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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

SUBJECT: Waterford Steam Electric Station Unit Number 3
Docket Number 50-382
Response to Station Blackout Rule For Plants Using AC
Independent Station Blackout Response Power

REFERENCE: NRC Letter from Ashok C. Thadani to William H. Rasin, NUMARC,
dated October 7, 1988

Gentlemen:

On July 21, 1988, the Nuclear Regulatory Commission (NRC) amended its regulations in 10 C.F.R., Part 50. A new section, 50.63, was added which requires that each light-water-cooled nuclear power plant be able to withstand and recover from a station blackout (SBO) of a specified duration. Utilities are expected to have the baseline assumptions, analyses, and related information used in their coping evaluation available for NRC review. It also identifies the factors that must be considered in specifying the station blackout duration. Section 50.63 requires that, for the station blackout duration, the plant be capable of maintaining core cooling and appropriate containment integrity. Section 50.63 further requires that each licensee submit the following information:

- A. A proposed station blackout duration including a justification for the selection based on the redundancy and reliability of the onsite emergency AC power sources, the expected frequency of loss of offsite power, and the probable time needed to restore offsite power;
- B. A description of the procedures that will be implemented for station blackout events for the duration (as determined in A above) and for recovery therefrom; and
- C. A list and proposed schedule for any needed modifications to equipment and associated procedures necessary for the specified SBO duration.

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The NRC has issued Regulatory Guide 1.155 "Station Blackout" which describes a means acceptable to the NRC Staff for meeting the requirements of 10 C.F.R. 50.63. Regulatory Guide (RG) 1.155 states that the NRC staff has determined that NUMARC 87-00 "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout At Light Water Reactors" also provides guidance that is in large part identical to the RG 1.155 guidance and is acceptable to the NRC Staff for meeting these requirements.

Table 1 to RG 1.155 provides a cross-reference between RG 1.155 and NUMARC 87-00 and notes where the RG takes precedence.

Louisiana Power & Light has evaluated the Waterford SES Unit No. 3 against the requirements of the SBO rule using the guidance from NUMARC 87-00 except where RG 1.155 takes precedence. The results of this evaluation are detailed below, (Applicable NUMARC 87-00 sections are shown in parenthesis).

A. Proposed Station Blackout Duration

NUMARC 87-00, Section 3, was used to determine a proposed SBO duration of four hours. No plant modifications were required to attain this proposed coping duration category.

The following plant factors were identified in determining the proposed station blackout duration;

1. AC Power Design Characteristic Group is P2 based on:
 - a. Expected frequency of grid-related LOOPS - does not exceed once per 20 years (Section 3.2.1, Part 1A, p. 3-3);
 - b. Estimated frequency LOOPS due to extremely severe weather places the plant in ESW Group 3 (Section 3.2.1, Part 1B, P.3-4);
 - c. Estimated frequency of LOOPS due to severe weather places the plant in SW Group 1 (Section 3.2.1, Part 1C, p. 3-7);
 - d. The offsite power system is in the I3 group (Section 3.2.1, Part 1D, p. 3-10);
2. The emergency AC power configuration group is "C" based on:
(Section 3.2.2, Part 2C, p. 3-13);
 - a. There are two (2) emergency AC power supplies not credited as alternate AC power sources (Section 3.2.2, Part 2A, p. 3-15);

- b. One (1) emergency AC power supply is necessary to operate safe shutdown equipment following a loss of offsite power (Section 3.2.2, Part 2B, p. 3-15).
3. The target EDG reliability is 0.975.
 - a. A target EDG reliability of 0.975 was selected based on having a nuclear unit average EDG reliability for the last 50 demands greater than 0.94 consistent with NUMARC 87-00, Section 3.2.4.

B. SBO Procedure Description

Plant procedures have been reviewed and modified to meet the guidelines in NUMARC 87-00, Section 4, in the following areas:

1. AC power restoration per NUMARC 87-00, Section 4.2.2; LP&L Emergency Procedures for Restoration of Offsite Power to Waterford 3
2. Severe weather per NUMARC 87-00, Section 4.2.3; OP-901-045 - Severe Weather and Flooding

Plant procedures have been reviewed and changes necessary to meet NUMARC 87-00 will be implemented in accordance with 10CFR50.63 in the following area:

1. Station blackout response per NUMARC 87-00, Section 4.2.1; OP-902-005 - Degraded Electrical Distribution Recovery Procedure

C. Proposed Modifications and Schedule

The ability of Waterford SES Unit No. 3 to cope with a station blackout for four hours in accordance with NUMARC 87-00, Section 3.2.5, and as determined in "Section A" above, was assessed using NUMARC 87-00, Section 7, with the following results:

1. Condensate Inventory for Decay Heat Removal (Section 7.2.1)

It has been determined from Section 7.2.1 of NUMARC 87-00 that approximately 80,000 gallons of water are required for decay heat removal for four hours (NUMARC 87-00, Section 3.2.5). The minimum permissible condensate storage tank level per technical specifications provides 170,000 gallons of water, which exceeds the required quantity for coping with a four-hour station blackout.

2. Class 1E Battery(ies) Capacity (Section 7.2.2)

A battery capacity calculation verifies that the Class 1E batteries have sufficient capacity to meet station blackout for four hours assuming loads not needed to cope with a station blackout are stripped. These loads are identified in plant procedures.

3. Compressed Air (Section 7.2.3)

Air-operated valves relied upon to cope with a station blackout for four hours can either be operated manually or have sufficient backup sources independent of the preferred and blacked out unit's Class 1E power supply. Valves requiring manual operation or that need backup sources for operation are identified in plant procedures.

4. Effects of Loss of Ventilation (Section 7.2.4)

a. FOR PWR

The calculated steady state ambient air temperature for the steam driven EFW pump room (the dominant area of concern for a PWR) during a station blackout induced loss of ventilation is 90°F.

b. Control Room Complex for PWR

The assumption in NUMARC 87-00, Section 2.7.1, that the control room will not exceed 120°F during a station blackout has been assessed.

The control room at Waterford SES unit No. 3 does not exceed 120°F during station blackout. Therefore, the control room is not a dominant area of concern;

Reasonable assurance of the operability of station blackout equipment in the above dominant areas(s) of concern has been assessed using Appendix F to NUMARC 87-00 or the Topical Report. No modifications or associated procedures are required to provide reasonable assurance for equipment operability.

5. Containment Isolation (Section 7.2.5)

The plant list of containment isolation valves has been reviewed to verify that valves which must be capable of being closed or that must be operated (cycled) under station blackout conditions can be positioned (with indication) independent of the preferred and blacked-out unit's Class 1E power supplies. No plant modifications or associated procedure changes were determined to be required to ensure that appropriate containment integrity can be provided under SBO conditions.

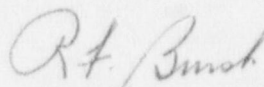
6. Reactor Coolant Inventory (Section 2.5)

The ability to maintain adequate reactor coolant system inventory to ensure that the core is cooled has been assessed for four hours. A plant-specific analysis was used for this assessment. The expected rates of reactor coolant inventory loss under SBO conditions do not result in core uncover in a SBO of four hours. Therefore, makeup systems in addition to those currently available under SBO conditions are not required to maintain core cooling.

The information provided in this letter is in accordance with a standard level of detail recommendation provided by the Nuclear Utility Group on Station Blackout (NUGSBO) and the Nuclear Utility Management Resource Council (NUMARC) and which LP&L understands has been reviewed and concurred with by the NRC as documented in the referenced letter.

Please contact me or Robert J. Murillo should there be any questions concerning this letter.

Yours very truly,



R.F. Buraki
Manager
Nuclear Safety & Regulatory Affairs

RFB/RJM/ssf

cc: E.L. Blake, W.M. Stevenson, J.A. Calvo, D.L. Wigginton, R.D. Martin,
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