

MAY 21 1982

Docket Nos.: 50-413/414



Mr. William O. Parker, Jr.
Vice President - Steam Production
P.O. Box 33189
Charlotte, North Carolina 28242

Dear Mr. Parker:

Subject: Request for Additional Information - Catawba Nuclear Station

In the performance of the Catawba Station licensing review, the NRC staff has identified additional concerns in the Instrumentation and Control Systems area as stated in the Enclosure. We request that you provide the information needed no later than June 30, 1982. If you require any clarification of this matter, please contact the project manager, Kahtan Jabbour, at (301) 492-7821.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Enclosure:
As stated

cc: See next page

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CATAWBA

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INSTRUMENTATION AND CONTROL CONCERNS FOR CATAWBA

During our review of the UHI system, we have been concerned with the adequacy of instrumentation and control features provided. These concerns are centered on the following characteristics of this system:

- 1) Termination of injection by the UHI system is effected automatically by the use of local level switches. This makes surveillance of the system difficult if not impractical during power operation and therefore greatly reduces the confidence in its ability to perform its required safety function.
- 2) The valves used to terminate upper injection utilize accumulators to effect automatic fast closure. Manual closure is only provided by the use of the hydraulic oil pump, closing one valve at a time. The hydraulic oil pump is not safety grade and valve closure by this means is a slow process.
- 3) Level indication is only provided for the accumulator surge tank and not for the accumulator itself.

The basic concern with this design is that the total emphasis appears to consider only the large break LOCA and not other potential events. For small and intermediate break LOCA's, steam generator tube ruptures and overcooling events it would appear that with better control and indication features in the design of the UHI system a significant improvement could be provided for the operator to cope with these events.

The argument for not providing safety grade manual closure of the termination valves, is that the transient is so fast that operator action would not be possible. While this may be true for a large break LOCA, perhaps operator action to prevent operation of the UHI system might be important for severe overcooling transients or for steam generator tube rupture accidents where it might be a goal to prevent the UHI system from maintaining reactor coolant system pressure.

Providing level indication would appear to be useful for all events to either confirm discharge of the UHI accumulator or not, whichever may be desired. With present designs a relative indication of level can be inferred from pressure indication. This in itself would be one means to provide diversity as a backup means to terminate injection.

The level switches used to automatically terminate UHI injection are differential pressure indicating switches which sense the height of water in the accumulator. Since the sensing connections are on the water accumulator which is water solid, level indication is normally pegged full scale. This further reduces the ability to perform surveillance to confirm that indication is normal. It would have been preferable if level transmitters had been used with an indicating range that extends to the normal water level in the surge tank. This would permit surveillance to confirm that the readings of all channels are normal and thus provide greater confidence in the systems operability. McGuire Unit 1 LER 82-13 confirms to an extent the problems noted with present systems.

The following questions summarize concerns that ICSB has on the adequacy of the design of UHI systems.

- 1) What is the safety significance of the automatic termination of UHI injection for a large break LOCA? Should diverse means be provided to terminate injection and/or should the design be modified to improve surveillance capabilities?
- 2) Should features be provided to insure a safety grade means to manually close valves to block UHI system operation for events other than a large break LOCA? Further, should plant procedures be revised to include specific instruction for their use, such as ATOG?
- 3) Should a direct indication of water level be provided for UHI accumulators as a means to confirm the safety actions of the system or for use in events other than large break LOCA?

We would like to discuss your response to the above questions and any other comments relative to this issue which you may have based on the concerns and our interpretation of this subject noted above.