



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 86 TO FACILITY OPERATING LICENSE NO. NPF-47  
ENTERGY OPERATIONS, INC.  
RIVER BEND STATION, UNIT 1  
DOCKET NO. 50-458

1.0 INTRODUCTION

Current technical specifications (TSs) require nuclear power plants to periodically perform response time testing for instrument channels on the reactor protection system (RPS) instrumentation. The intent of these tests is to ensure that changes in response time of instrumentation beyond the limits assumed in safety analyses are detected, and combined with instrument calibration, to ensure that the instrument is operating correctly. The response time tests do not demonstrate that the instrument response time design value is met, but rather that the specified performance requirements of the TSs are satisfied.

By letter dated January 14, 1994, the Boiling Water Reactor Owners' Group (BWROG) submitted topical report NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements," for staff review. The BWROG stated in NEDO-32291 that operational history has shown that significant degradation of instrumentation response times is being detected during the performance of calibrations and other surveillance tests. The BWROG further stated that the performance of conventional response time tests has proven to be of little value in assuring that instrumentation will perform as required or for determining the health of the instrument because the majority of allowable instrumentation response times are system response times rather than instrument times.

The primary argument provided in the topical report in support for the elimination of response time testing is that appropriate alternatives are currently in place per the criteria of Regulatory Guide 1.118, "Periodic Testing of Electric Power and Protection Systems," and IEEE 338-1977, "Criteria for the Periodic Testing of Nuclear Power Generating Station Safety Systems," which states:

"Response time testing of all safety-related equipment, per se, is not required if, in lieu of response time testing, the response time of the safety equipment is verified by functional testing, calibration checks or other tests, or both. This is acceptable if it can be demonstrated that

changes in response time beyond acceptable limits are accompanied by changes in performance characteristics which are detectable during routine periodic tests."

By letter dated December 28, 1994, from B. Boger to R. Pinelli, the staff approved use of NEDO-32291 for the elimination of response time testing requirements. In the accompanying safety evaluation, the staff concluded that significant degradation of instrument response times, i.e., delays greater than about 5 seconds, can be detected during the performance of other surveillance tests, principally calibration, if properly performed. Accordingly, the staff concluded that response time testing can be eliminated from TSS for the selected instrumentation identified in the topical report and accepted NEDO-32291 for reference in license amendment applications for all boiling water reactors with the conditions discussed below:

When submitting plant-specific license amendment requests, licensees must confirm the applicability of the generic analysis of NEDO-32291 to their plant, and in addition to the request as shown in Appendix I of the topical report, the TS markup tables as shown in Appendix H, and a list of affected instrument loop components as shown in Appendix C.1, licensees must state that they are following the recommendations from EPRI NP-7243, "Investigation of Response Time Testing Requirements," and, therefore, are requiring the following actions:

- (a) Prior to installation of a new transmitter/switch or following refurbishment of a transmitter/switch (e.g., sensor cell or variable damping components), a hydraulic response time test shall be performed to determine an initial sensor-specific response time value, and
- (b) For transmitters and switches that use capillary tubes, capillary tube testing shall be performed after initial installation and after any maintenance or modification activity that could damage the lines.

Licensees must also state the following in their requests:

- (a) That calibration is being done with equipment designed to provide a step function or fast ramp in the process variable,
- (b) That provisions have been made to ensure that operators and technicians, through an appropriate training program, are aware of the consequences of instrument response time degradation, and that applicable procedures have been reviewed and revised as necessary to assure that technicians monitor for response time degradation during the performance of calibrations and functional tests,
- (c) That surveillance testing procedures have been reviewed and revised if necessary to ensure calibrations and functional tests are being performed in a manner that allows simultaneous monitoring of both the input and output response of units under test,

- (d) That for any request involving the elimination of response time testing for Rosemount pressure transmitters, the licensee is in compliance with the guidelines of Supplement 1 to Bulletin 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount," and
- (e) That for those instruments where the manufacturer recommends periodic response time testing as well as calibration to ensure correct functioning, the licensee has ensured that elimination of response time testing is nevertheless acceptable for the particular application involved.

By letter dated November 20, 1995, Entergy Operations, Inc. submitted a license amendment application to eliminate instrument response time testing in accordance with NEDO-32291.

## 2.0 EVALUATION

The licensee's letter of November 20, 1995, referenced NEDO-32291 and proposed elimination of response time testing for selected parameters of the Reactor Protection System (RPS) instrumentation. The licensee stated that the response time tests proposed for elimination are of little safety significance and result in unnecessary personnel radiation exposure, reduced availability of systems during plant shutdown, increased potential for inadvertent actuations of safety systems, and a significant burden to utility resources. The proposed changes to the River Bend Station (RBS) TSs are different than that provided in Appendix H of NEDO-32291 since RBS has recently adopted TS written in the Improved TS format. However, the proposed changes meet the intent of Appendix H of NEDO-32291.

In accordance with the conditions identified in the staff's safety evaluation, the licensee provided the following information:

- Entergy Operations, Inc. (EOI) confirmed the applicability of NEDO-32291 to RBS. As identified in Appendix A of the topical report, RBS was a lead plant in the evaluation. In addition, EOI has confirmed that the components within the scope of the license amendment application have been evaluated in NEDO-32291. The components are identified in Table 1 of the staff's safety evaluation of NEDO-32291 as those instruments/components for which response time testing can be eliminated.
- EOI confirmed that RBS is in conformance with the following recommendations from EPRI NP-7243, "Investigation of Response Time Testing Requirements:"
  - (a) Prior to installation of a new transmitter/switch or following refurbishment of a transmitter/switch (e.g., sensor cell or variable damping components), a hydraulic response time test will be performed to determine an initial sensor-specific response time value. EOI committed to revise applicable RBS procedures prior to the upcoming refueling outage (RF-6) to fulfill this recommendation.

- (b) For transmitters and switches that use capillary tubes, capillary tube testing shall be performed after initial installation and after any maintenance or modification activity that could damage the lines. EOI stated that RBS does not utilize any transmitters or switches that use capillary tubes in any application that requires response time testing. Therefore, this recommendation is not applicable to RBS.
- EOI committed to revise applicable calibration procedures to include steps to input a fast ramp or step change to system components during calibrations.
  - EOI has conducted training for operators and technicians in response to Requested Action 4.a of NRC Bulletin 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount." Applicable calibration procedures will be reviewed to assure technicians monitor for response time degradation during the performance of calibrations. These procedures will be revised prior to the next performance of the procedure.
  - EOI committed to revise surveillance testing procedures to ensure calibrations and functional tests are being performed in a manner that allows simultaneous monitoring of both the input and output response of units under test. The applicable calibration procedures will be revised to require the technicians at different locations to be in direct communication to verify that the response of the transmitter to a step input change is prompt, and in all cases less than five seconds.
  - EOI has complied with the guidelines of Supplement 1 to NRC Bulletin 90-01. NRC's evaluation was documented in the staff's letter to EOI dated March 8, 1995.
  - The components affected by this amendment request are limited to Rosemount transmitters model 1152, 1153, 1154. EOI has reviewed the vendor recommendations for these devices and confirmed that they do not contain recommendations for periodic response time testing.

The staff has previously concluded that licensees may reference NEDO-32291 in license amendment applications provided that certain conditions are met. In their application dated November 20, 1995, the licensee addressed each of these conditions and the staff finds the responses acceptable. Therefore, the staff finds the licensee's proposed changes to the RBS TSs acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Louisiana State Official was notified of the proposed issuance of the amendment. The State official had no comments.



## 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (60 FR 62492). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: January 11, 1996