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10CFR50.4

Docket Nos. 50-348
50-364

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

Gentlemen:

Joseph M. Farley Nuclear Plant - Units 1 and 2
Loss of Decay Heat Removal
(Generic Letter 88-17)

In a letter dated January 27, 1989, Alabama Power Company provided the NRC responses to the recommended programmed enhancements of Generic Letter 88-17, "Loss of Decay Heat Removal," for Farley Nuclear Plant - Units 1 and 2. In response to the NRC's recommendation concerning the necessary instrumentation for mid-loop operation, Alabama Power Company stated that evaluations of several options for monitoring reactor coolant system (RCS) water level and residual heat removal (RHR) pump performance were ongoing. The letter further stated that following plant walkdowns to be performed during the Unit 2 sixth refueling outage (Spring 1989) and the Unit 1 ninth refueling outage (Fall 1989), Alabama Power Company would submit to the NRC a description of the instrumentation systems selected. Provided as an attachment to this letter are those system descriptions. Also provided is a description of the proposed main control board annunciation for core-exit temperature while operating in a reduced inventory condition.

As previously stated in the January 27, 1989 letter, Alabama Power Company's goal for implementing all required hardware changes in response to the NRC's recommendations is during the Unit 1 tenth and Unit 2 seventh refueling outages.

If you have any questions, please advise.

Respectfully submitted,

W. G. Hairston, III

WGH,III/BHW:md 11.12
Attachment

cc: Mr. S. D. Ebneter
Mr. E. A. Reeves
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Attachment

Description of Instrumentation Systems Required in Response to G.L. 88-17

1. RCS Water Level Monitoring System

The existing wide range RCS level instrument, which utilizes a differential pressure transmitter connected to a drain line on the intermediate Loop B pipe, will be modified to sense the reference pressure inside the RCS pressure boundary, rather than the containment atmosphere. The differential pressure transmitter reference leg will be vented to the top of the pressurizer. This modification will eliminate possible level inaccuracies caused by backpressure in the RCS. The modified wide range RCS level monitor will be considered as one of the required independent level instruments per G.L. 88-17.

Also, permanently installed rigid steel tubing will be routed from the same Loop B drain line connection to a tygon hose that will be mounted to a rigid stanchion to prevent flow obstructions in the hose. The tygon hose will also be vented to the top of the pressurizer via rigid steel piping. Although the tygon hose will not normally be considered as one of the independent indications of RCS level as required by G.L. 88-17, it will be used as supplemental and temporary indication to the control room operators should the wide range RCS level monitor become inoperable. Should the tygon hose be temporarily used in such a situation, the following conditions will be met:

1. The tygon hose will be continuously monitored locally.

2. Communications will be available between the person monitoring the tygon hose and the main control room.

3. RCS level readings will be obtained and recorded by the control room operators every 15 minutes.

4. The control room operators will be notified of unexpected RCS level variations.

5. The tygon hose will be isolated upon containment evacuation.

In addition to the modified wide range RCS level transmitter, redundant narrow range ultrasonic level monitors will be installed on two hot leg pipes. Ultrasonic level monitors provide a very accurate indication of RCS level while operating in the most critical range of mid-loop operation. Ultrasonic transducers will be permanently mounted directly on the Loop C hot leg pipe adjacent to the RHR suction (active loop) and on the Loop B hot leg pipe which does not have an RHR suction pipe (inactive). Main control board indication will be provided to display both narrow range level signals (i.e. Loop B and C). The two level signals will be routed to the plant computer where an alarm for low RCS level will be generated. This alarm will be both audible and visible to the plant operators. Possible effects that might cause a difference between an inactive loop's indication and that of an active loop will be reconciled either procedurely or electronically. Either of the two narrow range RCS level monitors will be considered as the second independent level instrument as required by G.L. 88-17.

2. **RHR Pump Performance Monitoring System**

As described above, narrow range indication of RCS level will be provided as an input to the plant computer. Presently, RHR flowrate is also an input to the plant computer. A correlation of these two parameters will provide the best indicator to predict the onset of degraded RHR pump performance. An algorithm will be written that translates a curve of RHR flowrate versus RCS narrow range level for which the onset of air entrainment and subsequent pump cavitation can be predicted. If the calculated value, based upon actual real-time plant data, exceeds the acceptable limit of the curve, then a main control board alarm will be generated. This RHR pump performance alarm will be both audible and visible to the plant operator. In addition, indication of RHR pump motor amperes is presently available on the main control board.

3. **Core-Exit Temperature Annunciation**

A visible and audible main control board annunciator will be installed that will alert the operator of high core-exit temperature while operating in a mid-loop condition with the reactor vessel head in place.

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