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INPUT FOR SAFETY EVALUATION REPORT McGUIRE NUCLEAR STATION UNITS 1 AND 2 MILLSTONE NUCLEAR POWER STATION UNIT 3 SEABROOK STATION UNITS 1 AND 2 SOUTH TEXAS PROJECT UNITS 1 AND 2 VIRGIL C. SUMMER NUCLEAR STATION VOGTLE ELECTRIC GENERATING PLANT UNITS 1 AND 2 WOLF CREEK GENERATING STATION REACTOR TRIP SYSTEM RELIABILITY ITEM 4.5.2 OF GENERIC LETTER 83-28

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ABSTRACT

This EG&G Idaho, Inc. report provides a review of the submittals for some of the Westinghouse (W) nuclear plants for conformance to Generic Letter 83-28, Item 4.5.2. The report includes the following plants, all Westinghouse, and is in partial fulfillment of the following TAC Nos.:

Plant	Docket Number	TAC Number
McGuire Nuclear Station Unit 1	50-369	53997
McGuire Nuclear Station Unit 2	50-370	53998
Millstone Nuclear Power Station Unit 3 (OL)	50-423	60401
Seabrook Station Unit 1 (OL)	50-443	N/A
Seabrook Station Unit 2 (OL)	50-444	N/A
South Texas Project Unit 1 (OL)	50-498	63489
South Texas Project Unit 2 (OL)	50-499	N/A
Virgil C. Summer Nuclear Station	50-395	54030
Vogtle Electric Generating Plant Unit 1 (OL)	50-424	N/A
Vogtle Electric Generating Plant Unit 2 (OL)	50-425	N/A
Wolf Creek Generating Station (OL)	50-482	N/A

FOREWORD

This report is provided as part of the program for evaluating licensee/applicant conformance to Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events." This work is conducted for the U. S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Division of PWR Licensing-A by EG&G Idaho, Inc.

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CONTENTS

CONFORMANCE TO GENERIC LETTER 83-28
ITEM 4.5.2
McGUIRE NUCLEAR STATION UNITS 1 AND 2
MILLSTONE NUCLEAR POWER STATION UNIT 3
SEABROOK STATION UNITS 1 AND 2
SOUTH TEXAS PROJECT UNITS 1 AND 2
VIRGIL C. SUMMER NUCLEAR STATION
VOGTLE ELECTRIC GENERATING PLANT UNITS 1 AND 2
WOLF CREEK GENERATING STATION

1. INTRODUCTION

On July 8, 1983, Generic Letter 83-28[1] was issued by D. G. Eisenhut, Director of the Division of Licensing, Office of Nuclear Reactor Regulation, to all licensees of operating reactors, applicants for operating licenses, and holders of construction permits. This letter included required actions based on generic implications of the Salem ATWS events. These requirements have been published in Volume 2 of NUREG-1000, "Generic Implications of ATWS Events at the Salem Nuclear Power Plant."[2]

This report documents the EG&G Idaho, Inc. review of the submittals of some of the Westinghouse plants including McGuire 1 and 2, Millstone 3, Seabrook 1 and 2, South Texas 1 and 2, Summer, Vogtle 1 and 2 and Wolf Creek for conformance to Item 4.5.2 of Generic Letter 83-28. The submittals from the licensees utilized in these evaluations are referenced in Section 12 of this report.

2. REVIEW REQUIREMENTS

Item 4.5.2 (Reactor Trip System Reliability - System Functional Testing - On-Line Testing) requires licensees and applicants with plants not currently designed to permit on-line testing to justify not making modifications to permit such testing. Alternatives to on-line testing will be considered where special circumstances exist and where the objective of high reliability can be met in another way. Item 4.5.2 may be interdependent with Item 4.5.3 when there is a need to justify not performing on-line testing because of the peculiarities of a particular design.

All portions of the Reactor Trip System that do not have on-line testing capability will be reviewed under the guidelines for this item. However, the existence of on-line testability for the Reactor Trip Breaker undervoltage and shunt trip attachments on Westinghouse, B&W and CE plants; the silicon controlled rectifiers in the CRDCS on B&W plants; and the scram pilot and backup scram valves on GE plants will only be confirmed here since they are specifically addressed in Items 4.4 and 4.5.1. Maintenance and testing of the Reactor Trip Breakers are also excluded from this review, as they are evaluated under Item 4.2. This review of the licensee/applicant submittals will:

1. Confirm that the licensee/applicant has identified those portions of the Reactor Trip System that are not on-line testable. If the entire Reactor Trip System is verified to be on-line testable, with those exceptions addressed above, no further review is required.

2. Evaluate modifications proposed by licensees/applicants to permit on-line testing against the existing criteria for the design of the protection systems for the plant being modified.

3. Evaluate proposed alternatives to on-line testing of the Reactor Trip System for acceptability based on the following:

a. The licensee/applicant submittal substantiates the impracticality of the modifications necessary to permit on-line testing, and

b. High Reactor Trip System availability (comparable to that which would be possible with on-line testing) is achieved in another way. Any such proposed alternative must be described in detail sufficient to permit an independent evaluation of the basis and analysis provided in lieu of performing on-line testing. Methods that may be used to demonstrate that the objective of high reliability has been met may include the following:

i. Demonstration by systematic analysis that testing at shutdown intervals provides essentially equivalent reliability to that obtained by on-line testing at shorter intervals.

ii. Demonstration that reliability equivalent to that obtained by on-line testing is accomplished by additional redundant and diverse components or by other features.

iii. Development of a maintenance program based on early replacement of critical components that compensates for the lack of on-line testing. Such a program would require analytical justification supported by test data.

iv. Development of a test program that compensates for the lack of on-line testing, e. g., one which uses trend analysis and identification of safety margins for critical parameters of safety-related components. Such a program would require analytical justification supported by test data.

4. Verify the capability to perform independent on-line testing of the reactor trip system breaker undervoltage and shunt trip

attachments on CE plants. Information from licensees and applicants with CE plants will be reviewed to verify that they require independent on-line testing of the reactor trip breaker undervoltage and shunt trip attachments.

3. GROUP REVIEW RESULTS

The relevant submittals from each of the Westinghouse reactor plants were reviewed to determine compliance with Item 4.5.2. First, the submittals from each plant were reviewed to establish that Item 4.5.2 was specifically addressed. Second, the submittals were evaluated to determine the extent to which each of the Westinghouse plants complies with the staff guidelines for Item 4.5.2.

4. REVIEW RESULTS FOR McGUIRE NUCLEAR STATION UNITS 1 AND 2

4.1 Evaluation

Duke Power Company, the license for McGuire 1 and 2, provided their response to Item 4.5.2 of the Generic Letter on November 4, 1983. In that response, the licensee states that on-line functional testing of the reactor trip system is performed for both McGuire units.

4.2 Conclusion

The staff finds the licensee's response meets the staff position on Item 4.5.2 of the Generic Letter and is, therefore, acceptable.

5. REVIEW RESULTS FOR MILLSTONE NUCLEAR POWER STATION UNIT 3

5.1 Evaluation

Northeast Utilities, the applicant for Millstone 3, provided their response to Item 4.5.2 of the Generic Letter on November 8, 1983. In that response, the applicant states that on-line functional testing of the Reactor Trip System will be performed at Millstone 3 and that procedures will be developed to perform independent testing of the shunt and undervoltage trip features of the reactor trip breakers.

5.2 Conclusion

The staff finds the applicant's response meets the staff position on Item 4.5.2 of the Generic Letter and is, therefore, acceptable.

6. REVIEW RESULTS FOR SEABROOK STATION UNITS 1 AND 2

6.1 Evaluation

Public Service Company of New Hampshire, the applicant for Seabrook 1 and 2, responded to Item 4.5.2 of the Generic Letter on November 4, 1983. In that response, the applicant states that Item 4.5.2 is not applicable to Seabrook, and that the Station staff will incorporate independent testing of the shunt and undervoltage trip features of the reactor trip breakers.

6.2 Conclusion

The staff finds the applicant's statement that Item 4.5.2 is not applicable to be confirmation that Seabrook will perform on-line testing of the RTS, that this confirmation meets the staff position on Item 4.5.2 of the Generic Letter and is, therefore, acceptable.

7. REVIEW RESULTS FOR SOUTH TEXAS PROJECT UNITS 1 AND 2

7.1 Evaluation

Houston Lighting and Power, the applicant for South Texas 1 and 2 responded to Item 4.5.2 of the Generic Letter on June 28, 1985. In that response, the applicant states that on-line functional testing will confirm the independent operability of the shunt and undervoltage trip devices, and that the capability for on-line functional testing of the Reactor Trip System will be provided.

7.2 Conclusion

The staff finds the applicant's statement that South Texas will have the capability to perform on-line testing of the RTS meets the staff position on Item 4.5.2 of the Generic Letter and is, therefore, acceptable.

8. REVIEW RESULTS FOR VIRGIL C. SUMMER NUCLEAR STATION

8.1 Evaluation

South Carolina Electric and Gas, the licensee for Summer, responded to Item 4.5.2 of the Generic Letter on November 4, 1983. In that response, the licensee states that Summer has submitted a design change to NRC to permit independent testing of the diverse trip features, and that Item 4.5.2 of the Generic Letter is not applicable.

8.2 Conclusion

The staff finds the licensee's statement that Item 4.5.2 is not applicable to be confirmation that Summer performs on-line testing of the RTS, that this confirmation meets the staff position on Item 4.5.2 of the Generic Letter and is, therefore, acceptable.

9. REVIEW RESULTS FOR VOGTLE ELECTRIC GENERATING PLANT UNITS 1 AND 2

9.1 Evaluation

Georgia Power Company, the applicant for Vogtle 1 and 2, responded to Item 4.5.2 of the Generic Letter on November 8, 1983, and May 20, 1985. In those responses, the applicant states Plant Vogtle is designed to allow on-line testing of the Reactor Trip System, with the exception of the bypass breakers, and that independent verification of the operation of the undervoltage and shunt trip attachments is dependent on implementation of the reactor trip breaker shunt trip modification.

9.2 Conclusion

The staff finds the applicant's statement that Plant Vogtle is designed to have the capability to perform on-line testing of the RTS meets the staff position on Item 4.5.2 of the Generic Letter and is, therefore, acceptable.

10. REVIEW RESULTS FOR WOLF CREEK GENERATING STATION

10.1 Evaluation

Kansas Gas and Electric Company, the applicant for Wolf Creek, responded to Item 4.5.2 of the Generic Letter on November 15, 1983. In that response, the applicant states that procedures for the on-line functional testing of the Reactor Trip System, including independent verification of the diverse trip features, are scheduled to be in place by fuel load.

10.2 Conclusion

The staff finds the applicant's statement that Wolf Creek is capable of performing on-line testing of the RTS meets the staff position on Item 4.5.2 of the Generic Letter and is, therefore, acceptable.

11. GROUP CONCLUSION

The staff concludes that the licensee/applicant responses for the listed Westinghouse plants for Item 4.5.2 of Generic Letter 83-28 are acceptable.

12. REFERENCES

1. NRC Letter, D. G. Eisenhut to all licensees of Operating Reactors, Applicants for Operating License, and Holders of Construction Permits, "Required Actions Based on Generic Implications of Salem ATWS Events (Generic Letter 83-28)," July 8, 1983.

2. Generic Implications of ATWS Events at the Salem Nuclear Power Plant NUREG-1000, Volume 1, April 1983; Volume 2, July 1983.

3. Duke Power Company letter to NRC, W. T. Orders to D. G. Eisenhut, Director, Division of Licensing, November 4, 1983.

4. Northeast Utilities letter to NRC, W. G. Counsil to D. G. Eisenhut, Director, Division of Licensing, "Response to Generic Letter 83-28, Generic Implications of Salem ATWS Events," November 8, 1983.

5. Public Service Company of New Hampshire letter to NRC, John DeVincentis to United States Nuclear Regulatory Commission, Division of Licensing, "Response to Generic Letter 83-28," November 4, 1983.

6. Houston Lighting and Power letter to NRC, J. H. Goldberg to Hugh J. Thompson, Jr., Director, Division of Licensing, "Response to Generic Letter 83-28, Required Actions Based on Generic Implications of Salem ATWS Events," June 28, 1985.

7. South Carolina Electric and Gas letter to NRC, O. W. Dixon to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, "Generic Letter 83-28," November 4, 1983.

8. Georgia Power Company letter to NRC, D. O. Foster to Director of Nuclear Reactor Regulation, "Generic Letter 83-28," November 8, 1983.

9. Georgia Power Company letter to NRC, J. A. Bailey to Director of Nuclear Reactor Regulation, "Generic Letter 83-28," May 20, 1985.

10. Kansas Gas and Electric Company letter to NRC, Glenn L. Koster to Harold R. Denton, Director, Office of Nuclear Reactor Regulation, "Response to Generic Letter 83-28," November 15, 1983.