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Dockets Nos. 50-269/270/287

DEC 1 3 1976

Duke Power Company
ATTN: Mr. William O. Parker, Jr.
Vice President
Steam Production
Post Office Box 2178
422 South Church Street
Charlotte, North Carolina 28242

Gentlemen:

At our meeting on November 5, 1976, we indicated that we would send you a letter describing the additional information we need to complete our evaluation of the measures you have proposed to prevent reactor vessel overpressurization. The attached enclosure identifies that information.

Please respond to this request for additional information within 30 days of receipt of this letter.

Sincerely,

Original signed by

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosure:
Request for Additional
Information

cc w/encl:
See next page

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Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-526-166

cc: Mr. William L. Porter
Duke Power Company
P. O. Box 2178
422 South Church Street
Charlotte, North Carolina 28242

Mr. Troy B. Conner
Conner & Knotts
1747 Pennsylvania Avenue, N. W.
Washington, D. C. 20006

Oconee Public Library
201 South Spring Street
Walhalla, South Carolina 29691

REQUEST FOR ADDITIONAL INFORMATION

MEASURES TO PROTECT AGAINST REACTOR VESSEL OVERPRESSURIZATION

1. In light of design criteria discussed on November 5, 1976, it appears that further analysis may be necessary to verify that your overpressurization system design is adequate to meet Appendix G limits assuming an additional single failure. Please provide a schedule for submittal of further system analyses, or justify why further analyses will not be necessary.

2. The criteria discussed at the November 5 meeting are listed below:

   1) Credit for operator action
   2) Single failure criteria
   3) Testability
   4) Seismic design and IEEE 279 criteria

   Provide information regarding how you intend to meet the design criteria as identified by the staff during the November 5th meeting. Where deviations from the criteria are contemplated, please provide a detailed justification including the technical basis for not meeting the criteria and, when significant, the impact on the schedule for implementation. Describe all redundant and diverse systems which are available to provide overpressure protection.

3. Provide schematic piping and instrumentation diagrams of all systems which are utilized during plant shutdown and startup operations, indicate primary and alternate flow paths, fluid and heat sources, pressure and flow controllers, RCS pressure protection systems, and ECCS and make up systems.

4. Provide a failure modes and effects analysis of the overpressure protection system for startup, shutdown, and testing operations which defines the limiting combination of initiating event and additional single failure or operator error subsequent to initiation of the overpressure transient.

5. Indicate for your low temperature overpressure protection system how the system has been designed to handle common failure modes such as those resulting from loss of offsite power and seismic events. Describe the failure mode of the air operated makeup flow control valve and the letdown flow control valve upon loss of air supply. Identify the events/failure modes which could result in loss of air supply.

6. Discuss the basis for determining the most limiting initial conditions for analysis of the overpressure transient. Items that must be considered include but should not be limited to: RCS pressure, valve opening time, steam generator temperature difference, reactor coolant pump seal pressures, pressurizer level, makeup tank level, accumulator pressure, relief valve water relief capacity, and pump heads and flows.

7. Please provide a transient analysis of the reactor coolant system response to inadvertent actuation of a single train of high pressure injection pumps. Describe what administrative controls and procedures are used during startup and shutdown, and during component and/or system testing to justify the assumption that inadvertent injection

by more than one high pressure train is not credible. Provide a similar discussion and analysis of a core flood tank discharge. For both situations indicate the basis for identifying the limiting single failure or common failure mode.

8. Does your plant have relief capacity installed in the decay heat removal system that could provide additional protection in the event of an overpressure transient? What is the water relief capacity of the valve? Is the decay heat removal system automatically isolated on RCS high pressure? What are the pressure setpoints for the DHR relief valve opening and its automatic isolation?

9. During the November 5th meeting, the possibility of limiting the volume of water in the RCS make up tank was discussed. It was stated that this could preclude filling the pressurizer if the make up control valve should fail full open. Is this procedure a viable option at your facility? Is water level in the Make Up Tank generally controlled automatically? Specify your assumptions for initial pressurizer level, make up tank water volume, and other design considerations which would result in limiting RCS pressure to within Appendix G limits.

10. Describe what instrumentation and alarms are available to the operator to aid in detection and termination of an overpressure transient.

11. What precautions are taken during startup, shutdown and testing to verify that critical procedural steps are performed to reduce the likelihood of inadvertently initiating an overpressure transient and minimizing the impact of the transient on the RCS. Would steps such as lock out of pumps and accumulators and reducing the water level in the pressurizer and make up tank be accomplished by double check off and sign off procedures to insure against error? What procedures normally are followed for altering the status of pumps or valves under administrative restriction?

12. If power is removed from valves as part of administrative controls used for overpressure protection, what status lights and indicators are available to verify their proper alignment? When administrative controls call for removing power from a valve or a pump, is this accomplished from the control room or from a motor control center?

13. Describe any testing procedure proposed to insure operation of overpressure protection devices. At what times would these tests be performed?

14. The problem of pressurizer relief valve maintenance was also discussed at the November 5th meeting. The relief valve is normally isolated and removed during shutdown conditions if maintenance is required. This would reduce the level of protection available to mitigate the consequences of a pressure transient. Please discuss what measures will be taken at your plant to provide overpressure protection when the relief valve is removed from service and indicate how the criteria enumerated at the November 5th meeting will be met.