ENCLOSURE

UNITED STATES
NUCLEAR REGULATORY COMMISSION
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MEMORANDUM FOR: Gary M. Holahan, Assistant Director
for Region III/V Reactors
Division of Reactor Projects III/IV/V
and Special Projects

FROM: Ledyard B. Marsh, Chief
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SUBJECT: REGION III TIA ON THE NEED FOR SCRAM VALVE PILOT AIR HEADER CHECK VALVE TESTING AT FERMI 2 (TAC NO. 67750)

We have evaluated the March 18, 1988 request from Region III regarding the staff's position on the testing of check valves (C11-F111, C11-F161A, and C11-F161B), associated with the backup scram function and the alternate rod insertion system at Fermi 2. The question is, Should the check valves be tested, since they allow alternate flow path for depressurizing the scram pilot valve air header in the event a solenoid valve in parallel fails shut? The depressurizing of the air header by the solenoid valves provides additional (i.e., backup) means of ensuring the insertion of control rods by venting the instrument air from the scram valves.

The primary means of venting the instrument air from the scram valves, however, is provided by the pilot scram valves, which are tested in accordance with the Technical Specifications and the inservice test program. When deenergized, two pilot scram valves in series permit the air to vent and initiate the insertion of one control rod. There are two pilot scram valves on each of the 185 CRD hydraulic control units at Fermi 2. The functional operability of these valves is verified by a finding that a particular CRD scram insertion time is less than the Technical Specification limit.

Our review of this issue indicates that, for non-ATWS scenarios, even without the backup scram and the alternate rod insertion functions, the worst failure in this case would result in one control rod not inserting following a CRD hydraulic control unit failure. The safety concerns relating to this failure have been reviewed in the utility's SAR. Before the operability of the check valves can play an important role in the insertion of control rods, multiple failures of valves would have to occur; and postulating such a failure scenario is inconsistent with the NRC's single failure criterion.

However, the check valves are associated with an Alternate Rod Insertion system which was specifically required for all BWRs as part of the ATWS prevention systems. In reviewing the regulatory requirements for ATWS in 10 CFR 50.62 the following is evident:

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1. In general, the rule does not require redundant ATWS mitigation or prevention equipment, nor does it require safety grade equipment.

2. The rule specifically requires redundant ARI valves, and the check valves in question provide a path for the ARI valves to perform their safety function.

3. The regulation states that the ATWS equipment must be designed for reliable operation, but the regulation does not specifically require that the equipment should be tested.

The check valves in question allow the redundant ARI solenoid valves to perform their venting function should one of the ARI solenoid valves be blocked. Thus, the proper functioning of the check valves seems to be an implicit consideration in the regulatory requirement that there be redundant ARI valves. Nonetheless, a review of the rule and the associated statement of considerations leads us to conclude that the check valves in question have not been specifically required to be tested. This same conclusion applies to the other ATWS equipment.

Although neither the ATWS rule nor the licensee's FSAR accident and transient analyses result in a regulatory requirement for the check valves at issue to be tested, we believe they should be since the check valves enable the redundant valve(s) to perform its function should one malfunction. Check valve operational problems have been numerous and are the subject of much industry and NRC attention (INPO SOER 86-3). Testing the valves will provide reasonable assurance of operational readiness to initiate insertion of any errant control rods regardless of the action of the scram pilot valves and to reduce the risk from anticipated transients without scram. NRR intends to pursue this matter with CRGR to require testing of components and instrumentation in both the backup scram function and the alternate rod insertion system. The licensee should be strongly urged but not required to test these valves.

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