

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

GENERIC IMPLICATIONS OF SALEM ATWS EVENT

GENERIC LETTER 83-28, ITEM 4.5.1

SOUTHERN CALIFORNIA EDISON COMPANY

SAN DIEGO GAS AND ELECTRIC COMPANY

THE CITY OF RIVERSIDE, CALIFORNIA

THE CITY OF ANAHEIM, CALIFORNIA

SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 1 AND 2

DOCKET NOS. 50-361 AND 50-362

I. INTRODUCTION

On February 25, 1983, during startup of the Salem Unit 1 Nuclear Plant, both circuit breakers in the Reactor Trip System failed to open automatically upon receipt of a valid trip signal. As a result of that event, the NRC's Office of Inspection and Enforcement issued IE Bulletin 83-01, which described the event and requested specified prompt corrective and preventive actions by licensees. As the cause and ramifications of the event were more clearly developed, the NRC's Office of Nuclear Reactor Regulation issued on July 8, 1983, Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events." This letter addressed issues related to reactor trip system reliability and general management capability. The letter was sent to all licensees of operating reactors, applicants for operating licenses and holders of construction permits.

One of the areas of reactor trip system reliability considered in Generic Letter 83-28 (GL 83-28), is that of functional testing of the reactor trip system including the diverse trip features. This is identified in GL 83-28 as Item 4.5.1. This evaluation addresses the acceptability of the response to this item provided by the Southern California Edison Company, et al. (the licensee) for Units 2 and 3 of the San Onofre Nuclear Generating Station (the facility). These units utilize Nuclear Steam Supply Systems designed by Combustion Engineering, Inc. (CE).

II. EVALUATION

Item 4.5.1 of GL 83-28 states as follows:

"On-line functional testing of the reactor trip system, including independent testing of the diverse trip features, shall be performed on all plants.

"1. The diverse trip features to be tested include the breaker undervoltage and shunt trip features on Westinghouse, B&W...and CE plants..."

By letter dated November 29, 1983, the licensee responded to a number of GL 83-28 items, including Item 4.5.1.

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Regarding item 4.5.1, the licensee stated surveillance testing of the reactor trip breakers was performed in accordance with facility Technical Specification 3/4.3.3.1; and that this testing consisted of a Channel Functional Test (performed monthly) and a Response Time Test (performed at refueling intervals). The licensee also stated independent testing of the undervoltage and shunt trips was performed at least every eighteen months, and following maintenance or adjustment of the reactor trip breakers.

Because the eighteen month interval cited above corresponds to a typical refueling interval, and because the testing is otherwise to be performed following maintenance (when the reactor might be shutdown), it was not clear from the licensee's submittal that the requested testing of the diverse trip features was performed while the reactor was "on-line". In discussions with a licensee representative, however, the representative stated the testing is performed when due - regardless of whether the reactor is shutdown or on-line.

The staff has determined the testing is, in fact, performed more frequently than required by the present technical specifications. This is a result of commitments made by the licensee following discovery at the facility in 1983, of reactor trip breaker failures when trip was initiated only by an undervoltage condition. The licensee's commitments are contained in a letter to H. R. Denton of the NRC, dated April 15, 1983, and include a commitment to perform more frequent surveillance (at least semiannually) of the undervoltage trip capability (including measurement of opening time). Although not addressed by the licensee's commitment, the licensee's representative states this surveillance (which is performed in accordance with facility procedure S023-II-11.61, "S.R. Breakers Undervoltage and Shunt Trip Device Circuit Test") includes functional testing of both the shunt trip feature and the undervoltage trip. The licensee's representative also stated the testing is performed in accordance with the surveillance schedule, and independent of reactor operational mode. Thus, the surveillance may be performed with the reactor on-line or shutdown - depending on plant operating conditions at the time the surveillance is due. The Commission's inspection staff has audited the licensee's performance of these surveillances and confirms the accuracy of the statements by the licensee's representative.

The appropriate frequency for performing on-line functional testing of the reactor trip breakers is the subject of Item 4.5.3 of GL 83-28. Therefore, the acceptability of the frequency used by the licensee to perform functional testing of the reactor trip breakers will be addressed by the staff's evaluation of that item.

CONCLUSION

Based on review of the licensee's responses to Generic Letter 83-28, the commitments contained in the licensee's letter of April 15, 1983, discussions with licensee representatives and an audit by the Commission's inspection staff, we conclude the licensee is performing on-line functional testing of the reactor trip breakers, including independent testing of the diverse trip features. Because this satisfies the guidance presented in Item 4.5.1 of Generic Letter 83-28, this item is closed.

Date:

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Implementation Date

It is the staff's practice to include an estimated implementation date in each safety evaluation report on multi-plant actions (MPAs). This safety evaluation report covers MPA B-92 (GL 83-28 Item 4.5.1). Since resolution of this item for San Onofre 2 and 3 involved no changes to plant hardware, technical specifications, or operating procedures, we find that the implementation of this MPA is complete as of the date of issuance of the safety evaluation.