ENCLOSURE

SAFETY EVALUATION REPORT FOR
GENERIC LETTER 83-28, ITEMS 3.1.1,
3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3, 4.1, AND 4.5.1
MCGUIRE NUCLEAR STATION, UNITS 1 AND 2
DOCKET NOS. 50-369 AND 370

I. 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 Westingnouse - 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 required the licensees to respond on immediate-term actions to ensure reliability of the RTS. 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 Action 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. Subsequent to GL 83-28, Region II was requested to perform the review of responses to Action Items 3.1.3 and 3.2.3. This report is the Regional Safety Evaluation of Duke Power Company submittals dated November 4, 1983, December 31, 1984, and May 24, 1985, to GL 83-28 for McGuire Units 1 and 2.

II. REVIEW GUIDELINES

The licensee's responses were evaluated for compliance to the staff's positions delineated in GL 83-28 for Action Items 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3, 4.1, and 4.5.1. The requirements of the above action items, as described in the Generic Letter, are paraphrased below:

3.1 Post-Maintenance Testing (Reactor Trip System Components)

Position

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. Licensees and applicants shall identify, if applicable, any post-maintenance test requirements in existing Technical Specifications which can be demonstrated to degrade rather than enhance safety. Appropriate changes to these test requirements, with supporting justification, shall be submitted for staff approval. (Note that action 4.5 discusses on-line system functional testing.)

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. Licensee 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. Licensees and applicants shall identify, if applicable, any post-maintenance test requirements in existing Technical Specifications which are perceived to degrade rather than enhance safety. Appropriate changes to these test requirements, with supporting justification, shall be submitted for staff approval.

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 UB-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 undervoltage and shunt trip features on Westinghouse, B&W (see Action Item 4.3 of GL 83-28) and CE plants; the circuitry used for power interruption with the silicon controlled rectifiers on B&W plants (see Action Item 4.4 of GL 83-28); and the scram pilot valve and backup scram valves (including all initiating circuitry) on GE plants.

III. EVALUATION AND CONCLUSION

By letters dated November 4, 1983; December 31, 1984; and May 24, 1985; Duke Power Company, the licensee of McGuire Nuclear Station, Units 1 and 2 provided information regarding their compliance to Sections 3.1, 3.2, 4.1, and 4.5 of GL 83-28. We have evaluated the licensee's responses against the NRC positions described in Section II above for completeness and adequacy. We concluded that the licensee's responses to Action Items 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3, 4.1, and 4.5.1 were acceptable and met the intent of GL 83-28.

Delineated below are the results of Region II's evaluation and a brief summary of the licensee's response:

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

The licensee's response to this item is acceptable and meets the intent of GL 83-28. The licensee states in their submittal that McGuire has existing procedures and programs to assure that post-maintenance testing of all safety-related and Technical Specification-related components is conducted and that such testing demonstrates that the Reactor Trip System equipment is capable of performing its intended safety functions. The licensee further stated in their response that functional testing is performed on the DS-416 breakers in conjunction with the time response verification and includes an independent verification of the UV and shunt trip on a monthly basis. They also stated that they measure time response before and after each six months maintenance. The licensee also stated that they were reviewing reactor trip system components other than the components supplied by Westinghouse to assure that technical information is correct and consistent and that any changes are incorporated into plant procedures.

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

The licensee's responses to this item are acceptable and meet the intent of GL 83-28. Duke Power Company stated in their submittal dated November 4, 1983, that they had reviewed vendor information and the maintenance manual for the DS-416 reactor trip breakers and verified that appropriate information had been incorporated into plant procedures and Technical Specifications. For other Reactor Trip System components, the licensee stated that they were reviewing previous Westinghouse recommendations to assure that these recommendations have been appropriately incorporated into plant procedures and Technical Specifications. Licensee's supplemental response dated May 24, 1985, provided adequate confirmation that the licensee had completed their review of recommendations in W Technical Bulletins and Data Letters concerning Reactor Trip System components. The supplemental response also stated that plant procedures have been revised as appropriate.

C. Item 3.1.3, Identification of Technical Specification Required Post-Maintenance Tests Proven Detrimental to Safety (Reactor Trip System Components)

The licensee's response to this item are acceptable and meet the intent of GL 83-28. The licensee stated that they have no knowledge of any post-maintenance testing requirements in the Technical Specifications which can be demonstrated to degrade safety.

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

The licensee's response to this item is acceptable and meets the intent of GL 83-28. The licensee stated that procedures exist which require functional verification on all safety-related components following maintenance and prior to returning the components to service. The licensee considers that these procedures are effective in assuring that safety-related equipment is operable upon return to service and that the equipment is capable of performing its intended safety function.

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

The licensee's responses to this item is acceptable and meets the intent of GL 83-28. The licensee stated in their response that they are implementing a substantial review to verify that all vendor instruction manuals are complete and consistent, and that the information in the vendor manuals is appropriately incorporated into plant procedures. The licensee also stated that administrative procedures had been established and were being implemented to control the distribution of vendor instruction manuals and to ensure that vendor guidance is appropriately incorporated into plant procedures. The licensee stated that the manual review program involves comparing all in-house copies of vendor manuals, resolving any differences, and contacting

vendors if needed to resolve problems. This program will ensure that all copies of a given manual are complete, consistent, and that any changes made to the manuals will be evaluated and appropriately incorporated into plant procedures.

F. Item 3.2.3, Identification of Technical Specification Required Post-Maintenance Tests Proven Detrimental to Safety (All Other Safety-Related Components)

The licensee's response to this item is acceptable and meets the intent of GL 83-28. The licensee stated that Duke Power has no knowledge of any post-maintenance test requirements in the Technical Specifications which can be demonstrated to degrade safety.

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

The licensee's response to this item is acceptable and meets the intent of GL 83-28. The licensee stated in their response that they have complied with the March 31 and April 21, 1983 (W) recommendations to replace the UVTA with devices having a modified shaft groove for the retaining ring and have verified critical dimensional tolerances specified by W. Duke also stated that the potential wire bundle problem described in W Technical Bulletin NSD-TB-75-02 dated February 20, 1975, had been resolved and corrective action taken on the McGuire Reactor Trip System breakers. The licensee did not identify any other breaker modifications.

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

The licensee's response to this item is acceptable and meets the intent of GL 83-28. The licensee confirmed in their response that on-line functional surveillance testing is performed on McGuire Unit 1 and Unit 2 Reactor Protective Systems as described in the Unit 2 operating license which requires system functional testing. Duke's response dated May 24, 1985, for item 4.2.1 partly discussed the licensee's on-line functional test and the licensee stated that they measure and record time response for each breaker on a monthly basis and that this includes a verification of the UV trip independent of the shunt trip and vice-versa. The licensee also stated that they were following guidance resulting from the Westinghouse Owners Group.

I. Conclusion

Based on our reviews, the NRC concludes that the licensee's responses to items 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3, 4.1, and 4.5.1 are acceptable and meet the intent of GL 83-28.