UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

GENERIC LETTER 83-28, ITEM 4.5.2

REACTOR TRIP SYSTEM RELIABILITY

GRAND GULF NUCLEAR STATION, UNIT 1

DOCKET NO. 50-416

1.0 INTRODUCTION AND SUMMARY

On February 25, 1983, both of the scram circuit breakers at Unit 1 of the Salem Nuclear Power Plant failed to open upon an automatic reactor trip signal from the reactor protection system. This incident was terminated manually by the operator about 30 seconds after the initiation of the automatic trip signal. The failure of the circuit breakers was determined to be related to the sticking of the undervoltage trip attachment. Prior to this incident, on February 22, 1983, at Unit 1 of the Salem Nuclear Power Plant, an automatic trip signal was generated based on steam generator low-low level during plant start-up. In this case, the reactor was tripped manually by the operator almost coincidentally with the automatic trip.

Following these incidents, on February 28, 1983, the NRC Executive Director for Operations (EDO) directed the staff to investigate and report on the generic implications of these occurrences at Unit 1 of the Salem Nuclear Power Plant. The results of the staff's inquiry into the generic implications of the Salem unit incidents are reported in NUREG-1000, "Generic Implications of the ATWS Events at the Salem Nuclear Power Plant." As a result of this investigation, the NRC staff requested (by Generic Letter 83-28 dated July 8, 1983) all licensees of operating reactors, applicants for an operating license, and holders of construction permits to respond to generic issues raised by the analyses of these two ATWS events.

This report is based on our evaluation of the response submitted by the licensee for Grand Gulf Nuclear Station, Unit 1, for Item 4.5.2 of Generic Letter 83-28. Item 4.5.2 requires licensees with plants not currently designed to permit on-line testing to justify not making provisions for such testing. Alternatives to on-line testing proposed by the licensees will be considered if the objectives of high reliability can be met in another way. This review will:

1. Confirm that the licensee has identified those portions of the Reactor Trip System (RTS) that are not on-line testable. If the entire RTS is verified to be on-line testable, with those exceptions addressed above, no further review is required.

2. Evaluate modifications proposed by the licensee to permit on-line testing against the existing criteria for the design of the protection systems for the plant being modified.

3. Evaluate proposed alternatives to on-line testing of the RTS where the impracticality of the modifications necessary to permit on-line testing exists.

2.0 EVALUATION

The licensee for Grand Gulf Nuclear Station, Unit 1 responded to Item 4.5.2 of the Generic Letter on September 11, 1984, June 12, 1985 and October 16, 1987. In those responses, the licensee states that all components (systems) required by Technical Specifications to perform a reactor trip, with the exceptions of the reactor mode switch and the backup scram valves, are subjected to on-line system tests.

The licensee states that on-line testing of the reactor mode switch or the backup scram valves is not practical, as such testing would necessarily cause a reactor trip; the licensee has committed to functionally test these components on a refueling interval basis.

3.0 CONCLUSION

The staff concludes that the licensee's position on Item 4.5.2 of the Generic Letter including: (1) the justification for not testing the reactor mode switch or the backup scram valves, (2) the requirement in the Technical Specifications to test the reactor mode switch during each refueling outage and (3) the commitment to test backup scram valves during each refueling outage meets the requirements and is, therefore, acceptable.

Principal Contributor: B. Mozafari

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