



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

IMPLICATIONS OF SALEM ATWS EVENT: POST-MAINTENANCE TESTING
AND REACTOR TRIP SYSTEM RELIABILITY

IOWA ELECTRIC LIGHT AND POWER COMPANY
CENTRAL IOWA POWER COOPERATIVE
CORN BELT POWER COOPERATIVE

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

1.0 INTRODUCTION

By letters dated November 7, 1983, February 29, 1984 and April 30, 1985, the Iowa Electric Light and Power Company (the licensee) submitted its responses for the Duane Arnold Energy Center (DAEC) to requirements outlined in our Generic Letter 83-28. This review covers Items 3.1.1, 3.1.2 and 4.5.1 only. The review of other items in the licensee's response will be the subject of future action.

2.0 BACKGROUND

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 occurred during the plant startup and the reactor was tripped manually by the operator about 30 seconds after the initiation of the automatic trip signal. The failure of the circuit breakers has been determined to be related to the sticking of the under voltage 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 startup. 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 certain generic concerns. These concerns are categorized into four areas: (1) Post-Trip Review, (2) Equipment Classification and Vendor Interface, (3) Post-Maintenance Testing, and (4) Reactor Trip System Reliability Improvements.

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Items 3.1.1 and 3.1.2 (Post-Maintenance Testing of Reactor Trip System (RTS) Components) require that the licensee submit a statement indicating that it has reviewed plant test and maintenance procedures and Technical Specifications to ensure that post-maintenance operability testing of safety-related components in the RTS is conducted. Also, the licensee should verify that vendor recommended test guidance has been reviewed, evaluated, and where appropriate, included in the test and maintenance procedures or the Technical Specifications.

Item 4.5.1 (RTS Reliability) requires that the licensee provide a commitment to independent, on-line functional testing of the diverse trip features.

2.0 EVALUATION

The staff has evaluated the licensee's submittals responding to the requirements of Items 3.1.1, 3.1.2 and 4.5.1. The staff concludes that the licensee has responded to NRC guidance and provided a statement that it has reviewed the plant test and maintenance procedures and Technical Specifications and is in compliance with the requirements of Items 3.1.1 and 3.1.2. The staff also concludes that the licensee's commitment to on-line testing of the scram pilot valves and initiating circuitry is adequate to meet the requirements of Item 4.5.1.

3.0 CONCLUSION

The staff concludes that the programs outlined in the licensee submittals adequately address the requirements of Items 3.1.1, 3.1.2 and 4.5.1 of Generic Letter 83-28, and its responses for the subject items are acceptable.

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Dated: August 6, 1985

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