UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

STATION BLACKOUT RULE

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE, UNITS 1 AND 2

DOCKET NOS. 50-335 AND 50-389

1.0 INTRODUCTION

On July 21, 1988, the Code of Federal Regulations, 10 CFR Part 50, was amended to include a new Section 50.63, entitled "Loss of All Alternating Current Power" (Station Blackout). The station blackout (SBO) rule requires that each light-water-cooled nuclear power plant be able to withstand and recover from an SBO of a specified duration. The SBO rule also requires licensees to submit information as defined in Part 50.63 and to provide a plan and schedule for conformance to the SBO rule. The SBO rule further requires that the baseline assumptions, analysis and related information be available for NRC review. Guidance for conformance to the SBO rule is provided by (1) Regulatory Guide (RG) 1.155, Station Blackout, (2) NUMARC 87-00, Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors, and (3) NUMARC 87-00 Supplemental Questions/Answers and Major Assumptions dated December 27, 1989 (issued to the industry by NUMARC* January 4, 1990).

To facilitate the NRC staff's (hereafter referred to as staff) review of licensee responses to the SBO rule, the staff endorsed two generic response formats. One response format is for use by plants proposing to use an alternate AC (AAC) power source, and the other format is for use by plants proposing an AC independent response. The generic response formats provide the staff with a summary of the results from the licensee's analysis of the plant's SBO coping capability. The licensees are expected to verify the accuracy of the results and maintain documentation that supports the stated results.

Compliance to the SBO rule is verified by a review of the licensee's submittal, an audit review of the supporting documentation as deemed necessary, and possible NRC follow-up inspections to ensure that the licensee has implemented the appropriate hardware and/or procedure modifications that will be required to comply with the SBO rule.

Staff review of SBO submittals can be limited to a review of the licensee's submittal and need not include a concurrent site audit review of the supporting documentation. However, a limited number of site audit reviews were performed to obtain a benchmark for licensee conformance with the documentation requirements of the SBO rule. St. Lucie was one of the plants selected by the NRC for a site audit review.

*Nuclear Management and Resources Council, Inc.

The licensee's responses to the SBO rule were provided by letters from W. F. Conway and D. A. Sager to U. S. Nuclear Regulatory Commission, dated April 17, 1989, and March 7, 1990, respectively. The licensee's responses were reviewed by Science Applications International Corporation (SAIC) under contract to the NRC. The site audit was performed by a joint NRC/SAIC team headed by an NRC staff member on October 17-19, 1989. The results of the review and site audit are documented by an SAIC Technical Evaluation Report (TER) SAIC-89/1643, "St. Lucie, Unit 1, Station Blackout Evaluation," dated August 17, 1990 (attached).

Based on the licensee's responses and the SAIC TER, an SE was prepared and transmitted as a draft SE to the licensee on November 21, 1990. The licensee responded to the draft SE by letter dated December 21, 1990, and in a meeting with the staff on May 21, 1991. This SE, a revision of the initial SE, reflects the licensee-staff interactions that have occurred since the draft SE was issued.

Paragraph (b) of 10 CFR 50.63 exempts certain plants from the requirement to submit information in response to the SBO rule if the capability to withstand an SBO was specifically addressed in the operating license proceeding and was specifically approved by the NRC. St. Lucie Unit 2 meets this requirement because the issue of SBO was considered by the Atomic Safety Licensing Appeal Board (ALAB-603) and a plant-specific analysis (UFSAR Section 15.10) was performed by the licensee which demonstrated that the plant could successfully withstand a complete loss of all AC power for at least 4 hours. Therefore, this review is limited to St. Lucie Unit 1, except Section 3 which describes how the St. Lucie Unit 1 EDGs can be used to support an SBO in Unit 2 under the licensee's operating procedures.

2.0 ST. LUCIE UNIT 1 EVALUATION

After reviewing the licensee's SBO submittals and the SAIC TER and in consideration of the information obtained by the NRC staff during the site audit review, the staff concurs with the conclusions as identified in the SAIC TER (refer to the attachment for details of the review). Based on this review, the staff findings and requests are summarized as follows.

2.1 Station Blackout Duration

The licensee initially calculated a minimum acceptable SBO duration of 4 hours based on a plant AC power design characteristic group "P2," an emergency AC (EAC) power configuration Group "A," and a target EDG reliability of 0.95. The target EDG reliability is based on each EDG having a reliability greater than 0.95 over the last 100 demands. The "P2" grouping is based on an independence of AC offsite power classification of Group "I2," a severe weather (SW) classification of Group "1" and an extremely severe weather (ESW) classification of Group "4."

For the reasons discussed in the attached SAIC TER, the staff disagrees with the licensee's determination of several of the items used to determine the required SBO duration. If the start-up transformers do not have the capacity requirement to supply the loss of offsite power (LOOP) loads of one division

of both units, the classification of the independence of offsite power would be Group I3. However, this alone does not change the "P" classification or the required coping duration. The staff classifies the ESW as Group 5 instead of ESW Group 4, which results in a plant AC power design characteristic Group "P3*." Also, the staff classifies the EAC Power configuration as Group "C." Based on these characteristics, the required coping duration is 8 hours for an EDG reliability target of 0.95, or 4 hours for an EDG reliability target of 0.975.

During the May 21, 1991, meeting with the NRC staff, the licensee agreed to accept the staff's I3 independence of AC offiste power classification and an 8-hour coping duration.

2.2 Alternate AC (AAC) Power Source

The licensee has proposed using the existing EDGs in the non-blackout (NBO) Unit 2 as an AAC power source to operate systems necessary for the required SBO coping duration and recovery therefrom.

2.2.1 General staff position on AAC power sources

The definition in 10 CFR §50.2, RG 1.155 and NUMARC 87-00 define the AAC power source in terms of four attributes: (1) connections to the offsite or the onsite AC power systems, (2) minimum potential for common cause failure with offsite power or the onsite emergency AC power sources, (3) timely availability, and (4) required capacity and reliability. More specifically, in regard to the fourth attribute, the definition reads as follows:

> "(4) Has sufficient capacity and reliability for operation of all systems required for coping with station blackout and for the time required to bring and maintain the plant in safe shutdown (non-design basis accident)."

In view of the variety of types, capacities and capabilities of power sources proposed as AAC sources by various licensees, the staff has characterized proposed AAC power sources as being either optimum, fully capable or partially capable. This characterization, which relates only to the capacity attribute cited above, was necessary in order to facilitate the staff review of licensee responses to the SBO rule. It does not invalidate or revoke any of the requirements or guidance applicable to AAC power sources.

An optimum AAC power source design is one that is capable of powering simultaneously both safety trains of normal safe shutdown systems and equipment. Such a design, following actuation of the AAC source, would provide completely redundant normal safe shutdown capability during an SBO and recovery therefrom from the main control room.

A fully capable AAC power source design is one that is capable of powering at least one complete safety train of normal safe shutdown systems and equipment. This includes decay heat removal, battery charging, HVAC (heating, ventilation and air conditioning), emergency lighting, and the associated controls and instrumentation. Thus, although redundant capability is not available, a fully capable AAC source would enable attainment of safe shutdown during an SBO and recovery therefrom from the main control room.

A minimally capable AAC power source design is one that is not capable of powering all (or any) normal safety train related safe shutdown equipment; but it is capable of powering specific equipment that, in conjunction with extensive manual operator actions both inside and outside of the control room, is critical for attaining safe shutdown during an SBO. Appendix R diesels proposed as an AAC source are examples of minimally capable AAC sources. With this design, operability of the main control room could not be assured, unless the batteries were sized to operate for the SBO duration, or battery charging capability was provided by the AAC source.

2.2.1.1 EDGs used as AAC power sources

The guidance on the use of existing emergency diesel generators (EDGs) at multi-unit sites as AAC power sources is documented in the SBO rule, 10 CFR §50.63, RG 1.155 Position C.3.3.5 and NUMARC 87-00 (Section 2.3.1(3)). This guidance is further explained in NUMARC 87-00 Supplemental Questions and Answers dated December 27, 1989, under questions 3.4 and B.3. The SBO rule states:

> "At multi-unit sites, where the combination of emergency ac power sources exceeds the minimum redundancy requirements for safe shutdown (non-DBA) of all units, the remaining emergency ac power sources may be used as alternate ac power sources provided they meet the applicable requirements."

The rule statement requires minimum redundancy. This means that in order to qualify as an AAC source, there must be an EDG available in the NBO unit that is in addition to the number of EDGs required to meet the minimum EDG redundancy requirement for powering a normal safe shutdown for a LOOP event. Thus, the EDGs in a two-unit site with two dedicated EDGs per unit would not qualify as AAC sources because the two EDGs per unit just meet the minimum redundancy requirement, i.e., there is no excess EDG.

However, there are some plants at two-unit sites which just meet minimum redundancy but where each EDG is of sufficient capacity to fully power all the normal LOOP loads of the NBO unit, and also has sufficient excess capacity for powering the required safe shutdown loads of the SBO unit. In recognition of the existence of this type of situation, the staff has interpreted the excess EDG redundancy requirement of the SBO rule to allow EDGs just meeting the minimum EDG redundancy requirements to qualify as AAC sources on the basis of excess capacity, provided the other applicable requirements for AAC sources are also met.

The NRC's basic position on the use of EDGs as AAC power sources on the basis of excess capacity is that such excess capacity should not be attained by load shedding in the NBO unit which results in a degradation of its normally available safe shutdown capability for the LOOP condition. Any actions that would add to the burden of operators that are already in a high stress environment, such as load switching or disablement of information readouts or alarms in the control room, are considered to be a degradation of normal safe

shutdown capability for LOOP in the NBO unit. Therefore, the staff position is that the normal equipment compliment should remain available with adequate EDG capacity for use should it become necessary. The NBO unit should have the capability for hot shutdown/hot standby, forced cooling, cooldown and depressurization as required. While additional events are not explicitly being postulated, it is not prudent to diminish the capability of the NBO unit to mitigate problems should they arise. It is not in the interest of safety to reduce the capability to handle various eventualities in one unit for the purpose of meeting the SBO rule in another unit. Each unit must meet the SBO rule on its own merits without reducing another unit's capability to respond to its own potential problems.

Therefore, a multi-unit site with the dedicated EDGs just meeting the minimum redundancy requirement but not having the excess capacity defined above for qualifying as an AAC source does not meet the SBO rule AAC source option requirements. Further measures are required, such as a separate AAC source or a coping analysis which shows the plant can cope with and recover from SBO for the required duration.

2.2.1.2 Connectability of AAC power sources

The basic criteria governing the connectability of an AAC power source are contained in 10 CFR 50.2 (the AAC source should be connectable to but normally not connected to the offsite or onsite emergency AC power systems), 10 CFR 50.63 (SBO should not assume a concurrent single failure or design basis accident), and in Appendix A of 10 CFR Part 50 (the single failure criterion and the independence requirements apply to the non-blackout [NBO] unit). Therefore, in a one-unit site, as a minimum, an AAC source need only be connectable to one set of safe shutdown equipment, regardless of whether that equipment is part of a safety train or not.

However, at a two (or more) unit site where the EDGs meet the AAC source excess redundancy or excess capacity criterion, one intertie circuit between units is acceptable provided it is separately connectable to each safety (EDG) bus in both units. This follows from the application of the above criteria and the assumptions that must be taken that an SBO can occur in either unit, and that the single failure in the NBO unit can be on either one of its EDGs or on its respective safety bus.

2.2.2 Proposed AAC power source

The St. Lucie Plant is a two-unit site with two dedicated EDGs to each unit. The licensee proposes to install a 4160V connection between safety busses 1AB of Unit 1 and 2AB of Unit 2 (see SAIC TER Figure 1 for details) to permit one of the EDGs of the NBO unit to be used as an AAC source for the blacked-out unit. Either of the two EDGs of one unit can be connected to either of the safety busses of the other unit. The licensee stated that each of the Unit 2 EDGs has sufficient capacity to power the required loads of both units. In support of this, the licensee provided (during the site audit review) the NBO loads (Unit 2) as 1954kW and SBO loads (Unit 1) as 897kW (i.e., total EDG loading of 2851kW). The AAC power source would be available to power the loads within 10 minutes following the confirmation that an SBO has occurred.

The licensee has committed to performing a test to demonstrate that the AAC power source can power the SBO bus within 10 minutes following confirmation that an SBO has occurred.

The staff finds that the licensee evaluation of LOOP loads (NBO unit) is not consistent with the staff position stated above (Section 2.2.1.1), since loads such as the motor-driven auxiliary feedwater pump, residual heat removal pump, instrument air compressor, etc., were not included in the LOOP loads.

Therefore, to assess whether the Unit 2 EDGs have true excess capacity to qualify as an AAC power source for Unit 1 in accordance with the above-stated guidance, the staff referred to the St. Lucie UFSAR. The attachment (SAIC TER) documents the LOOP loads of the Unit 2 (NBO unit) as 2802.5kW (based on Table 8.3-2 of the Unit 2 UFSAR) and the corrected SBO loads of the Unit 1 (SBO unit) as 1133.5kW. This tabulation indicates a total load of 3936kW for the NBO and SBO unit which is essentially equal to the 3935kW (2000HR) rating of each of the Unit 2 EDGs. This indicates that the Unit 2 EDGs qualify as AAC sources for Unit 1 on the basis of excess capacity. The staff finds that the AAC power source for St. Lucie Unit 1 satisfies the connectability requirements of Section 2.2.1.2, and falls into the fully capable category as discussed in Section 2.2.1. The staff acknowledges the licensee's request for a load limit equal to the 200 HR rating of the EDGs. However, for SBO loads, the staff requires 2000 HR load rating for all AACs.

The qualification of the EDGs as excess capacity EDGs in accordance with the SBO rule guidance does not imply that the EDGs are required under emergency operating procedures to power loads not considered to be needed by the licensee during a specific SBO event. The qualification of the EDGs as excess capacity EDGs implies only that the EDGs have the capacity to power such loads as the motor-driven auxiliary feedwater pump and residual heat removal pump, if the need should arise.

2.3 Station Blackout Coping Capability

The characteristics of the following plant systems and components were reviewed to assure that the systems have the availability, adequacy, and capability to achieve and maintain a safe shutdown and recover from the SBO for an 8 hour coping duration.

2.3.1 Condensate inventory for decay heat removal

The licensee's Technical Specifications require a minimum condensate storage tank (CST) level of 116,000 gallons in Unit 1 and 307,000 gallons in Unit 2. Using NUMARC 87-00 methodology, approximately 62,000 gallons are required to cope with an SBO for 4 hours. During the course of the review, SAIC performed a conservative independent analysis which indicates that approximately 98,000 gallons of condensate would be required for either unit during an 8-hour SBO event. In either case, the CST capacity exceeds the required condensate inventory. Therefore, the staff concludes that there is sufficient condensate water to cope with an SBO of 8 hours. In addition, the excess inventory available in the CST is available for SBO recovery.

2.3.2 Class 1E battery capacity

The AAC source will be available to power the battery chargers in approximately 10 minutes. Battery capacity adequacy is not considered to be a concern under these conditions and the licensee was not required to perform any additional calculations to meet the requirements of the SBO rule.

2.3.3 Compressed air

The licensee has stated that air-operated valves needed to cope with an SBO are supported by air compressors which will be powered by an AAC source. The AAC source will be available within 10 minutes of an SBO to power the bus from which the air compressors are supplied. Therefore, the staff concludes that there is reasonable assurance that such valves will remain operable.

2.3.4 Effects of loss of ventilation

The licensee did not perform any calculations pertaining to loss of ventilation since the AAC source will be available within approximately 10 minutes to power the necessary ventilation equipment. However, not all ventilation equipment will be powered by the AAC source during an SBO. The licensee indicated that additional studies will be made to assure that these areas will not overheat during an SBO.

Request: The licensee should complete the ventilation studies and include the studies and the results in the documentation supporting the SBO submittal that is maintained by the licensee. The licensee should implement any procedure changes and modifications that are required to assure adequate ventilation is maintained, in the areas containing SBO equipment, for the required coping duration.

2.3.5 Containment isolation

The licensee did not address containment isolation since the AAC source will be available to power one of the blacked-out unit safety busses within approximately 10 minutes. The licensee was not required to address containment isolation if the AAC source is available within 10 minutes. Since power is available to one division of safe shutdown equipment, it is assumed that the AAC source provides power to the appropriate isolation valves to assure containment integrity during an SBO.

2.3.6 Reactor coolant inventory

The licensee plans to use one charging pump to maintain reactor coolant inventory. The charging pump has a capacity of 44 gpm and will be powered by the AAC. The AAC source will be available within 10 minutes following an SBO. Although the licensee requested that a 16 gpm leakage rate be used, as explained in the attached TER, the staff assumed a leakage rate of 112 gpm based on data from similar plants. If this assumption is correct, the staff agrees with the conclusion reached in the TER that for a net loss of 68 gpm, there is reasonable assurance that the reactor core will be covered during an SBO of 8 hours.

Request: The licensee should evaluate and confirm that there will be adequate reactor coolant system inventory to ensure continued core cooling for the required 8-hour SBO duration and recovery therefrom with an assumed leakage rate of 112 gpm, and include this information in the documentation supporting the SBO submittal that is maintained by the licensee.

2.4 Procedures and Training

The licensee has committed to the issuance of new and revised procedures, including the associated training required to implement the procedures.

The proposed procedural and training modifications were not reviewed in detail but the staff expects the licensee to maintain these procedures to ensure an appropriate response to an SBO event.

2.5 Proposed Modifications

As discussed in paragraph 2.2 above, the licensee is adding a 4160V cross-tie between the safety busses of Units 1 and 2 so that one of the two EDGs of Unit 2 can be used as an AAC source for an SBO in Unit 1. This 4160V cross-tie will have sufficient capacity to power the shutdown loads of the SBO unit and will be installed underground or be within buildings such that it will not be exposed to weather-related events. Physical separation of the cross-tie will conform with the separation criteria of the plant's licensing basis. The licensee stated that procedure changes will be completed within 2 years of the notification from the NRC staff per 10 CFR 50.63(c)(3). The staff finds that the proposed modification serves as a part of the AAC source implementation and meets the applicable guidelines of RG 1.155 and NUMARC 87-00, Appendix B.

Request: The licensee should provide a full description, including the nature and objectives, of the required procedure changes identified in 2.4 and 2.5 above in the documentation supporting the SBO submittals that is to be maintained by the licensee.

2.6 Quality Assurance And Technical Specifications

The licensee has committed to incorporate all equipment used to cope with an SBO and not covered by current QA programs into a QA program that meets the guidance of RG 1.155, Appendix A. The staff finds this to be acceptable.

Technical Specifications for the SBO equipment are currently being considered generically by the NRC in the context of the Technical Specification Improvement Program and remains an open item at this time. However, the staff expects the plant procedures to reflect the appropriate testing and surveillance requirements to ensure the operability of the necessary SBO equipment. When the staff later determines that TS regarding the SBO equipment are warranted, the licensee will be notified of the implementation requirements.

2.7 EDG Reliability Program

The licensee's submittal on SBO did not specifically address the commitment to implement an EDG reliability to conform to the guidance of RG 1.155, Position 1.2. However, during the site audit review, the licensee stated that their reliability program would meet these guidelines.

Request: The licensee should confirm that an EDG reliability program which meets the guidance of RG 1.155, Section 1.2, will be implemented. Confirmation that such a program is in place or will be implemented should be included in the documentation supporting the SBO submittals that is to be maintained by the licensee.

2.8 Scope of Staff Review

The SBO rule (10 CFR 50.63) requires licensees to submit a response containing specifically defined information. It also requires utilities ". . . to have baseline assumptions, analyses, and related information used in their coping evaluations available for NRC review." The staff and its contractor (SAIC) did not perform a detailed review of the proposed hardware and procedural modifications which are scheduled for later implementation. However, based on our review of the licensee's supporting documentation and the SBO audit, we have identified the following areas for focus in any follow-up inspection or assessment that may be undertaken by the NRC to verify conformance with the SBO rule. Additional items may be added as a result of the staff review of the actions taken by the licensee in response to this SE.

a. Hardware and procedural modifications,

b. SBO procedures in accordance with RG 1.155, Position 3.4, and NUMARC 87-00, Section 4,

c. Operator staffing and training to follow the identified actions in the procedures,

d. EDG reliability program meets, as a minimum, the guidelines of RG 1.155,

e. Equipment and components required to cope with an SBO are incorporated in a QA program that meets the guidance of RG 1.155, Appendix A,

f. Review of the heating and ventilation calculations when they are completed for the dominant areas of concern during an SBO to assure that the systems and equipment therein are operable under the SBO conditions, and

g. Actions taken pertaining to the specific recommendations noted in this SE.

3.0 ST. LUCIE UNIT 2 SBO WITHSTAND CAPABILITY

As noted in Section 1.0 of this SE, paragraph (b) of 10 CFR 50.63 exempts certain plants from the requirement to submit information in response to the SBO rule if the capability to withstand SBO was specifically addressed in the operating license proceeding and was specifically approved by the NRC. St. Lucie Unit 2 meets this requirement because the issue of SBO was considered by the Atomic Safety Licensing Appeal Board (ALAB-603) and a plant-specific analysis (UFSAR Section 15.10) was performed by the licensee which demonstrated that the plant could successfully withstand a complete loss of all AC power for at least 4 hours. In the context of the SBO rule this would constitute a coping analysis independent of AC power. The analysis methodology and results are fully described in ALAB-603, 12 NRC at Pages 44-65.

The methodology for determination of the SBO duration is not identical to the methodology prescribed by the corresponding guidance for the SBO rule (Position 3.1 of RG 1.155, or Section 3.0 of NUMARC 87-00). However, the two methodologies are considered to be essentially equivalent since they are derived from the same fundamental basis and differ only in format.

The determination of the 4-hour SBO duration for St. Lucie Unit 2 was based on a probabilistic/statistical calculation which combined the probabilities of loss of offsite power and both EDGs, and the probabilities of not being able to restore either of these sources of AC power within 4 hours. The probability values used in this calculation were based on historical experience data at the St. Lucie site. The combined probability of failure of both EDGs provided by the licensee was 7E-4. Assuming complete independence, this reduces to a 2.6E-2 failure probability for each EDG, or an equivalent average reliability of 0.974. The target EDG reliability for St. Lucie Unit 2 required to support the 4-hour SBO duration established during the operating license proceeding is therefore 0.974; and this is essentially identical to the 0.975 target for the EDGs of both units that is required to establish a 4-hour SBO duration for St. Lucie Unit 1 as cited in Section 2.1.

Conformance to the SBO rule for St. Lucie Unit 1 is attained by utilizing the Unit 2 EDGs as an AAC source. The Unit 2 EDGs qualify as AAC sources on the basis of excess capacity, as noted in Section 2.2.2. The St. Lucie Unit 1 EDGs are smaller (3500 kW continuous) and would not qualify as AAC sources for an SBO on Unit 2 on the basis of excess capacity. However, an acceptable cross-tie between the units would be available and, although not qualifying as AAC sources, the Unit 1 EDGs do have substantial capacity (650 kW) above their normal LOOP shutdown load which can be used to power some SBO loads in Unit 2, e.g., battery charging or some HVAC, and a charging pump which would significantly improve SBO coping capability in Unit 2.

In summary, the staff concludes that (1) the SBO withstand capability analysis performed for St. Lucie Unit 2 during the license proceeding was essentially equivalent to the coping analysis that would have been required under the SBO rule, and (2) the added intertie between Units 1 and 2 with consequent availability of AC power assist from the Unit 1 EDGs provides additional support for coping with an SBO in Unit 2.

Although the staff concludes that the St. Lucie Unit 1 EDGs do not have sufficient capacity to qualify as excess capacity EDGs in accordance with the SBO rule guidance, this does not restrict the use of the EDGs under emergency operating procedures to power loads on Unit 2 as well as loads on Unit 1 during an SBO on Unit 2. The division of the loads between the two units may be in accordance with the emergency operating procedures.

Request: The licensee is expected to maintain the reliability of the Unit 2 EDGs at 0.974 or greater in accordance with the licensing basis for Unit 2 in regard to the SBO issue. The licensee is also encouraged to update the SBO coping procedures for Unit 2 to incorporate the enhanced capability provided by the AC intertie between Units 1 and 2.

4.0 SUMMARY AND CONCLUSIONS

The staff has reviewed the licensee's responses to the SBO rule (10 CFR 50.63) and the TER prepared by the staff's consultant, SAIC. The staff and SAIC also jointly conducted a site audit review of the supporting documentation for the SBO response. Based on our review, the additional analyses and other acceptance conditions provided in this SE should be completed. These include evaluation of the heat-up calculations in the identified areas containing SBO equipment and systems to ensure that these areas will not exceed equipment operability limits; evaluation of RCS inventory to ensure continued core cooling for the required duration and recovery therefrom; and confirmation that an EDG reliability program will be implemented that meets the guidance of RG 1.155, Section 1.2.

The licensee should maintain these analyses and other documentation supporting the SBO submittal available for further inspection and assessment as may be undertaken by the NRC to further verify conformance with the SBO rule.

Based on our review of the submittals and site audit, we find the licensee's design and proposed method of dealing with an SBO to be in conformance with the SBO rule, pending the licensee's commitment within 30 days that the requests documented in this SE will be implemented. The schedule for implementation should also be provided in accordance with 10 CFR 50.63(c)(4).

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