



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

SUPPLEMENTAL SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

STATION BLACKOUT RULE (10 CFR 50.63)

GPU NUCLEAR CORPORATION

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

1.0 INTRODUCTION

The NRC staff's Safety Evaluation (SE) pertaining to GPU Nuclear Corporation's (GPUN/licensee) initial response to the Station Blackout (SBO) Rule, 10 CFR 50.63, was transmitted to the licensee by letter dated August 23, 1991. The staff found the licensee's proposed method of coping with an SBO to be in conformance with the SBO Rule. The licensee responded to the staff's SE, and specifically to the recommendations, by letter from J. J. Barton, GPU Nuclear Corporation, to the Document Control Desk, U.S. Nuclear Regulatory Commission dated October 7, 1991. Also, there was a teleconference between representatives of the licensee and the NRC staff on November 19, 1991, and a follow-up letter from the licensee, dated December 4, 1991.

2.0 EVALUATION

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

2.1 Proposed Alternate AC Power Source (SE Section 2.2.2)

SE Recommendation: The licensee should take positive steps to improve the combustion ...oine system reliability from the present value of 0.93 to the minimum target value of 0.95.

9202140322 920212
PDR ADDCK 05000219
P PDR

Licensee Response: The licensee states that the reliability value previously cited was based on early, short-term operational history of the combustion turbines, which were installed in 1989. The licensee states that positive steps are being taken with respect to additional data collecting and review to achieve and maintain an aggregate alternate AC source reliability of 0.95.

Staff Evaluation: The staff finds the licensee's commitment to be acceptable.

2.2 Effects of Loss of Ventilation (SE Section 2.3.4)

2.2.1 SE Recommendation: The licensee should use an initial temperature for the SBO control room heat-up calculation no lower than that allowed by the Technical Specifications or the administrative procedures.

Licensee Response: The licensee notes that as stated in their previous submittal dated March 30, 1990, the effects on the control room due to the loss of the ventilation system was the subject of the control room heat-up analysis which demonstrated that the temperature inside the control room will remain below acceptable limits (120°F) following loss of the ventilation system. The licensee states that in this analysis the initial control room temperature was assumed to be 75°F and the heat generation rates were based on plant operation at 100% power with all attendant control room instrumentation functioning. At the end of 4 hours, without ventilation, the average control room temperature was calculated to be 106.3°F.

The licensee also states that subsequent to performing the heat-up analysis, a control room loss of ventilation test was conducted under Test Procedure TP 254/13 MTX 26.12.2.6. This test confirmed the conservatism of the analytical method used in the heat-up analysis.

The licensee states that the test was conducted during November 1989 with the plant operating at full power. No auxiliary ventilation was provided. The cabinet doors and the control room doors were closed during the test and no

abnormalities or instrumentation drifting were observed. The initial average control room temperature was 73.5°F. The control room design temperature (thermodynamically controlled) is 75°F ± 5°F (FSAR 9.4.1.2). The licensee goes on to state that the results of this test demonstrated that for a 4-hour period following loss of Heating, Ventilating, and Air Conditioning (HVAC), the control room temperature remained below 84.2°F (average room temperature). The maximum temperature experienced in the control room was 87.5°F.

The licensee states that following an SBO event, power is expected to be restored within a 1-hour period. According to the test results during the first 1-hour period following loss of HVAC, the average temperature in the control room was less than 79.2°F, with a maximum temperature of 82°F, far below maximum allowable limits. The maximum temperature experienced during this 1-hour period was 82°F.

The licensee states that this test was conducted with the plant at 100% power. During an SBO event, the control room heat generating rate is expected to be less than that during 100% power operation since less AC equipment would be able to operate.

The licensee states that their Technical Specifications do not specify a control room temperature limit. However, Station Procedure 331.1 (R.3) indicates a 75°F ± 5°F set point for the local thermostat.

The licensee concludes that based on these test results and based on the conservatism associated with it, that it is not necessary to incorporate any limits into the administrative procedures to maintain the control room temperature at or below the 75°F value used in the control room heat-up analysis or require opening of control room cabinet doors.

The staff requested further information from the licensee with respect to the heat sources surrounding the control room and the outdoor temperature during the test. By telecon of November 19, 1991, and a follow-up letter dated

December 4, 1991, the licensee states that the outdoor temperature during the test was about 48°F at the start of the test and about 42.5°F at the finish. The elevation of the control room is 46'6". The ceiling is insulated and there is another floor above the control room at elevation 63'9". The walls in the control room are surrounded by insulated interior walls and by other rooms except for the north wall, which is partially exposed (about 10') to the outdoor atmosphere.

Staff Evaluation: The staff notes that the control room temperature during the first hour of the test reached a maximum of 82°F based on an initial temperature of 73.5°F and an outdoor temperature ranging from about 42°F to 48°F. The staff has not been able to conclude that the control room temperature could not exceed 120°F if the test were to be performed during a hot summer day. Furthermore, the staff cannot conclude based on the test results that equipment within the control room will operate satisfactorily during an SBO event. Therefore, it is the staff's position that the licensee should establish an administrative procedure to ensure that during normal operation, the control room temperature does not exceed the initial control room temperature used in the heat-up calculation and should include a provision in their station blackout procedures, in accordance with NUMARC 87-00, to open the control room cabinet doors within 30 minutes following the onset of an SBO event.

2.2.2 SE Recommendation: The licensee should verify and confirm that the equipment in the inverter rooms and other areas which have heat generation sources are qualified for the expected heat-up that would occur in these areas during the first hour before the AAC power source is available. Further, the licensee should include all analyses and related information in the supporting documentation that is to be maintained by the licensee for staff review.

Licensee Response: The licensee stated that temperature effects due to heat generated from the inverters in the A & B battery room will be confirmed. The licensee also added that other similar areas will also be reviewed.

Staff Evaluation: The staff interprets this response as a commitment to confirm reasonable assurance of operability of the inverters, and other equipment. The licensee should provide a schedule for implementing this commitment and retain all supporting documentation in the SBO file.

2.3 Containment Isolation: (SE Section 2.3.5)

SE Recommendation: The licensee needs to list and address in an appropriate procedure(s) the containment isolation valves (CIVs) which are normally closed and the CIVs which are normally open and which fail as-is upon loss of AC power and cannot be excluded by the criteria given in Regulatory Guide (RG) 1.155.

The procedure needs to identify the actions necessary to ensure that the valves are fully closed, if needed. The staff's position is that the valve closure needs to be confirmed by position indication (local, mechanical, remote process information, etc.). The licensee should include the above information in the SBO supporting documentation that is to be maintained by the licensee for staff's review.

Licensee Response: The licensee stated that containment isolation requirements were reviewed as part of the Oyster Creek coping assessment to ensure adequate containment integrity during an SBO event. The licensee stated that this review was in accordance with the criteria in RG 1.155, Section 3.2.7.

The licensee further states that the review identified several containment isolation valves that may be in the open position at the onset of an SBO. For these valves, position indication confirmation and/or manual operation, as applicable, will be procedurally implemented, unless satisfactory engineering justification determines it is not necessary.

Staff Evaluation: The staff finds this commitment to be acceptable. The licensee should provide a schedule for implementing this commitment, and retain all supporting documentation in the SBO file.

2.4 Proposed Modifications: (SE Section 2.5)

SE Recommendations: The licensee should include sufficient technical information on the proposed modifications in the SBO supporting documentation that is to be maintained by the licensee for staff review.

Licensee Response: The licensee states that plant modifications in support of SBO Rule compliance will be documented. The licensee also states that this documentation will contain sufficient technical information describing the modifications and will be available for staff review.

Staff Evaluation: The staff finds the licensee's commitment to be acceptable.

2.5 Quality Assurance and Technical Specifications (SE Section 2.6)

SE Recommendation: The licensee should verify that the SBO equipment is covered by an appropriate quality assurance (QA) program consistent with the guidance of RG 1.155. This evaluation should be documented as part of the documentation supporting the SBO Rule response.

Licensee Response: The licensee states that the SBO equipment will be classified and, as applicable, included in an appropriately graded QA program. The licensee further states that the quality assurance program will be consistent with the applicable guidance in RG 1.155.

Staff Evaluation: The staff finds the commitment by the licensee to the QA program to be acceptable. The documentation pertaining to the QA program should be retained by the licensee in the SBO file.

2.6 Emergency Diesel Generator (EDG) Reliability Program (SE Section 2.7)

SE Recommendation: The licensee should provide confirmation and include in the documentation supporting the SBO package that is to be maintained by the licensee that an EDG reliability program meeting the guidance of RG 1.155, Position 1.2, is in place or will be implemented.

Licensee Response: The licensee states that the existing, proceduralized surveillance and maintenance program, including but not limited to deviation reporting, graded root-cause analysis, independent reviews (oversight), etc., is believed to be consistent with the intent of RG 1.155, Section 1.2.

Staff Evaluation: The staff finds the licensee's confirmation to be acceptable.

3.0 Conclusion:

The staff has reviewed the licensee's responses to the staff's SE pertaining to the SBO Rule (10 CFR 50.63). The licensee provided detailed answers to the staff's recommendations. Based on our review of the licensee's responses to the staff's SE, we find the licensee's responses acceptable contingent upon the licensee resolving staff concerns with respect to loss of ventilation (Sections 2.2.1 and 2.2.2 of this SSE). The licensee should submit within 30 days of receipt of this SSE confirmation of the resolution of these items and present a schedule for their implementation in accordance with 10 CFR 50.63(c)(4).

Principal Contributor: C. R. Thomas

Date: February 12, 1992