lag between the peak dynamic load due to pipe rupture and the peak containment temperature transient for the double-ended steamline break such that the temperature peaks after the pipe rupture dynamic load is over. However, Figure 6-24 of the McGuire FSAR shows that for a 1.4 ft² double-ended MSLB, the temperature in the lower compartment peaks at 315°F immediately after the postulated MSLB and eventually drops and steadies at about 250°F indefinitely. It is not clear how Duke Power justifies the time lag between the peak pipe rupture dynamic load transient and the peak temperature transient. Duke Power is requested to provide a detailed comparison of these two transients.

Moreover, it is noted that in its snubber operability assessment, Duke Power only discusses the possible scenario of a postulated MSLB. No seismic effects are considered. As previously discussed in question 1, the licensing basis for McGuire requires that the safety-related snubbers be designed and qualified for both pipe rupture and SSE for the faulted condition. Since Duke Power indicates that these Grinell hydraulic snubbers will experience significant distortion at temperatures above 250°F, it is not clear how these degraded snubbers would be able to provide their design safety functions: (1) restrain the pipe for dynamic loading, and (2) allow for the free thermal movement of the pipe. Duke Power is requested to demonstrate the functionality of these snubbers under the postulated accident environmental conditions.