Enclosure

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)

ENTERGY OPERATIONS, INC.

GRAND GULF NUCLEAR STATION

DOCKET NO. 50-416

1.0 INTRODUCTION

The NRC staff's safety evaluation (SE) pertaining to the Entergy Operations, Inc.'s (the licensee's) response to the Station Blackout (SBO) Rule, 10 CFR 50.63, was transmitted to the licensee by letter dated February 6, 1992. The staff's SE found the licensee's proposed method of coping with an SBO to be incomplete and listed seven recommendations to bring the plant into conformance with the SBO Rule. The licensee responded to the staff's SE by letter from W. T. Cottle dated March 19, 1992.

2.0 EVALUATION

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

2.1 Class 1E Battery Capacity (SE Section 2.2.2)

In the SE, the staff noted that the Division-I battery calculation assumed that, to conserve battery capacity, the reactor core isolation cooling (RCIC) gland seal compressor would be stripped from the battery 30 minutes after the onset of an SBO. Accordingly, the staff recommended the following:

SE Recommendation

The licensee needs to ensure and confirm to the NRC that the stripping of the RCIC gland seal compressor will not adversely affect RCIC operation. The battery calculations should be included with the other documentation that is to be retained by the licensee in support of the SBO submittals.

Licensee Response

The licensee responded that, based on General Electric Specification 21A9526, operation of the RCIC turbine is acceptable without the RCIC gland seal compressor. Section 4.2.2.2.4 of the specification states that the gland containment equipment is not essential for any one single operation of the RCIC turbine. The specification also exempts

the gland containment equipment from use during abnormal ambient conditions. Therefore, the stripping of the RCIC gland seal compressor during SBO conditions will not adversely affect RCIC operation. The licensee also stated that appropriate battery calculations are available for NRC review.

Staff Evaluation

The staff finds the licensee's response to be acceptable.

2.2 Effects of Loss of Ventilation (SE Section 2.2.4)

2.2.1 Cable Room and Upper Cable Spreading Room (SE Section 2.2.4.1)

SE Recommendations

In the SE, the staff recommended that the licensee should a) re-perform its control room and upper cable spreading room heat-up analysis, taking into account the non-conservatism as identified in the SAIC Technical Evaluation Report, and verify the prior conclusion that these room temperatures would not exceed 120°F; and b) revise the plant procedures to require the operators to open the instrument and control cabinet doors within 30 minutes of an SBO event per the guidance described in NUMARC 87-00.

Licensee Response

In its response, the licensee stated that it will re-perform the control room and upper cable spreading room heat-up analysis as recommended in the SE. This re-analysis will be complete by the end of September 1992. The licensee further stated that the Off-Normal Event Procedure for SBO will be revised to open control room panel doors of cabinets containing instrument and control equipment right after the more critical steps required to restore offsite power (manually starting the EDGs from the control room, verifying the scram, verifying primary system parameters, etc.). This procedure will ensure that the doors are opened within 30 minutes of completion of the critical actions.

Note: Subsequent to issuing the SE, the NRC staff clarified its position with respect to the assumed initial temperatures used in the heat-up evaluations during an SBO. The staff position is that the licensee should document the basis and justification for the assumed initial temperatures used in heat-up analysis for the control room and identified dominant areas of concern. Administrative procedures or other controls should be established to maintain the initial temperatures consistent with those used in the heat-up analyses. The basis and justification should be included in the documentation that is to be maintained by the licensee in support of the SBO submittals.

Staff Evaluation

Based on its review and the above-cited licensee's commitments, the staff considers this SE issue related to the effects of loss of ventilation in the control room and upper cable spreading room resolved.

2.2.2 Switchgear/Inverter Room (SE Section 2.2.4.5)

SE Recommendation

In the SE, the staff recommended that the licensee should a) provide the initial room temperature used in the heat-up analysis and b) provide in detail and justify the heat loads used in the analysis. It is the staff's position that the licensee can assume any initial room temperature provided it has an administrative procedure to ensure that the room temperature will not exceed the assumed initial room temperature during normal power operation.

Licensee Response

In the response, the licensee stated that the heat-up calculations do not consider initial room temperature. The evaluation of the switchgear/inverter room heat-up following an SBO is based upon a design basis calculation for loss-of-power and loss-of-coolant-accident (LOCA) conditions. The temperatures are calculated for steady-state conditions without active cooling or forced ventilation of these areas. The steady-state temperature is based only on the heat input into the room from internal electrical heat loads and from the surrounding areas, assuming 95°F outside air temperature and accident conditions for adjacent rooms.

The licensee further stated that the evaluation of heatup in these rooms included all of the heat loads for SBO conditions, plus additional electrical heat loads for LOCA conditions. These additional heat loads are the electrical loads energized during LOCA conditions, including switchgear, load centers, motor control centers, and controls to support equipment required to operate. The LOCA heat loads due to mechanical equipment were excluded in the SBO heat-up evaluation. The only equipment that would be generating heat during SBO would be dc distribution equipment, which is included in the evaluation.

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 switchgear/inverter room resolved.

2.2.3 Drywell (SE Section 2.2.4.6)

SE Recommendation

In the SE, the staff recommended that the licensee should reevaluate the drywell heat-up calculation assuming a heat load which will also include the heat load due to the recirculation pump seal leakage of 36 gpm, and confirm that peak temperature does not exceed 330°F.

Licensee Response

In the response, the licensee stated that it will perform a new drywell heat-up calculation considering Generic Issue 23, Reactor Coolant Pump Seal Leakage, by the end of September 1992. In the interim, the licensee used the existing calculation for a main steamline break to demonstrate that the maximum drywell temperature for the SBO event will be enveloped by the existing worst-case design basis temperature.

Staff Evaluation

Based on its review and the licensee's commitment, the staff finds the licensee's response acceptable and, therefore, considers this SE issue related to the effects of loss of ventilation in the drywell during an SBO event resolved.

2.3 EDG Reliability Program (SE Section 2.6)

SE Recommendation

In the SE, the staff stated that an emergency diesel generator (EDG) reliability program should be developed in accordance with the guidance of Regulatory Guide (RG) 1.155, Section 1.2. Confirmation that such a program is in place or will be implemented should be included in the documentation that is to be maintained by the licensee in support of the SBO submittals.

Licensee Response

The licensee responded that an EDG reliability program that satisfies the SBO requirements will be implemented by December 31, 1992.

3.0 SUMMARY AND CONCLUSION

The staff has reviewed the licensee's response to the staff's February 5, 1992, SE pertaining to the SBO Rule (10 CFR 50.63). We find the licensee's response to be acceptable.

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Date: June 5, 1992