



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SOUTHERN CALIFORNIA EDISON COMPANY

SAN ONOFRE NUCLEAR GENERATING STATION UNIT NO. 1

DOCKET NO. 50-206

GENERIC LETTER 83-28, ITEM 1.1 - POST-TRIP REVIEW

(PROGRAM DESCRIPTION AND PROCEDURE)

I. INTRODUCTION

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 start-up 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 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 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.

The first action item, Post-Trip Review, consists of Action Item 1.1, "Program Description and Procedure" and Action Item 1.2, "Data and Information Capability." This safety evaluation addresses Action Item 1.1 only.

II. REVIEW GUIDELINES

The following review guidelines were developed after initial evaluation of the various utility responses to Item 1.1 of Generic Letter 83-28 and incorporate the best features of these submittals. As such, these review guidelines in effect represent a "good practices" approach to post-trip review. The NRC staff has reviewed the licensee's response to Item 1.1 against these guidelines:

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- A. The licensee or applicant should have systematic safety assessment procedures established that will ensure that the following restart criteria are met before restart is authorized.
- ° The post-trip review team has determined the root cause and sequence of events resulting in the plant trip.
 - ° Near term corrective actions have been taken to remedy the cause of the trip.
 - ° The post-trip review team has performed an analysis and determined that the major safety systems responded to the event within specified limits of the primary system parameters.
 - ° The post-trip review has not resulted in the discovery of a potential safety concern (e.g., the root cause of the event occurs with a frequency significantly larger than expected).
 - ° If any of the above restart criteria are not met, then an independent assessment of the event is performed by the Plant Operations Review Committee (PORC), or another designated group with similar authority and experience.
- B. The responsibilities and authorities of the personnel who will perform the review and analysis should be well defined.
- ° The post-trip review team leader should be a member of plant management at the shift supervisor level or above and should hold or should have held a Senior Operator license on the plant. The team leader should be charged with overall responsibility for directing the post-trip review, including data gathering and data assessment and he/she should have the necessary authority to obtain all personnel and data needed for the post-trip review.
 - ° A second person on the review team should be a Shift Technical Advisor (STA) or should hold a relevant engineering degree with special transient analysis training.
 - ° The team leader and the STA (Engineer) should be responsible to concur on a decision/recommendation to restart the plant. A nonconcurrence from either of these persons should be sufficient to prevent restart until the trip has been reviewed by the PORC or equivalent organization.
- C. The licensee or applicant should indicate that the plant response to the trip event will be evaluated and a determination made as to whether the plant response was within acceptable limits. The evaluation should include:
- ° A verification of the proper operation of plant systems and equipment by comparison of the pertinent data obtained during the post-trip review to the applicable data provided in the Final Safety Analysis Report (FSAR).

- An analysis of the sequence of events to verify the proper functioning of safety-related and other important equipment. Where possible, comparisons with previous similar events should be made.
- D. The licensee or applicant should have procedures to ensure that all physical evidence necessary for an independent assessment is preserved.
- E. Each licensee or applicant should provide in its submittal, copies of the plant procedures which contain the information required in Items A through D. As a minimum, these should include the following:
 - The criteria for determining the acceptability of restart
 - The qualifications, responsibilities and authorities of key personnel involved in the post-trip review process
 - The methods and criteria for determining whether the plant variables and system responses were within the limits as described in the FSAR
 - The criteria for determining the need for an independent review.

III. EVALUATION AND CONCLUSION

By letters dated November 28, 1983, and July 18, 1984, the licensee of San Onofre Nuclear Station, Unit 1, provided information regarding its Post-Trip Review Program and Procedures. The NRC staff has evaluated the licensee's program and procedures against the review guidelines developed as described in Section II. A brief description of the licensee's response and the staff's evaluation of the response against each of the review guidelines is provided below:

- A. The licensee has established the criteria for determining the acceptability of restart. These criteria are: a verification that the reactor protection system and the engineered safety features and systems which are important to reactor safety have performed as required; and a verification of the cause of the trip and the adequacy of the subsequent corrective action taken. The staff finds that the licensee's criteria for determining the acceptability of restart are acceptable.
- B. The qualifications, responsibilities and authorities of the personnel who will perform the review and analysis have been clearly described. The staff has reviewed the licensee's chain of command for responsibility for post-trip review and evaluation, and finds it acceptable.
- C. The licensee has described the methods and criteria for comparing the event information with known or expected plant behavior. Based on the review of the licensee's submittals, the staff finds the methods and criteria are acceptable.

- D. With regard to the criteria for determining the need for independent assessment of an event, the licensee has indicated that if the cause of the trip cannot be determined, or if all significant aspects of the transient are not well understood, an independent assessment of the event will be performed. In addition, the licensee has established procedures to ensure that all physical evidence necessary for an independent assessment is preserved. The staff finds that these actions to be taken by the licensee conform to the guidelines as described in the above Sections II.A. and D.
- E. The licensee stated that the Operating Instruction, Revision 0, "Trip/Transient Package Review," along with the emergency, normal and abnormal operating instructions, provides a systematic assessment program to conduct the post-trip review. The staff finds the licensee's statement acceptable.

Based on the review of the licensee's submittals, the staff concludes that the licensee's Post-Trip Review Program and Procedures for San Onofre Nuclear Station, Unit 1, are acceptable.

IV. ACKNOWLEDGEMENT

This evaluation was prepared by D. Shum.

Dated: May 9, 1985.