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)

GULF STATES UTILITIES COMPANY

RIVER BEND STATION, UNIT 1

DOCKET NO. 50-458

1.0 INTRODUCTION

The NRC staff's Safety Evaluation (SE) pertaining to the licensee's initial responses to the Station Blackout (SBO) Rule, 10 CFR 50.63, was transmitted to the licensee by letter dated January 16, 1992. The staff found the licensee's proposed method of coping with an SBO to be non-conforming. The licensee was asked to submit a revised response to the SBO Rule which addressed the areas of non-conformance. The licensee responded to staff's SE, and specifically to the recommendations, by letter dated March 20, 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 they do not agree with the licensee's extremely severe weather (ESW) classification of Group "1." The staff further stated that the licensee's calculations are not consistent with the ESW frequency results obtained when using information contained in the plant Updated Safety Analysis Report (USAR). The estimated frequency of loss of offsite power using site specific data contained in the plant USAR, puts the site in ESW "4." The staff classifies the site in ESW Group "4," and hence the AC power design characteristic is "P2." With this determination, in conjunction with EAC Group "C" and an emergency diesel generator (EDG) reliability target of 0.95, the minimum required SBO duration is 8-hours.

SE Recommendation: The SE stated that for reasons stated above, the licensee needs to change the EDG reliability target from 0.95 to 0.975 in order to remain a 4-hour SBO coping duration plant. The EDG target reliability change should be included in the documentation supporting the SBO submittals that is to be maintained by the licensee. 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 response to the above SE issue, the licensee states that it does not concur with SE recommendation. The licensee stated that a 4-hour coping duration with 0.95 as the EDG reliability target is appropriate for River Bend Station (RBS) based on the analysis performed using site specific data for ESW classification of Group "1."

The licensee stated that the ESW classification of Group "1" for the RBS is based on its evaluation using plant specific data. The expected frequency of loss of off-site power due to ESW was evaluated using NUREG/CR-2639 data for the New Orleans Weather Bureau Office, without correcting the data for the reduction of wind speed due to friction over land from New Orleans to the RBS (approximately 90 miles). This uncorrected data indicated that the annual expectation of storms at the RBS site with winds in excess of 125 mph is 6.8 X 10E-4.

Adjustments of the New Orleans data for the reduction of wind speed due to friction over the land yields data which more closely represents the expected winds at the RBS. This correction results in a reduction in the annual expectation of 125 mph winds at the site to 4.866 X 10E-5. This result compares favorably with an independent meteorological analysis of the NUREG data which also adjusted the New Orleans data to the RBS. These site specific results are less than the frequency criteria for an ESW 1 classification provided in NUMARC 87-00 (3.3 X 10E-4), therefore, RBS was classified as an ESW Group "1" site with a resulting AC power design characteristic of "P1."

The licensee stated that the USAR data used by SAIC is not entirely indicative of ESW conditions, and use of this data alone to predict the frequency of 125 mph winds will significantly overestimate the expected frequency.

Based on above, the licensee determined that their original submittal was correct in stating that RBS is a 4-hour coping plant with an EDG target reliability of 0.95.

Staff Evaluation: Based on its review, the staff agrees with the licensee that a 4-hour coping duration with 0.95 EDG target reliability is appropriate for RBS. This determination is based on the ESW classification of Group "2." The ESW classification of Group "2" for RBS is based on the analysis performed by the licensee using NUREG/CR-2639 data for the New Orleans Weather Bureau Office without adjustment to the RBS. The staff is concerned not only with conditions at the plant site, but also the surrounding area where the plant's transmission lines are located. Therefore, the staff concludes that the RBS is classified as ESW Group "2," with a resulting AC power design characteristic of "P1." With either an ESW 1 or ESW 2 classification, the RBS qualifies as a 4-hour coping plant with an EDG target reliability of 0.95.

2.2 Station Blackout Coping Capability (SE Section 2.2)

SE Recommendation: The licensee needs to conform to the 4-hour coping duration by increasing the EDG reliability target from 0.95 to 0.975. Otherwise, the licensee needs to reevaluate the plant for an 8-hour coping duration and the supporting analyses should be submitted for NRC review.

Licensee Response: The licensee stated that they do not concur with this recommendation for reasons provided in response to Station Blackout Duration (SSE Section 2.1).

Staff Evaluation: Refer to Section 2.1 above.

2.3 Class 1E Battery Capacity (SE Section 2.2.2)

SE Recommendation: The licensee needs to ensure that reactor core isolation cooling (RCIC) loads are consistent with or bound the expected load profile during an SBO event since any change in RCIC operation will directly impact the loading calculations and alter the battery capacity adequacy.

Licensee Response: In response to the above concern, the licensee stated that the RCIC loads used in the class 1E battery capacity calculations are consistent with RCIC system operation following an SBO.

Staff Evaluation: Based on its review, the staff finds the SE issue resolved since the RCIC loads are considered conservatively in the battery capacity calculation.

2.4 Effects of Loss of Ventilation (SE Section 2.2.4)

SE Recommendations: The licensee should (1) provide additional information and/or technical justification for the initial conditions and assumptions used in the heat-up analysis for each area of concern, (2) with regard to the computer code, provide detailed information to address the staff's concerns as discussed in the above evaluation, and (3) re-perform the heat-up analysis for each area of concern taking into account the non-conservatisms as identified in the SAIC TER.

Licensee Response: The licensee provided detailed responses for each of the above items recommended by the staff. In summary, the licensee provided detailed justifications for the use of the assumptions and initial conditions for the heat-up calculations. Three computer codes were used in the RBS SBO analysis: (1) CONSBA for containment analysis, (2) THREED for the auxiliary building and control room, and (3) COMPARE for the battery rooms, switchgear rooms, and DC equipment rooms (all located in the control building). These computer codes were accepted for use by the NRC in other nuclear safety-related applications. The THREED and CONSBA programs are documented in the RBS USAR. The COMPARE code was developed by the Los Alamos Laboratory for the staff. The licensee found no appreciable impact to calculation results when sensitivity cases were run to test the potential non-conservatisms discussed in the SAIC TER.

Staff Evaluation: Based on its review, the staff finds the licensee's responses acceptable and, therefore, considers this SE issue related to the effects of loss of ventilation during an SBO event of 4-hour duration at the River Bend plant resolved.

2.5 Proposed Modification (SE Section 2.4)

SE Recommendation: The licensee needs to clarify whether the removal of control room ceiling tiles will be a permanent modification or an operator action covered by an appropriate SBO procedure.

Licensee Response: In response to the above concern, the licensee stated that RBS Operations Department has been advised of the need to incorporate this operator action into Abnormal Operating Procedure (AOP)-0050.

Staff Evaluation: The staff accepts the licensee's statement. However, the licensee needs to provide a schedule to implement the operator action to remove control room ceiling tiles into AOP-0050.

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 January 16, 1992. The staff found the licensee's proposed method of coping with an SBO to be non-conforming. The licensee was asked to submit a revised response to the SBO Rule which addresses the areas of non-conformance. The licensee's response to each of the staff's recommendations has been evaluated in this Supplemental Safety Evaluation (SSE) and found to be acceptable.

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Date: June 11, 1992