

Docket
SD-270

NOV 10 1977

Docket Nos. 50-269
50-270
and 50-287

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

Gentlemen:

We have completed a preliminary review of the overpressure protection system for Oconee 1, 2 and 3. We have found that the system currently installed does not meet all the criteria established by the NRC.

Your system maintains a gas blanket or bubble in the pressurizer at all times, in conjunction with a single low pressure setpoint relief valve. This design has certain advantages over other concepts because failure of an operator to manually enable the low pressure setpoint of the relief valve does not totally defeat protection against a pressure transient. We have concluded that your system adequately accommodates all postulated overpressure transients with the exception of an inadvertent initiation of safety injection by the high pressure injection (HPI) pump.

Based on your analyses, we have identified high pressure injection as the limiting mass addition overpressure transient. Operation of the HPI pump, which is capable of delivering flow against full system operating pressure, is required whenever a reactor coolant pump is in operation. Since the discharge of the HPI pump is isolated from the reactor coolant system by a single injection valve, a single error or equipment failure could open the injection valve and initiate a pressure increase inside the reactor coolant system pressure boundary (RCSPB). If failure of the single low setpoint power operated relief valve is then assumed as the single failure following initiation of the event, your analysis shows that operator action would be required within five minutes to maintain the RCSPB pressure below Appendix G limits. This is not in accordance with NRC criteria which does not allow credit for operator intervention for ten minutes.

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Since your system does not fully satisfy our established criteria, we request that you propose system modifications that will provide overpressure protection in full conformance with NRC criteria, and that you provide a value-impact assessment on schedule and cost to make all necessary hardware changes.

It is also our position that to assure proper alignment of the overpressure protection system during plant cooldown, an enabling alarm must be provided which monitors the system enabling switch and the position of the isolation valve upstream of the power operated relief valve (PORV).

Your previous submittals do not provide adequate electrical circuit and logic diagrams of the overpressure protection system to permit a thorough review. Please provide the following:

1. RCS overpressure protection system diagram.
2. Logic diagram.
3. Control circuitry diagram.
4. Instrument loop diagram.
5. Annunciator system schematic.
6. Overpressure protection control display and layout.

In addition to the items discussed above, we have identified several concerns related to PORV maintenance and HPI testing for the currently proposed system. If the relief valve requires maintenance the upstream isolation valve would need to be closed thereby removing the single relief valve from service. Therefore we request that you propose Technical Specifications which stipulate that when the reactor vessel temperature is below the minimum value for which the vessel can be fully pressurized the PORV may be removed from service for a short period of time only if: (1) charging pumps are out of service and all HPI injection valves are closed and power removed, or (2) the vessel head is removed. Regarding HPI testing, we request that the HPI valve be allowed to be cycled only if all HPI pumps are out of service, or vessel temperature is above the minimum value for which the vessel can be fully pressurized, or the reactor vessel head is removed.

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We will require that your Technical Specifications identify the system enabling temperature and the PORV setpoint. In addition, you should propose specifications related to system testing.

These maintenance and testing restrictions should be examined to assure compatibility with present Technical Specification requirements regarding the operability and periodic testing of ECC and emergency boration systems. Also, since the impact of the proposed Technical Specifications will be considered by us in determining the acceptability of the proposed overpressure mitigating system, you should provide a thorough evaluation of the effect of these maintenance and testing requirements on the susceptibility of the reactor coolant system to a pressure transient.

You should provide the above requested information and the proposed Technical Specifications within 45 days of receipt of this letter. For the interim period prior to installation of a system which meets all the NRC criteria, you should continue to use the overprotection measures of your installed system. We realize that although your overpressure mitigating system does not meet the NRC criteria, it will provide adequate protection for the interim period.

Sincerely,

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

cc:

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Duke Power Company

- 4 - November 10, 1977

cc: Mr. William L. Porter
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