



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

SAFETY EVALUATION REPORT

GENERIC LETTER 83-28, ITEM 4.5.2

REACTOR TRIP SYSTEM RELIABILITY

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

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 commission (NRC) 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 contractor's evaluation of the response submitted by Illinois Power Company, the licensee for Clinton Power Station, Unit 1, for Item 4.5.2 of Generic Letter 83-28 (Ref. 4). The actual documents reviewed as part of this evaluation are listed in the references at the end of the safety evaluation report.

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

Illinois Power Company, the licensee for Clinton Power Station, Unit 1, responded to Item 4.5.2 of the Generic Letter on October 1, 1984. In that response, the applicant states that the Clinton Reactor Protection System design complies with all applicable regulatory requirements for the RPS, and includes a summary description of the on-line functional testing performed on the RPS and the testing intervals used.

The applicant's response states that Clinton does not perform on-line testing of the backup scram valves because: testing during operation could cause a plant scram; failure of a valve will not prevent a reactor trip; and, the valves are independently tested during each refueling outage.

## 3.0 CONCLUSION

Inasmuch as the Reactor Protection System includes those components necessary to trip the reactor, the staff finds the applicant's position on Item 4.5.2 of the Generic Letter, including (1) the applicant's justification for not performing periodic on-line testing of the backup scram valves and (2) the commitment to test backup scram valves independently during each refueling outage, meets the requirements and is, therefore, acceptable.

## 4.0 REFERENCES

1. NRC Letter, D. G. Eisenhut to all licensees of Operating Reactors, Applicants for Operating License, and Holders of Construction Permits, "Required Actions Based on Generic Implications of Salem ATWS Events (Generic Letter 83-28)," July 8, 1983.

2. Generic Implications of ATWS Events at the Salem Nuclear Power Plant  
NUREG-1000, Volume 1, April 1983; Volume 2, July 1983.
3. Illinois Power Company letter to NRC, F. A. Spangenberg to Director of Nuclear Reactor Regulation, "NRC Generic Letter 83-28, Salem ATWS Events," October 1, 1984.
4. EGG-NTA-7457, "Input for Safety Evaluation Report Big Rock Point Plant, Brunswick Steam Electric Plant, Unit Nos. 1 and 2, Clinton Power Station Unit 1, Cooper Nuclear Station, Dresden Station Units 2 and 3, James A. Fitzpatrick Nuclear Power Plant, Grand Gulf Nuclear Station Units 1 and 2, Edwin I. Hatch Nuclear Plant Units 1 and 2, Reactor Trip System Reliability, Item 4.5.2 of Generic Letter 83-28," F. G. Farmer, Idaho National Engineering Laboratory, November 1986.