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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 194 TO

FACILITY OPERATING LICENSE NO. DPR-51

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 1

DOCKET NO. 50-313

1.0 INTRODUCTION

By letter dated May 31, 1996, Entergy Operations, Inc. (the licensee) submitted a request for changes to the Arkansas Nuclear One, Unit No. 1 (ANO-1) Technical Specification (TS). The requested changes were to revise the surveillance test interval (STI) for the reactor protection system reactor trip breakers (RTBs), protective channel coincidence logic/reactor trip modules (RTMs), and electronic trip relays from a monthly interval to a six month interval. The application of May 31, 1996, referenced Babcock and Wilcox Owners Group (B&WOG) Topical Report BAW-10167, Supplement 3, "Justification for Increasing the Reactor Trip System On-Line Test Intervals," dated January 1995, for much of the supporting analyses. A B&WOG submittal dated November 5, 1997 (subsequent to the licensee's request to revise the TSs for ANO-1), amended the topical report to propose a three-month interval instead of the six-month STI included in the original topical and the proposed TS change for ANO-1. In its safety evaluation dated January 7, 1998, the Nuclear Regulatory Commission (NRC) staff accepted the revised topical report, including the three-month test interval, for use by the licensees participating in the B&WOG program.

Following discussions with the licensee regarding the most efficient means to proceed with the TS amendment request for ANO-1, the NRC staff agreed to issue this amendment approving the three-month STI, as supported by the accepted topical report, BAW-10167, Supplement 3. Although the approved amendment differs (in terms of the length of the STI) from the licensee's application, the underlying information provided in the initial proposed no significant hazards consideration determination remains valid.

2.0 BACKGROUND

The rod drive control system (RDCS) at ANO-1 provides for withdrawal and insertion of control rod assemblies (CRAs) to control reactivity within the reactor core. The RDCS consists of three basic components: (1) control rod drive (CRD) motor power supplies, (2) system logic, and (3) trip breakers and the electronic trip relays (SCR). The RDCS trip breakers and electronic trip relays are provided to interrupt power to the control rod drive motors. When power is removed, the roller nuts (within the control rod drive mechanism) disengage from the leadscrew (attached to the CRAs) and a gravity free-fall of the CRAs occurs.

The proposed change to the STIs for the RTBs, RTMs, and electronic trip relays is based on Supplement 3 to B&WOG Topical Report BAW-10167. The topical report includes analyses to justify the proposed changes to the STI for the RTMs, RTBs, and electronic trip relays. In a safety evaluation dated January 7, 1998, the NRC staff accepted BAW-10167, Supplement 3 (revised to propose a three month test interval) for use by the licensees participating in the B&WOG program, including the licensee for ANO-1.

3.0 EVALUATION

The NRC staff reviewed topical report BAW-10167, Supplement 3, and found that, as revised, it was acceptable and that the STI for the reactor trip devices, consisting of RTBs, RTMs, and electronic trip relays, could be extended for those B&W plants that participated in the B&WOG program. The licensee participated in the program and therefore, the staff's generic findings regarding the extension, from a one month test interval to a three month interval, is applicable to the reactor trip devices at ANO-1.

The reliability models used in the analyses in BAW-10167, Supplement 3, were representative of the Oconee-type reactor trip system (RTS) design group that includes ANO-1. The unavailability of the RTS trip devices was modeled in the report using reliability block diagrams for both the current one-month STI and the originally proposed six-month STI. The proposed STI extension was analyzed for its potential effect on core melt frequency and RTS unavailability to demonstrate that the proposed STI change did not significantly increase plant risk when compared to the current TS requirements. The submittals pertaining to the topical report and the licensee's proposed TS change and the NRC safety evaluation for BAW-10167, Supplement 3, were prepared prior to the issuance of Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August 1998. The overall methodology used by the staff and the staff's findings pertaining to the acceptability of the topical report are, however, generally consistent with the positions defined in the later regulatory guides for the employing risk-informed insights into the regulation of nuclear power plants.

The methodology and models presented in BAW-10167, Supplement 3, were the same as those in the NRC staff-approved Supplement 1 of BAW-10167 including time-dependent, common mode failure and uncertainty analyses. Emphasis was placed on the use of operating experience for the data source in the derivation of both random and common mode failure rates. The RTB portions of the reliability models included evaluation of failure mechanisms associated with cyclic stresses and time-in-service stresses. The RTB failure data reflected reliability improvements and reduction in the potential for common mode failures due to the licensee's implementation of the guidance provided in Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events."

The NRC staff reviewed the information provided in B&WOG submittals and found that the proposed change to the STI from one month to six months was acceptable in terms of its impact on RTS failure probability and overall plant risk. However, during the staff's review of BAW-10167, Supplement 3, the B&WOG revised the proposed extension from a six-month STI to a three-month STI due to the lack of operating history data for the extended test intervals. The B&WOG stated that the performance of the RTS trip devices would be monitored to ensure

that degradation does not occur as a result of the STI extension. The staff notes that such performance monitoring can reasonably be expected as part of the requirements contained in 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants." Given the requirements of 10 CFR 50.65, the staff does not consider it necessary to have additional requirements or regulatory commitments for monitoring or reporting the performance of the RTS trip devices.

In its submittal of May 31, 1996, the licensee included supporting information pertaining to the applicability of BAW-10167, Supplement 3 to ANO-1. The data from ANO-1 was included in the evaluations reported in the topical report and the staff finds that the site-specific experience for ANO-1 is consistent with the results reported in BAW-10167, Supplement 3. The licensee's submittal proposing TS revisions for ANO-1 was made prior to the revision of the topical report which reduced the proposed STI extension from six months to three months. Following discussions with the licensee regarding the most efficient means to proceed with the proposed TS changes, the NRC staff agreed to issue this amendment approving the three-month STI, as supported by the accepted topical report, BAW-10167, Supplement 3.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Arkansas 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 and changes surveillance requirements. 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 (61 FR 44356). 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: December 31, 1998