



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

ENCLOSURE 1

SUPPLEMENTAL SAFETY EVALUATION BY
THE OFFICE OF NUCLEAR REACTOR REGULATION
STATION BLACKOUT RULE (10 CFR 50.63)
ENERGY OPERATIONS INC.
WATERFORD STEAM ELECTRIC STATION, UNIT 3
DOCKET NO. 50-382

1.0 INTRODUCTION

The NRC staff's Safety Evaluation (SE) pertaining to the initial responses of Entergy Operations Inc. (the licensee for Waterford 3) to the Station Blackout (SBO) Rule, 10 CFR 50.63, was transmitted to the licensee by letter dated January 15, 1992. The staff's SE found the licensee's proposed method of coping with an SBO to be acceptable subject to the satisfactory resolution of nine recommendations. The licensee responded to the staff's SE and, specifically, to the recommendations by letter from R. F. Burski, dated February 28, 1992.

2.0 EVALUATION

The licensee's responses to the staff's recommendations are evaluated below.

2.1 ESW Classification (SE Section 2.1)

SE Evaluation

In the SE, the staff classified the extreme severe weather (ESW) classification as Group "4," based on Table 3-2 of NUMARC 87-00, rather than Group "3" as claimed by the licensee based on site-specific data. The staff did not evaluate the licensee's plant specific data in detail since the group classification (i.e., Group "3" or Group "4") had no affect on the required coping duration.

Licensee Response

Since the group classification had no affect on the required coping duration, the licensee accepted the NUMARC classification subject to reserving the option to re-submit the site-specific data at a later date if such action is necessary.

Staff Evaluation

The staff finds the licensee's response acceptable and considers this issue resolved.

2.2 Class 1E Battery Capacity (SE Section 2.2.2)

2.2.1 SE Issue: Shedding of Control Room Monitoring Systems

SE Recommendation

(1) The licensee should justify the shedding of the control room monitoring systems considering the requirements of "NUMARC Supplemental Question and Answers," Item Numl. 7.2. (2) The licensee should identify the specific loads shed by the plant and justify shedding of these loads.

Licensee Response

The licensee stated that it concurs with the recommendations and that the specific loads that will be shed during an SBO will be identified, including control room monitoring systems. Further, justification will be provided for each load which is shed taking into account the guidelines of NUMARC 87-00. The licensee further stated that the submittal will be provided to the NRC by June 1, 1992.

Staff evaluation: The staff accepts the licensee's commitment to identify and provide justification for the loads to be shed. The staff finds this to be acceptable. The licensee should include all of the documentation and information related to this issue with the other documentation to be retained by the licensee in support of the SBO submittals for future NRC audit.

2.2.2 SE Issue: Battery Room Initial Temperature

SE Recommendation

The licensee should ensure that the temperature does not drop below 77°F under all circumstances.

Licensee Response

The licensee stated that it concurs with the recommendation and stated that Procedure EC-003-200 requires that the battery room ambient temperature be maintained between 78 and 82°F. In the event that the ambient temperature is not maintained within 78 to 82°F, the shift supervisor or control room supervisor is required to be notified so that corrective action can be taken.

The licensee further stated that Waterford 3 will be replaced by the end of refuel 5 (Fall of 1992) the existing batteries with new

batteries of a similar type and capacity. A procedural change will be made by the end of refuel 5 to control the battery electrolyte temperature at 70°F.

Staff Evaluation

The staff finds the licensee's response acceptable and considers this issue resolved. The licensee should document the basis and justification for the assumed initial temperatures used in the heat-up analysis for the battery rooms. Administrative procedures should be established to maintain the temperature consistent with the initial room temperature used in the analysis. The basis and justification should be included in the documentation that is to be maintained by the licensee in support of the SBO submittals.

2.2.3 SE Issue: Battery Design Margin

SE Recommendation

The batteries should have a design margin of at least 10% as recommended by IEEE Std. 485.

Licensee Response

The licensee stated that it will implement the recommendation. The existing batteries will be replaced by the end of refuel 5 with new batteries of a similar type and capacity. A reduced life will be established for the new batteries 3A-S and 3B-S (the batteries will be replaced prior to their normal end of life, i.e., before reaching 80% capacity as defined in IEEE-Std 485). The 3AB DC system will be modified by the end of refuel 6 to satisfy the design margin of 1.10.

Staff Evaluation

The staff accepts in principle the licensee's commitment to replace the batteries earlier than the normal replacement (i.e., prior to when the battery capacity decreases to 80% of their design capacity based on a 25% over-capacity for a DBA) in order to maintain throughout the life of the battery at least a 10% design margin for SBO loads. The licensee should document how it intends to implement its commitment regarding earlier replacement of the batteries (e.g., by a Technical Specification (TS) change, etc.) and include this information in the documentation supporting the SBO submittals.

2.3 Effects of Loss of Ventilation (SE Section 2.2.4)

SE Recommendation

The licensee should: (1) establish an administrative procedure to ensure that the room temperatures in the dominant areas of concern during normal power operation will not exceed the assumed initial temperatures during an SBO event; and (2) establish a procedure in accordance with the guidance described in NUMARC 87-00 to open the control room cabinets and doors within 30 minutes of the onset of an SBO event.

Licensee Response

The licensee stated that it will put into effect by the end of refuel 5 a procedure(s) to ensure that the temperatures in the Control Room, EPW Pump Room, and Switchgear Rooms A, B, and A/B are maintained at or below the initial temperatures assumed in the SBO calculations and to ensure that corrective action is taken within a specified time period should a temperature excursion occur.

With regard to the control room cabinets, the licensee stated that plant procedure, OP-902-005, has identified the control room cabinets and doors that need to be opened at the onset of an SBO event. In addition, the plant procedure OP-902-005 will be revised by the end of refuel 5 to state that the cabinets and doors need to be opened within 30 minutes.

Staff Evaluation

Based on its review, the staff finds the licensee's responses acceptable and, therefore, considers the above cited SE issue related to the effects of loss of ventilation during an SBO event at the Waterford plant resolved.

2.4 Reactor Coolant Inventory (SE Section 2.2.6)

2.4.1 SE Statement

In the SE, the staff stated that the expected maximum losses from the RCS are 25 gpm from each of the RCS pumps and 12 gpm allowed by TS for a total of 112 gpm.

Licensee Clarification

The licensee stated that its RCS inventory analysis was based on 100 gpm and did not include the 12 gpm allowed leakage by the TS. However, the inventory and containment temperature and pressure analyses demonstrated significant temperature and pressure margins in comparison to LOCA temperature and pressure values. The licensee concluded that the inclusion of an additional 12 gpm is not expected to change the results in any appreciable way. Nevertheless, the licensee stated that the analyses would be updated by December 18, 1992.

Staff Evaluation

The staff finds the licensee's commitment to update the analyses by December 18, 1992, to be acceptable. The analyses should be included with the other documentation to be retained by the licensee in support of its SBO submittals.

2.4.2 SE Statement

In the SE, the staff noted that the reactor coolant inventory evaluation was based on 25 gpm per reactor coolant pump and stated that if the final resolution of Generic Issue (GI) 23 defines higher leakage rates, the licensee should be aware of the potential impact of this on their analysis.

Licensee Response

The licensee stated that Entergy Operations, Inc. plants have already reduced RCP seal failure probabilities to an acceptable level. Nonetheless, the licensee stated that it will address this issue on a plant specific basis, if necessary, when GI 23 is resolved by the NRC.

Staff Evaluation

The staff finds the licensee's response acceptable.

2.5 Proposed Procedures and Training (SE Section 2.3)

SE Statement

The staff stated that it expects the licensee to implement the appropriate procedures and training to ensure an effective response to an SBO.

Licensee Response

The licensee stated that the only physical related modifications were the placement in the plant of a portable air compressor that can be connected to the EDG air receivers and the termination of the EDG field flashing command should the EDG fail to start. The training for these changes was covered as part of the required reading for Design Change Package (DCP) 3147. The training for procedure change packages OP-902-005 and OP-902-008 related to SBO was performed prior to the effective date for the changes which were made for SBO. The training department will perform by the end of refuel 5 a review of other procedures for SBO to determine if there is a need for additional training.

Staff Evaluation

The staff finds that the licensee has adequately addressed the procedure change and training issues for SBO.

2.6 Proposed Modifications (SE Section 2.4)

SE Recommendation

The licensee should include a full description including the nature and objectives of any required modifications in the documentation that is to be maintained by the licensee in support of the SBO submittals.

Licensee Response

The licensee stated that there were no modifications that were required to be implemented to cope with an SBO for 4 hours except for the portable air compressors and the termination of the EDG field flashing command as discussed in Section 2.5 above and the DC system as discussed in Section 2.2.3 above. The licensee

stated that the documents related to these modifications will be retained as part of the SBO evaluation of record.

Staff Evaluation

The staff finds the licensee's response acceptable.

2.7 Quality Assurance and Technical Specifications (SE Section 2.5)

Recommendation

The licensee should verify and confirm that the SBO equipment is or will be covered by an appropriate QA program consistent with the guidance of Appendix A, RG 1.155. Verification that such a program is in place should be included as part of the documentation supporting the SBO Rule response.

Licensee Response

The licensee stated that the majority of the equipment is covered by the QA programs for Class 1E equipment or by Appendix R. A QA program will be developed by the end of refuel 5 for the EDG portable air compressor. As a form of verification, a list of SBO equipment will be prepared, and a documentation reference will be provided by the end of refuel 5 which establishes that the equipment is covered by a QA program. This documentation will be retained as part of the SBO evaluation record.

Staff Evaluation

The staff finds that the licensee has adequately addressed this recommendation.

2.8 EDG Reliability Program (SE Section 2.6)

SE Recommendation

The licensee should implement an EDG reliability program which as a minimum meets the guidance of RG 1.155, Section 1.2. Confirmation that such a program is in place or will be implemented should be included in the documentation supporting the SBO submittals that is to be maintained by the licensee.

Licensee Response

The licensee stated that it concurs in principle with the NRC recommendation. The licensee stated that its present reliability program is comprised of six critical elements which include: (1) surveillance needs; (2) performance monitoring; (3) a maintenance program; (4) failure analysis and root cause investigation; (5) EDG problem closeout; and (6) EDG reliability data systems. The licensee stated that although it believes that the Waterford 3 EDG program meets the intent of items 1 through 5 of RG 1.155, Section 1.2, these items are generally stated and are subject to interpretation. Accordingly, the licensee will submit to the NRC by June 1, 1992, for review and concurrence a description of the Waterford 3 EDG reliability program relative to items 1 through 5 of RG 1.155, Section 1.2.

Staff Evaluation

The staff finds the licensee's response to be acceptable and considers this issue resolved. This information should be included with the other documentation that is to be retained by the licensee in support of the SBO submittals.

3.0 SUMMARY AND CONCLUSION

The staff has reviewed the licensee's responses to the staff's January 15, 1992, SE pertaining to the SBO Rule (10 CFR 50.63). We find the licensee's responses to be acceptable as noted in this SSE except that the licensee should document the loads to be shed and the justification for the loads to be shed from the station batteries (Section 2.2.1), document the basis and justification for the initial temperatures used for the heat-up analysis in the battery rooms and provide an administrative procedure to maintain the initial battery room temperatures consistent with the initial temperatures used in the heat-up analyses (Section 2.2.2), and document how it intends to implement its commitment regarding earlier replacement of the station batteries (Section 2.2.3). This SSE documents the NRC's final regulatory assessment of the licensee's proposed conformance to the SBO Rule. Therefore, no further submittals are required.

The staff considers the 2-year clock for implementation of the SBO Rule in accordance with 10 CFR 50.63 (c)(4) to begin upon receipt by the licensee of the this SSE. Therefore, the licensee should take the necessary action to ensure complete compliance with the SBO Rule as indicated in the staff's SE and SSE. The documentation related to these analyses and actions required should be included with the other documentation to be maintained by the licensee in support of the SBO Rule implementation for possible future NRC audit.

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