April 1, 2002

Mr. Alan Nelson
Nuclear Energy Institute
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Washington, DC 20006-3708

Mr. David Lochbaum
Union of Concerned Scientists
1707 H Street, NW., Suite 600
Washington, DC 20006-3919

SUBJECT: STAFF GUIDANCE ON SCOPING OF EQUIPMENT RELIED ON TO MEET THE REQUIREMENTS OF THE STATION BLACKOUT (SBO) RULE (10 CFR 50.63) FOR LICENSE RENEWAL (10 CFR 54.4(a)(3))

Dear Messrs. Nelson and Lochbaum:

The Nuclear Regulatory Commission (NRC) staff has reviewed the Nuclear Energy Institute's (NEI) comments, dated March 19, 2002, and the Union of Concerned Scientists' letter, dated February 19, 2002, on the proposed staff guidance for identifying equipment relied on to meet the requirements of the SBO rule 10 CFR 50.63, as it affects scoping for license renewal rule under 10 CFR 54.4(a)(3). The staff is enclosing a copy of the revised staff position on scoping of SBO equipment for license renewal.

However, the staff would like to clarify the use of alternate ac power sources within the context of the SBO rule. Alternate ac power sources were accepted under the SBO rule as an alternate means of withstanding an SBO. The definition of an alternate ac power source is contained in 10 CFR 50.2. The definition addresses the capability of these power sources to cope with an SBO but not to recover from an SBO. While a very small number of alternate ac power sources may have capabilities beyond those required for coping, the staff nevertheless finds that they were only reviewed as a means of coping with an SBO for the plant specified coping duration. Reference to alternate ac power sources as a means of recovering from an SBO is therefore not intended within the context of the SBO rule. Within the context of the rule, only offsite power and onsite power are credited as means of recovering from an SBO event; and both must therefore be included within the scope of license renewal.

An aging management program for SBO equipment that is within the scope of license renewal should address the 10 attributes described in the Standard Review Plan for License Renewal. For the attributes that address corrective action, confirmation process, and administrative controls, the staff has determined that 10 CFR Part 50, Appendix B is acceptable. However, Appendix A "Quality Assurance Guidance for Non-Safety Systems and Equipment" of Regulatory Guide 1.155, "Station Blackout" may be used subject to the staff review if and when a specific SBO aging management program is submitted by the applicant.

The implementation of this staff position will start with the license renewal applications currently under review. Additional staff guidance for implementation of this staff position at Calvert Cliffs, Oconee, ANO-1, and Hatch will be issued separately.

With the enclosed staff position, it is also possible that comparable changes might need to be made to NEI 95-10, Revision 3, “Industry Guidance for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule.” If you have any questions regarding this matter, please contact Peter Kang at 301-415-2779.

Sincerely,

/***RA***/

David B. Matthews, Director
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

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NRC Staff Position on the License Renewal Rule (10 CFR 54.4) as it relates to
The Station Blackout Rule (10 CFR 50.63)

Staff Position

Consistent with the requirements specified in 10 CFR 54.4(a)(3) and 10 CFR 50.63(a)(1), the plant system portion of the offsite power system should be included within the scope of license renewal. The reasons for support of this position follow:

Rationale

The license renewal rule, 10 CFR 54.4(a)(3), requires that, "All systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for.....station blackout (10 CFR 50.63)" be included within the scope of license renewal. The station blackout (SBO) rule, 10 CFR 50.63(a)(1), requires that each light-water-cooled nuclear power plant licensed to operate be able to withstand and recover from a station blackout of a specified duration that is based upon factors that include: "(iii) The expected frequency of loss of offsite power; and (iv) The probable time needed to restore offsite power." The SBO rule in this regard is consistent with the staff findings identified in the statement of considerations and NUREG-1032, "Evaluation of Station Blackout Accidents at Nuclear Power Plants." In particular, with regard to factor (iv), the staff found that offsite power is more likely to be restored (0.6 hours median time to restore) than the emergency diesel generators (8 hours median time to repair) in terminating an SBO event.

Station Blackout is the loss of offsite and onsite ac electric power to the essential and non-essential switchgear buses in a nuclear power plant. It does not include the loss of ac power fed from inverters powered by station batteries nor loss of ac power from an SBO defined alternate ac power source. The SBO rule was added to the regulations in 10 CFR Part 50 because, as operating experience accumulated, concern arose that the reliability of both the offsite and onsite ac power systems might be less than originally anticipated, even for designs that met the requirements of General Design Criteria 17 and 18. As a result, the SBO rule required that nuclear power plants have the capability to withstand and recover from the loss of offsite and onsite ac power of a specified duration (the coping duration).

Licensees' plant evaluations followed the guidance specified in NRC Regulatory Guide (RG) 1.155 and NUMARC 87-00 to determine their required plant-specific coping duration. The criteria specified in RG 1.155 to calculate a plant-specific coping duration were based upon the expected frequency of loss of offsite power and the probable time needed to restore offsite power, as well as the other two factors (onsite emergency ac power source redundancy and reliability) specified in 10 CFR 50.63(a)(1). In requiring that a plant's coping duration be based in part on the probable time needed to restore offsite power, 10 CFR 50.63(a)(1) is specifying that the offsite power system be an assumed method of recovering from an SBO. Disregarding the offsite power system as a means of recovering from an SBO would not meet the requirements of the rule and would result in a longer required coping duration.

The use of the offsite power system within 10 CFR 50.63(a)(1) as a means of recovering from an SBO should not be construed to be the only acceptable means of recovering from an SBO. A licensee could for example recover offsite power or emergency (onsite) power. It is not possible to determine prior to an actual SBO event which source of power can be returned first. As a result, 10 CFR 50.63(c)(1)(ii) and its associated guidance in RG 1.155, Section 1.3 and Section 2, requires procedures to recover from an SBO that include restoration of offsite and onsite power.

Based on the above, both the offsite and onsite power systems are relied upon to meet the requirements of the SBO rule. Elements of both offsite and onsite power are necessary to determine the required coping duration under 10 CFR 50.63(a)(1), and the procedures required by 10 CFR 50.63(c)(1)(ii) must address both offsite power and onsite power restoration. It follows, therefore, that both systems are used to demonstrate compliance with the SBO rule and must be included within the scope of license renewal consistent with the requirements of 10 CFR 54.4(a)(3). License renewal applicants are presently including the onsite power system within the scope of license renewal on the basis of the requirements under 10 CFR 54.4 (a)(1) (safety-related systems). They are also including equipment that is relied upon to cope with an SBO (e.g., alternate ac power sources) on the basis of the requirements under 10 CFR 54.4(a)(3). Only the addition of the offsite power system is therefore necessary to complete the required scope of the electrical power systems under license renewal.

The offsite power systems of U.S. nuclear power plants consist of a transmission system (grid) component that provides a source of power and a plant system component that connects that power source to a plant's onsite electrical distribution system which powers safety equipment. The staff has historically relied upon the well-distributed, redundant, and interconnected nature of the grid to provide the necessary level of reliability to support nuclear power plant operations. For purposes of the license renewal rule, the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. This path typically includes the switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer and transformer and onsite electrical distribution system, and the associated control circuits and structures. Ensuring that the appropriate offsite power system long-lived passive structures and components that are part of this circuit path are subject to an aging management review will assure that the bases underlying the SBO requirements are maintained over the period of the extended license. This is consistent with the Commission's expectations in including the SBO regulated event under 10 CFR 54.4(a)(3) of the license renewal rule.

NUCLEAR ENERGY INSTITUTE

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