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

ENCLOSURE

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
REGARDING STATION BLACKOUT
VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION, UNITS 1 AND 2

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 specified duration, requires licensees to submit information as defined in 10 CFR 50.63 and requires licensees 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 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 follow-up NRC inspections to ensure that the licensee has implemented the appropriate hardware and/or procedure modifications that may be required to comply with the SBO rule.

The licensee proposes to use existing emergency diesel generators (EDGs) as an AAC source and has submitted its response in the applicable generic response format. The licensee's initial responses were provided by a letter from W. R. Cartwright (Virginia Electric and Power Company) to Document Control Desk of the U.S. Nuclear Regulatory Commission (NRC), dated April 17, and April 20, 1989. In addition, the licensee provided a response to the NUMARC 87-00 Supplemental Questions/Answers by a letter from W. L. Stewart to Document Control Desk, Nuclear Regulatory Commission, dated March 30, 1990. The licensee's responses were reviewed by Science Applications International Corporation (SAIC) under contract to the NRC. The results of the review are documented by a SAIC Technical Evaluation Report (TER), SAIC-90/1370 North Anna Power Station, Units 1 and 2, Station Blackout Evaluation," dated September 24, 1990 (Attachment 1).

*Nuclear Management and Resources Council, Inc.

2.0 EVALUATION

After reviewing the licensee's SBO submittals and the SAIC TER, the staff concurs with the conclusions as identified in the SAIC TER (refer to Attachment 1 for details of the review). Based on this review, the staff findings and recommendations are summarized as follows.

2.1 Station Blackout Duration

The licensee has calculated a minimum acceptable SBO duration of 8 hours based on an offsite power design characteristic group of "P2", an Emergency AC configuration group "C", and an EDG reliability target of 0.95. The "P2" grouping is based on an independence of offsite power classification of Group "I 1/2," a severe weather (SW) classification of Group "2" and an extremely severe weather (ESW) classification of Group "4".

The staff disagrees with the licensee's classification of the independence of offsite power as Group "I 1/2". As discussed in the attached TER, upon loss of a reserve station service transformer RSST-A, RSST-B or RRST-C, the only method of energizing the second division would be by manually tieing the two emergency buses together. Thus, there is no automatic transfer of all the safeguard buses, and in addition the only method of manually powering the second division of the safeguard buses is by connecting the emergency buses together, which is unacceptable. Therefore, the independence of offsite power is Group "I3". However, this does not result in a change to the required coping duration of 8 hours.

2.2 Alternate AC (AAC) Power Source

The licensee has proposed using the existing EDGs as an AAC power source to operate systems necessary for the required SBO coping duration of 8 hours 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 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 SBO rule 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 <u>EDGs used as AAC power sources</u>

The guidance on the use of existing EDGs 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 non-blackout (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 loss of offsite power (LOOP) event. Thus, the EDG's in a two-unit site with two dedicated EDG's 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. The staff position is therefore 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 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, or whether the AAC source is an excess redundancy EDG or an independent power source.

However, at a two (or more) unit site where the EDGs meet the AAC source excess redundancy 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 North Anna Power Station presently has four EDGs, with two EDGs dedicated to each unit. The licensee proposes to install additional switchgear and electrical connections between the 4160V emergency buses of Unit 1 and Unit 2 so that either one of the two EDGs of NBO unit could serve as an AAC power source for the SBO unit during an SBO.

The licensee's submittal states that the EDG/AAC source is available within 1 hour of the onset of the SBO event, and has sufficient capability to provide power for the safe shutdown of both units for an 8-hour SBO duration. However, a July 2, 1990, telefax to the NRC from the licensee, showing a preliminary tabulation of loads on the AAC source (NBO and SBO unit loads), did not include several of the normal LOOP loads on the NBO unit. Subsequently, during a telecon on July 3, 1990, the licensee discussed with the staff a proposed load management scheme on the NBO unit. The purpose of this load management scheme was to eliminate loads from the EDGs such that they could qualify as AAC sources on the basis of excess capacity. The staff told the licensee that such a load management scheme on the NBO unit did not conform to the SBO rule. By letter dated August 1, 1990, the licensee submitted a revised tabulation of the AAC source loadings (NBO and SBO unit loads) for the Surry Power Station. No similar tabulation was presented for the North Anna Power Station. However, the staff's understanding is that the August 1, 1990 tabulation for Surry Power Station is also applicable to North Anna Power Station. The staff concluded that the Surry Power Station load management scheme was not consistent with the SBO rule. Therefore, based on the July 2, 1990, preliminary tabulation of the SBO loads for North Anna and the revised August 1, 1990, tabulation for Surry (assumed to be the same for North Anna), the staff concludes that the North Anna Power Station EDGs do not have the excess capacity available to qualify as an AAC source. In addition, the licensee's proposed AAC power source configuration (connectability of AAC power sources) does not conform to an acceptable configuration as provided in NUMARC-8700 and NUMARC 87-00 Supplemental Questions/Answers under question C.1 and to the guidance of Section 2.2.1.2 above.

After reviewing the SAIC TER and the licensee's proposed actions for crediting existing NBO unit EDGs as an AAC source, the staff has determined that the proposed AAC source does not meet the requirements of 10 CFR §50.63.

Recommendation: The licensee should undertake further measures such as providing an independent AAC power source or a coping analysis which shows that the plant can cope with and recover from an SBO for the required duration independent of AC power.

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 safe shutdown and recovery from an SBO for an 8-hour coping duration.

2.3.1 Condensate inventory for decay heat removal

The licensee states that it has been determined using NUMARC 87-00 methodology that 103,024 gallons of condensate water are required for decay heat removal for 8 hours. This is enveloped by the minimum emergency condensate storage tank (CST) level allowed by the Technical Specifications (TS) of 110,000 gallons. After reviewing the licensee's submittal and the SAIC TER, the staff agrees with the licensee's assessment that the plant has adequate condensate inventory for an 8-hour SBO duration. In addition, the excess inventory available in the CST is available for SBO recovery. However, the licensee needs to assess how the decay heat removal function will be accomplished without the benefit of instrumentation and DC power required for the electrical systems and controls in the blacked-out unit after the battery is discharged in 1 hour.

2.3.2 Class 1E battery capacity

The licensee stated that a battery calculation has been performed pursuant to NUMARC 87-00 methodology to verify that the Class 1E batteries have sufficient capacity to meet the SBO loads for 1 hour. Further, the AAC source would be available to power the battery charger (one dc train) after 1 hour following the onset of the SBO.

The licensee did not specifically state that both battery banks of the NBO unit would be powered by battery chargers during the SBO event. The staff's review shows that the licensee's proposed AAC power source does not have the required excess capacity to qualify as an ACC source in accordance with the requirements of 10 CFR §50.63, and therefore cannot be credited toward charging the batteries. It appears that the batteries will be discharged without charging and there is no assurance that the decay heat removal function can be maintained without the control room instrumentation and DC power for electrical systems and controls in the SBO unit for the required duration.

Recommendation: The licensee should provide a battery of sufficient capacity to power all normal battery-backed monitoring and electrical systems and controls for the required SBO duration and recovery therefrom, or provide battery charging from an acceptable AAC power source.

2.3.3 Compressed air

The licensee has stated that all air-operated valves needed for the 1 hour SBO coping duration can be either operated manually or have sufficient backup sources of power. Also, the licensee has indicated that an air compressor will be available within 1 hour after the electrical cross-connect is established to supply power to the SBO unit from the NBO unit. However, the proposed cross-connect for the North Anna Power Station does not meet the SBO rule guidance (see Section 2.2.2), and therefore it cannot be assumed that the compressor will be available for the NBO and SBO unit after 1 hour. North Anna has a common compressed air system for Units 1 and 2, and one instrument air compressor per unit each powered from an emergency bus. In order to supply power to at least one compressor in either unit, the licensee needs to commit to have a cross-connect

between transfer buses D and E. This cross-connect would enable the safety buses 1J and 2H to be connected to an available EDG in either unit. A cross-connect already exists between safety buses 1H and 2J to enable these buses to be connected to an available EDG in either unit. There are separate air bottles or a nitrogen supply on critical valves to allow control without the air compressor during the first hour.

After reviewing the information provided by the licensee and the SAIC TER, the staff agrees with SAIC assessment that once the recommended cross-tie between transfer buses D and E is installed, adequate compressed air will be available to support the air-operated valves. However, the North Anna Power Station does not have a qualified AAC power source, and therefore while the recommended cross-tie between buses D and E resolves the compressed air issue, it does not resolve the SBO issue.

2.3.4 Effects of loss of ventilation

The licensee identified several areas that require forced ventilation. These include the control room (common for Units 1 and 2), the emergency switchgear rooms, the charging pump cubicles and auxiliary feedwater pump room. The licensee calculated 8-hour steady-state temperatures as shown below using non-applicable NUMARC 87-00 methodology.

- Control room	181°F
- Emergency switchgear room	153°F
- Charging pump cubicles	300°F
- AFW pump room	175°F

The licensee stated that existing ventilation (chiller, air handler, and associated pumps) for the control room and emergency switchgear rooms would be provided within 1 hour. No information was provided as to what steps would be taken to ensure that the control room and switchgear rooms do not exceed 120°F during the first hour of the SBO. The licensee did not state that their procedures would include a provision to open the cabinet doors in the control room within 30 minutes of onset of SBO.

The licensee also stated that ventilation fans and flexible ducting installed for Appendix "R" will be used to maintain the charging pump cubicles to less than 120°F. This ventilation would be provided within 1 hour.

The licensee stated that existing ventilation would be utilized to lower the temperature in the AFW pump room to an acceptable temperature of 120°F. Since no information was given on how this ventilation would be provided in the AFW room, the licensee needs to furnish specific details on anticipated operator actions in the AFW pump room to justify the acceptability of a 175°F environment. These details need to specifically address the ability of the operator to adequately perform his functions in this room during an SBO event.

The licensee did not provide an evaluation of the heat-up calculations performed, if any, for the dominant areas of concern including the control room, emergency switchgear room, charging pump cubicles and AFW pump room for the first hour of an SBO event. Also, the licensee needs to address the SBO equipment inside the containment concerning the effects of loss of ventilation.

The licensee's analyses presumably used NUMARC 87-00 methodology for the heat-up calculations. However, NUMARC methodology is not appropriate for an 8-hour coping duration. Also, the licensee's proposed method of limiting the heat-up in some of the dominant areas of concern depends on the excess capacity of the NBO unit EDGs used as an AAC source. However, the staff has determined that the NBO unit EDGs do not have excess capacity to qualify as an AAC source.

Recommendation: The licensee's analyses assume that an AAC source will be available to power HVAC equipment of the SBO unit within 1 hour. However, the staff has determined that the existing EDGs at the North Anna plant do not have the excess capacity to qualify as an AAC source in accordance with the SBO rule requirements. Therefore, the licensee should provide an acceptable AAC source, or provide other means to provide the necessary HVAC during an SBO. The licensee should perform the heat-up evaluation for the dominant areas of concern including control room, switchgear rooms, AFW pump room, and charging pump cubicles. The licensee should verify that there is reasonable assurance of equipment operability and habitability for the operator manual actions during the first hour of the SBO. The licensee should maintain these analyses and verification as part of the SBO package supporting the SBO rule response. Also, the licensee should include in their SBO procedures a provision to open the control room cabinet doors within 30 minutes after the onset of an SBO. Additionally, licensee should provide evaluation for the SBO equipment inside containment concerning the effects of loss of ventilation for the required SBO duration.

2.3.5 Containment isolation

The licensee reviewed the plant list of containment isolation valves (CIVs) to verify that valves which must be capable of being closed or operated (cycled) during an SBO can be positioned (with indication) independent of the blacked-out unit's power supplies. The licensee stated that no plant modifications are necessary to insure containment integrity during an SBO. The staff agrees with the licensee's analysis and concludes that there is reasonable assurance that appropriate containment isolation can be achieved and maintained during an SBO.

2.3.6 Reactor coolant inventory

The licensee used a Surry Power Station specific analysis which bounds the reactor coolant system at North Anna to assess that the reactor coolant inventory was adequate to prevent core uncovery during the first hour of an SBO. Within that time, a charging pump in the NBO unit would be started to provide make-up flow to the RCS of both units through a cross-connect line, and would provide sufficient flow to ensure core cooling for the SBO period. The staff agrees that the one charging pump should have sufficient capacity to prevent core uncovery of the blacked out unit and to maintain RCS inventory at the NBO unit provided that the NBO unit is kept at hot standby during the SBO event. However, the licensee needs to add an acceptable AAC source to power the charging pump and charge the station battery or describe how the inventory above the core will be monitored and maintained without the benefit of instrumentation or DC power in the blacked-out unit after 1 hour when the battery becomes discharged.

Recommendation: The licensee should provide an acceptable independent AAC source of sufficient capacity and capability to provide power to the supporting systems to monitor and maintain adequate RCS inventory.

2.4 Procedures and training

The licensee has stated that procedures are in place to address many of the SBO coping requirements, and these procedures will be revised to address the AAC method of coping with an SBO. The licensee did not specifically address the training requirement to implement the modifications or associated procedures.

The proposed procedure modifications were not reviewed by the NRC staff, but the staff expects the licensee to maintain and implement these procedures, including any others that may be required as part of the revised response, to ensure an appropriate response to an SBO event. Although personnel training requirements for an SBO response were not specifically addressed by the licensee's submittal, the staff expects the licensee to implement the appropriate training to ensure an effective response to an SBO.

2.5 Proposed Modifications

The licensee proposes to add a Class 1E crosstie connection between the 4160V buses 1J and 1H of Unit 1. The licensee stated that this would allow power to be transferred between units from any one of the EDGs.

The staff finds this proposed configuration unacceptable because a failure of the inner safety bus (1H or 2J) of the NBO unit would prevent transfer of power to the blacked-out unit from the NBO unit.

In response to the above-stated staff concern, the licensee proposed in their August 1, 1990 submittal for the Surry Power Station an additional non-safety grade crosstie between the non-safety outer transfer buses D and E. The North Anna Power Station was not specifically addressed in the August 1, 1990, submittal and the staff does not know if a similar crosstie would also be installed at the North Anna Power Station. This cross-tie modification should be implemented at the North Anna station, in order to have an acceptable crosstie configuration for using EDGs as AAC power sources. However, since the EDGs do not meet the excess capacity requirements of the SBO rule, the staff concludes that none of the EDGs qualify as an acceptable AAC power source.

The licensee also noted that breaker control and protective relay modifications will be required to allow connections of the buses in the manner described. No modifications to other plant equipment are described. However, in view of the staff positions as identified in recommendations documented in this SE, other modifications may be required.

Recommendation: The licensee should provide an AAC source that meets the requirements of the SBO rule or an alternative method for coping with an SBO. A full description of the proposed modifications including the nature and objectives of the required modifications to meet the SBO rule and a proposed schedule for implementation should be provided.

2.6 Quality Assurance (QA) and Technical Specifications (TS)

The licensee did not provide information regarding QA programs and TS for SBO equipment. TS for the SBO equipment are currently being considered generically by the NRC in the context of the Technical Specification Improvement Program

and remain an open item at this time. However, the staff would expect that the plant procedures will reflect the appropriate testing and surveillance requirements to ensure the operability of the necessary SBO equipment. If the staff later determines that a TS regarding the SBO equipment is warranted, the licensee will be notified of the implementation requirements.

Recommendation: The licensee should verify that the SBO equipment is covered by an appropriate QA program consistent with the guidance of RG 1.155. Further, this verification should be documented as part of the package supporting the SBO rule response.

2.7 EDG Reliability Program

The licensee stated that the EDG target reliability of 0.95 is to be maintained, however, no information was provided as to how this would be accomplished.

Recommendation: It is the staff's position that an EDG reliability program should be developed in accordance with the guidance of 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.

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 evaluation available to NRC." The staff and its contractor did not perform a detailed review of the proposed procedure modifications which are scheduled for later implementation. Therefore, based on our review of the licensee's SBO submittals and the FSAR, we have identified the following areas for focus in any follow-up inspection or assessment that may be undertaken by the NRC to further verify conformance with the SBO rule.

a. Hardware and procedural modifications,

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

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

d. EDG reliability program meeting, 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, and

f. Actions taken pertaining to the specific recommendations noted in the SE.

Additional areas may be identified following staff review of licensee's revised response to the SBO rule.

3.0 SUMMARY AND CONCLUSIONS

The staff has reviewed the licensee's response to the SBO rule (10 CFR 50.63) and the Technical Evaluation Report prepared by the staff's consultant, Science Applications International Corporation. Based on the staff's review of the licensee's submittals and the SAIC TER, the staff finds that the North Anna Power Station does not conform with the SBO rule and the guidance of R.G. 1.155, and therefore recommends that the licensee re-evaluate the areas of concern that have been identified in this SE. Guidance for the licensee to review and implement the staff's recommendations is provided in RG 1.155, NUMARC 87-00 and the supplementary guidance (NUMARC 87-00 Supplementary Questions/Answers; NUMARC 87-00 Major Assumptions) dated December 27, 1989, which was issued to the industry by NUMARC on January 4, 1990. The staff's concerns that are identified in this SE should be addressed by the licensee, and a revised response submitted to the NRC within 60 days. The licensee is expected to ensure that the baseline assumptions of NUMARC 87-00 are applicable to the North Anna Power Station. Also, the licensee should maintain all analyses and related information in the documentation supporting the SBO submittal for further inspection and assessment as may be undertaken by the NRC to audit conformance with the SBO rule.

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