

SAFETY EVALUATION FOR
GENERIC LETTER 83-28, ITEMS 3.1.1,
3.1.2, 3.2.1, 3.2.2, 4.1, AND 4.5.1
SURRY POWER STATION, UNIT NOS. 1 AND 2

INTRODUCTION

In February 1983, the Salem Nuclear Power Station experienced two failures of the reactor trip system upon the receipt of trip signals. These failures were attributed to Westinghouse - Type DB-50 reactor trip system (RTS) circuit breakers. The failures at Salem on February 22 and 25, 1983, were believed to have been caused by a binding action within the undervoltage trip attachment (UVTA) located inside the breaker cubicle.

Due to problems with the circuit breakers at Salem and at other plants, NRC issued Generic Letter (GL) 83-28, Required Actions Based on Generic Implications of Salem Anticipated Transient Without Scram (ATWS) Events, dated July 8, 1983. This letter described intermediate-term actions to be taken by licensees and applicants as a result of the Salem anticipated transient without scram events. These actions were developed by the staff based on information contained in NUREG-1000, Generic Implications of ATWS Events at the Salem Nuclear Power Plant. Actions to be performed included development of programs to provide for post trip review, classification of equipment, vendor interface, post-maintenance testing, and RTS reliability improvements.

The Generic Letter stated that for Items 3.1.1, 3.1.2, 3.2.1, 3.2.2, 4.1, and 4.5.1, NRC Regional Offices would perform a post-implementation review and issue Safety Evaluation Reports. This report is the Regional Safety Evaluation of Virginia Electric and Power Corporation (VEPCO) submittals dated November 4, 1983, and February 8, August 15 and October 2, 1985 to GL 83-28 for Surry Power Station, Unit Nos. 1 and 2. A regional inspection was conducted at the Surry facility during September 10 - 14, 1984 to review the licensee's current program, planned program improvements, and implementation of present procedures associated with post-trip review, equipment classification, vendor interface, post-maintenance testing, and reactor trip system reliability. The details of the inspection findings are discussed in Inspection Report Nos. 280, 281/84-25.

REVIEW GUIDELINES

The licensee's responses were evaluated for compliance to the staff positions delineated in GL 83-28 for Items 3.1.1, 3.1.2, 3.2.1, 3.2.2, 4.1, and 4.5.1. The staff positions of the above Items, as described in the Generic Letter, are paraphrased below:

3.1 Post-Maintenance Testing (Reactor Trip System Components)

Position

The following actions are applicable to post-maintenance testing:

1. Licensees and applicants shall submit the results of their review of test and maintenance procedures and Technical Specifications to assure that post-maintenance operability testing of safety-related components in the reactor trip system is required to be conducted and that the testing demonstrates that the equipment is capable of performing its safety functions before being returned to service.
2. Licensees and applicants shall submit the results of their check of vendor and engineering recommendations to ensure that any appropriate test guidance is included in the test and maintenance procedures or the Technical Specifications, where required.

3.2 Post-Maintenance Testing (All Other Safety-Related Components)

Position

The following actions are applicable to post-maintenance testing:

1. Licensees and applicants shall submit a report documenting the extending of test and maintenance procedures and Technical Specifications review to assure that post-maintenance operability testing of all safety-related equipment is required to be conducted and that the testing demonstrates that the equipment is capable of performing its safety functions before being returned to service.
2. Licensees and applicants shall submit the results of their check of vendor and engineering recommendations to ensure that any appropriate test guidance is included in the test and maintenance procedures or the Technical Specifications, where required.

4.1 Reactor Trip System Reliability (Vendor-Related Modifications)

Position

All vendor-recommended reactor trip breaker modifications shall be reviewed to verify that either: (1) each modification has, in fact, been implemented; or (2) a written evaluation of the technical reasons for not implementing a modification exists.

For example, the modifications recommended by Westinghouse in NCD-Elec-18 for the DB-50 breakers and a March 31, 1983, letter for the DS-416 breakers shall be implemented or a justification for not implementing shall be made available. Modifications not previously made shall be incorporated or a written evaluation shall be provided.

4.5 Reactor Trip System Reliability (System Functional Testing)

Position

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 under-voltage and shunt trip features on Westinghouse, Babcock and Wilcox (B&W) and Combustion Engineering (CE) plants; the circuitry used for power interruption with the silicon controlled rectifiers on B&W plants; and the scram pilot valve and backup scram valves (including all initiating circuitry) on General Electric (GE) plants.

DISCUSSION AND EVALUATION

By letters dated November 4, 1983, and February 8, August 15 and October 2, 1985, VEPCO, the licensee, provided information regarding their compliance to Sections 3.1, 3.2, 4.1, and 4.5 of Generic Letter 83-28. We have evaluated these responses against the NRC staff positions and conclude that the licensee's responses to Items 3.1.1, 3.1.2, 3.2.1, 3.2.2, 4.1 and 4.5.1 are acceptable and meet the intent of GL 83-28 as summarized below.

- a. Item 3.1.1, Review of Test and Maintenance Procedures and Technical Specifications (Reactor Trip System)

The licensee stated in a supplemental response dated October 2, 1985 that maintenance and testing procedures for the reactor trip system have been reviewed, and that they contain requirements for post-maintenance testing to ensure that safety functions are met. The licensee also stated that in general, the maintenance procedures will direct personnel to utilize a specified periodic test (PT) procedure to ensure that safety functions are met. However, in those cases where a refueling PT is used to discover and correct deficiencies, the PT itself requires the safety function test. Based on the above, we find this response to be acceptable.

- b. Item 3.1.2, Check of Vendor and Engineering Recommendations for Testing and Maintenance (Reactor Trip System Components)

The licensee stated in a supplemental response dated October 2, 1985 that vendor recommendations have been evaluated and included as appropriate into the working level procedures for the RTS. The licensee also stated that their current vendor interface program includes contacting vendors of safety-related equipment and requesting the most recent technical manuals and any other recommendations. Upon receipt these recommendations are then reviewed and evaluated for applicable revision to procedures. We find this response to be acceptable.

- c. Item 3.2.1, Review of Test and Maintenance Procedures and Technical Specifications (All Other Safety-Related Components)

The licensee has committed to perform a review of working level procedures to verify that post-maintenance testing is required and that the testing

verifies component capability to perform its safety functions prior to being returned to service. The licensee also stated that the review would be completed by September 1, 1987. Considering that it has been VEPCO's standard practice to perform post-maintenance testing of safety-related equipment prior to returning the equipment to service we find this response to be acceptable.

- d. Item 3.2.2, Check of Vendor and Engineering Recommendations for Testing and Maintenance (All Other Safety-Related Components)

The licensee has committed to perform a review of their procedures to assure that vendor and engineering recommendations for all other safety-related equipment have been reviewed and that appropriate test guidance has been incorporated into those procedures. The licensee stated that the review will be accomplished as part of the biannual review of station procedures using administrative procedure A-13. The review will take two years to complete and is scheduled to be completed by September 1, 1987. Considering that it has been VEPCO's standard practice to include vendor and engineering information in applicable procedures, we find this response to be acceptable.

- e. Item 4.1, Reactor Trip System Reliability (Vendor - Related Modifications)

The licensee stated in their submittal dated February 8, 1985 that all vendor recommended reactor trip breaker modifications have been implemented at Surry 1 and 2. The licensee stated that there were only two modifications recommended by the vendor for the DB-50 type reactor trip breakers used at Surry. The two modifications required by the vendor are identified as follows:

- (1) NCD-Elec-18 dated December 17, 1971, requiring replacement of the undervoltage trip assembly.
- (2) WES-3023 dated April 19, 1983, requiring removal of the over-current trip bracket on the trip bar.

- f. Item 4.5.1, Reactor Trip System Reliability (System Functional Testing)

The licensee confirmed in their response dated February 8, 1985 that on-line functional testing of the undervoltage and shunt trip features is being performed as part of the routine monthly logic testing program at Surry 1 and 2. We find this to be acceptable.

CONCLUSION

Based on our review, we conclude that Items 3.1.1, 3.1.2, 3.2.1, 3.2.2, 4.1, and 4.5.1 have been adequately addressed, and are acceptable and meet the intent of GL 83-28.

PRINCIPAL CONTRIBUTOR:

T. Conlon, RII

Dated: December 13, 1985