



**GPU Nuclear**  
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January 30, 1986  
RFW-0770

Mr. John A. Zwolinski, Director  
BWR Project Directorate No. 1  
Division of Boiling Water Reactor Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Zwolinski:

Subject: Oyster Creek Nuclear Generating Station  
Docket No. 50-219  
NUREG 0737 Item II.K.3.19  
Recirculation Loop Interlock

Our letter dated September 19, 1985 provided justification for a change in modification scope for the subject NUREG 0737 item. The intended scope change was also discussed on October 9, 1985 at a meeting attended by Messrs. J. Donohew and W. Hodges of the NRC staff and members of my staff. At that meeting it was decided that further correspondence concerning our position on this matter would be necessary. This letter amplifies our contention that an alarm-only modification adequately ensures functional requirements are satisfied.

The original proposed interlock consisted of an electrical interlock which would prohibit isolation of more than three out of five recirculation loops. Isolation of all five recirculation loops inhibits adequate communication between the downcomer region and the core region of the reactor vessel. The reduced scope modification we intend to install during the next (Cycle 11R) refueling outage consists of an alarm upon isolation of a fourth recirculation loop. This will alert the control room operator that the Technical Specification Safety Limit has been exceeded. Isolation of a fourth loop does not cause a coolant communication problem. The alarm will alert the operator to unisolate the fourth loop.

On May 2, 1979, a total loss of feedwater transient following a reactor scram from near full power, occurred at Oyster Creek. During the first few minutes of the event all five 26 inch recirculation loop discharge valves were closed; however, all of the 2 inch discharge valve bypass lines were open prior to and throughout the event. Although the reactor triple low level instrument trip point was reached, subsequent analyses showed that the fuel had remained covered throughout the event. Further analysis concluded that one unisolated 26 inch diameter recirculation loop provides adequate coolant communication between the downcomer region and core region in the reactor vessel. With one 26 inch diameter recirculation loop open plus the five 2 inch discharge valve bypass valves open the recirculation flow rate is about 5 to 6 times the boiloff rate in the core region. Thus, the Technical Specification Safety Limit requirement of two open recirculation loops is very conservative.

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RSB (ACTING)  
FOB (VASSALLO)  
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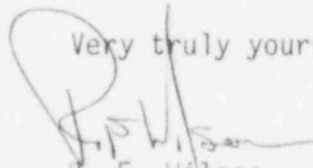
The planned modification will retain the hinged clear plastic covers over the recirculation loop isolation valve control switches. However, the warning labels atop the covers have been determined to be a Human Engineering Deficiency (HED). This HED was identified during the Control Room Design Review and results from the labels' interference with viewing the recirculation loop isolation valves' position indicating lights. A warning will be posted in close proximity to the recirculation loop isolation valve control switches on the control panel to remind the control room operators of the requirement to maintain two loops unisolated.

Defense-in-depth will be achieved through licensed operator training, procedural controls, the control switch covers and the posted warning to minimize the possibility of isolating more than three recirculation loops. The alarm will alert the operator that the Safety Limit has been exceeded and that procedures have been violated. In addition, an alarm reflash capability has been incorporated into the annunciator design to indicate closure of the isolation valves for the fifth recirculation loop.

The alarm-only modification meets the functional requirements of providing an active warning of a potentially unsafe condition, thus preventing accidental isolation of the recirculation loops. Even with the addition of an electrical interlock, operators would still have the ability to isolate more than three of five recirculation loops. This could be done utilizing the interlock bypass feature. The bypass would be necessary to allow isolation of more than three loops when conditions permit. With the alarm-only modification an operator would have to disregard his training, violate procedures and ignore the posted warning, and be unaware of the significance of the control switch covers in order to exceed the Safety Limit. He could exceed the Safety Limit even with the electrical interlock if he chose to do so, for whatever reason, by utilizing the interlock bypass.

The above discussion shows that the functional requirement for open recirculation loops, to allow adequate coolant communication between the downcomer and core regions, can be met by our proposed alarm-only modification. We request that you concur with our proposal. If further questions arise, please contact Michael W. Laggart of my staff at (201) 299-2341.

Very truly yours,



R. F. Wilson

Vice President and Director  
Technical Functions

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