



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

ENCLOSURE

SUPPLEMENTAL SAFETY EVALUATION

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

STATION BLACKOUT RULE (10 CFR 50.63)

NEW HAMPSHIRE YANKEE

SEABROOK STATION, UNIT 1

DOCKET NO. 50-443

1.0 INTRODUCTION

The NRC staff's Safety Evaluation (SE) pertaining to the licensee's initial response to the Station Blackout (SBO) Rule, 10 CFR 50.63, was transmitted to the licensee by letter, dated February 11, 1992. The staff found the licensee's proposed method of coping with a SBO to be conforming contingent upon the satisfactory resolution of the recommendations presented in the SE. The licensee responded to the staff's SE, and specifically to the recommendations, by letter from T. C. Feigenbaum, New Hampshire Yankee, to the Document Control Desk, U.S. Nuclear Regulatory Commission, dated March 19, 1992.

2.0 EVALUATION

The licensee's responses to each of the staff's recommendations are evaluated below:

2.1 Station Blackout Duration (SE Section 2.1)

In the SE, the staff stated that it did not agree with the licensee in the selection of the extremely severe weather (ESW) classification of Group "3." The staff stated that the licensee's calculation was not consistent with the ESW frequency results obtained when using information contained in the plant UFSAR. The UFSAR data indicated that the site is in ESW Group "4," which is consistent with the data given in Table 3-2 of NUMARC 87-00. Since both the UFSAR and NUMARC data are consistent, the staff considered the Seabrook site to be in ESW Group "4."

SE Recommendation: In the SE, the staff stated that the licensee needs to implement pre-hurricane shutdown procedures to retain a 4-hour coping duration. Alternatively, the licensee needs to change the coping duration to 8 hours and reevaluate the plant for an 8-hour coping duration.

Licensee Response: In its response, the licensee stated that the site specific data used in their analysis is more representative of actual conditions, and the UFSAR is being updated to reflect this data. The licensee stated that UFSAR Table 2.3-6 was developed from a journal paper published in 1968, and the results were based on a wind speed data base with an average of twenty-one years of records. The licensee is in the process of revising UFSAR Table 2.3-6 to reflect the more current information and more reliable estimates presented in NUREG/CR-2639 and in Wind Effects on Structures. The licensee indicated that the annual probability at the site of a fastest mile

wind greater than or equal to 125 mph using the revised information is approximately  $2.6 \times 10^{-3}$ , which places the plant in ESW Group "3."

The licensee further indicated that for all locations in the vicinity of Seabrook Station, the National Oceanic and Atmospheric Administration (NOAA) data indicate that the annual probability of wind speeds at any location of greater than 125 mph is on the order of  $1 \times 10^{-3}$ . This NOAA data supports Seabrook Station's site classification as an ESW Group "3."

The licensee concluded that the Seabrook Station is correctly classified as an ESW Group "3," thus resolving this SE issue.

Staff Evaluation: Based on its review and the licensee's commitment to revise UFSAR Table 2.3-6 to reflect the more current information, the staff agrees with the licensee in ESW classification of Group "3."

## 2.2 Class 1E Battery Capacity (SE Section 2.2.2)

In the SE, the staff stated that it did not receive the licensee's battery capacity calculation. However, the licensee provided the load profiles used in the calculation. Based on the information available in the plant UFSAR and that provided by the licensee, the staff had the following concerns:

1. The licensee did not consider any design margin (10% to 15% per IEEE Std. 485) to provide for less than optimum operating conditions of the battery due to improper maintenance, recent discharge or ambient temperature lower than anticipated.
2. The staff was unable to verify that the temperature factor used is based on the lowest electrolyte temperature that could occur during normal operation per NUMARC 87-00, Section 7.2.2.
3. The staff was unable to verify that load shedding will occur within the first 40 minutes of the SBO event and that the loads which will be shed will not adversely affect the ability to safely shut the plant down or maintain the plant in a safe shutdown condition.
4. The load profiles submitted by the licensee have discrepancies between the combined loads and individual bus loads in the 40-240 minute period.
5. The staff was unable to determine that the actual equipment loads instead of the rated loads is the worst case scenario (e.g., constant KW loads are voltage dependent).

Based on the above, the staff could not conclude the adequacy of the battery capacity for the required SBO duration.

SE Recommendation: The licensee should reevaluate the battery capacity considering the above concerns, perform an analysis to show that there is adequate battery capacity for the required duration, and submit the results of the reanalysis to the NRC staff. The battery capacity analysis and verification, and any resulting modification, should be included in the documentation supporting the SBO submittals that is to be maintained by the licensee.

Licensee Response: In its response, the licensee stated that they have performed a preliminary review of the battery capacity concerns listed in the SE and have concluded that the existing battery sizing calculation demonstrates adequate battery capacity for the 4-hour coping duration without any modifications. The licensee further stated that detailed responses to each of the concerns are being prepared pending the completion of additional electrolyte temperature and load shedding evaluations. The licensee will provide this information by May 31, 1992.

Staff Evaluation: Based on its review, the staff finds the above licensee response acceptable pending verification of adequate battery capacity for the 4-hour coping duration. The licensee committed to complete verification of battery adequacy and address staff concerns by May 31, 1992. It is the staff's position that the licensee must be in full compliance with the SBO Rule within two years after receipt by the licensee of this SSE in accordance with 10 CFR 50.63(C)(4). Therefore, this commitment should be expeditiously implemented to bring the licensee into full compliance with the SBO Rule. Also, the licensee should retain all supporting documentation in the SBO file.

### 2.3 Effects of Loss of Ventilation (SE Section 2.2.4)

#### 2.3.1 MS/FW Pipe Chase Electrical Room (SE Section 2.2.4.1)

In the SE, the staff reported that the licensee's calculated final temperature (132°F) exceeds the EQ temperature for this area (130°F). Therefore, the staff was not able to conclude that reasonable assurance of equipment operability had been provided for this area.

SE Recommendation: The licensee should ensure that the MSIVs will be closed before the temperature inside the MSIV cabinets exceeds the operability temperature. If the operability temperature for the MSIVs is exceeded prior to the closure of the valves, the licensee should assess the consequences of the failure of the MSIVs to perform their function.

Licensee Response: In its response, the licensee indicated that the limiting EQ temperature of 130°F is associated with the MSIV logic cabinets. However, cabinets in the MS/FW pipe chase electrical room are the Train A cabinets for all MSIVs. Redundant Train B capability is provided by an identical set of cabinets located in Train B switchgear room. The switchgear room temperature at four hours is well below 130°F. Because the Train B cabinets can close all the MSIVs, the redundant Train A cabinets are not required for a SBO event. Therefore, the Train A cabinets will be deleted from the SBO equipment list.

The only remaining components in the MS/FW pipe chase electrical room that are required for a SBO have an EQ temperature of 144°F. As such, it can be concluded that reasonable assurance of equipment operability in the MS/FW pipe chase electrical room has been provided and that MSIV closure capability has been preserved. Procedure ECA 0.0 will be revised to require the use of the B train switches by May 31, 1992.

Staff Evaluation: Based on its review, the staff finds the above licensee's response acceptable, and therefore considers this SE issue related to the effects of loss of ventilation in the MS/FW pipe chase electrical room during a SBO event resolved.

### 2.3.2 Control Room and Switchgear Room (SE Section 2.2.4.2)

SE Recommendations: (1) The licensee should verify that its heat loads accurately reflect the loads expected in the control room and the switchgear room during a SBO event; (2) For the control room heat-up analysis, the licensee assumed an initial temperature of 75°F, which is non-conservative. If the licensee wishes to use 75°F as the initial temperature, then it must provide an administrative control which ensures that the control room temperature will not exceed the assumed temperature under any circumstance; and (3) The licensee should establish a procedure in accordance with the guidance described in NUMARC 87-00 to open the control room cabinet doors within 30 minutes of a SBO event.

Licensee Response: In its response, the licensee stated that area heat-up in the control building (including the main control room and switchgear rooms) is being re-analyzed with heat loads reflecting the total battery loads as suggested by SAIC in the TER. This re-analysis will be completed by May 31, 1992. It is expected that the main control room temperature will remain below 120°F. With regard to the initial control room temperature, the licensee stated that Seabrook Station has an existing main plant computer video alarm system (VAS) alarm response procedure (D7011, Control Room Temperature High), which specifies appropriate corrective actions when control room temperature reaches 75°F.

In addition, the licensee indicated that an existing procedure for coping with a Station Blackout (ECA 0.0) provides steps for opening control room cabinet doors. Operations personnel are verifying that the actions listed in this procedure can be accomplished within 30 minutes of the onset of a SBO event. This verification, and any required changes to ECA 0.0, will be completed by May 31, 1992.

Staff Evaluation: Based on its review, the staff finds the above licensee's responses acceptable, and therefore considers this SE issue related to the effects of loss of ventilation in the control room and switchgear room during a SBO event resolved.

### 2.4 Quality Assurance and Technical Specifications (SE Section 2.5)

SE Recommendation: The licensee should verify and confirm that the SBO equipment is covered by an appropriate QA program consistent with the guidance of Reg Guide 1.155. This evaluation should be documented as part of the documentation supporting the SBO Rule response.

Licensee Response: In response to this recommendation, the licensee stated that it has reviewed each piece of required equipment and determined that they are all safety related. The licensee indicated that all safety related equipment is within the scope of the New Hampshire Yankee Operational Quality Assurance Program, which complies with the requirements of 10 CFR 50 Appendix B, which exceed those described in Reg Guide 1.155.

Staff Evaluation: Based on its review, the staff finds the above licensee's response acceptable and therefore considers this SE issue resolved.

### 3.0 SUMMARY AND CONCLUSION

The NRC staff's SE pertaining to the licensee's initial response to the SBO Rule, 10 CFR 50.63, was transmitted to the licensee by letter, dated February 11, 1992. The staff found the licensee's proposed method of coping with a SBO to be conforming contingent upon the satisfactory resolution of the recommendations presented in the SE. The licensee's responses to each of the staff's recommendations have been evaluated in this Supplemental Safety Evaluation (SSE) and found to be acceptable pending verification of adequate battery capacity for the 4-hour coping duration. The licensee has committed to complete verification of battery adequacy and address staff concerns by May 31, 1992. 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. It is the staff's position that the licensee must be in full compliance with the SBO Rule within two years after receipt by the licensee of this SSE in accordance with 10 CFR 50.63(C)(4). Therefore, this commitment should be expeditiously implemented to bring the licensee into full compliance with the SBO Rule. Also, the licensee should retain all supporting documentation in the SBO file.

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