



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

October 24, 1989

Mr. Alex Marion  
NUMARC  
1776 I Street, N.W.  
Washington, DC 20006

Dear Mr. Marion:

SUBJECT: TRANSMITTAL OF DRAFT DOCUMENT TO BE USED FOR DISCUSSION IN  
THE OCTOBER 30, 1989 MEETING ON STATION BLACKOUT (TAC 40577)

Enclosed please find a draft letter which will be used in the discussion of the October 30, 1989 meeting. The early release of this draft should ensure meaningful exchanges in the meeting.

Sincerely,

Peter S. Tam, Senior Project Manager  
Project Directorate I-4  
Division of Reactor Projects I/II

Enclosure : as stated

cc. Central files  
NRC PDR  
F. Rosa  
J. Knight

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Enclosure to letter, P. Tam to A. Marion, dated October 24, 1989.

**DRAFT**  
TO: ALL HOLDERS OF OPERATING REACTOR LICENSEES AND APPLICANTS  
SUBJECT: STATION BLACKOUT RESPONSE SUBMITTALS ANALYSES AND RESPONSES  
(GENERIC LETTER 89-XX)

PURPOSE AND BACKGROUND:

The purpose of this generic letter is (1) to inform licensees of problems identified during staff review of licensee responses to the station blackout (SBO) rule (10 CFR 50.63), and during the site audit reviews of the supporting documentation; and (2) to request additional information that is required to enable the staff to more accurately assess licensee conformance with the requirements of the SBO rule.

Pursuant to 10CFR 50.63 (Station Blackout Rule), licensees were required to be able to withstand SBO for a specified duration and to recover. Licensees were also required to provide a submittal which described their plants' compliance with the specific provisions of the rule. In addition, licensees were to have available for NRC review the baseline assumptions, analyses and related information used in their coping evaluation. This supporting documentation was to allow the NRC to assess conformance with the rule by audit of the documentation supporting the SBO submittal. During meetings with NUMARC and the NRC it was agreed that the guidelines of NUMARC 87-00 as modified by Regulatory Guide 1.155 provided an appropriate basis for conducting analyses to determine compliance with 10CFR 50.63 and identify needed modifications. All licensees responses were submitted on schedule in accordance with 10CFR 50.63.

AUDIT FINDINGS:

The staff conducted audit reviews of the documentation supporting the station blackout (SBO) submittals for several plants. These audit reviews were performed at the sites and corporate offices, and included plant walk-through to assess design features of major relevance to the SBO submittal. In addition, the NRC conducted audit reviews of the SBO supporting documentation for four plants through meetings with licensees at the NRC headquarters. Several deficiencies in the licensee supporting documentation were identified during these audit reviews. The fact that these deficiencies were not apparent from the review

of the licensee submittals using the ~~DRAFT~~ need upon generic response format raises the question of the licensee conformance to the SBO rule. The deficiencies that have been identified during the audit reviews conducted so far are presented below.

1. Improper interpretation of guidance for determining required SBO duration:

Two plants had used the Regulatory Guide 1.155 and NUMARC 87-00 guidance improperly in determining the required coping duration. The licensee of the two plants had incorrectly classified the offsite group as 12 instead of 13, and onsite emergency diesel generator group as A instead of C. Based upon the incorrect offsite and onsite groups, the licensee had wrongly classified the plants required coping duration as 12 hours when, in fact, it should have been eight hours. ~~DRAFT~~

2. Disabling and evacuation of control room due to lack of battery capacity or for purposes of extending the battery capability:

One licensee had proposed the voluntary disabling and evacuation of the main control room for the purposes of extending the battery capability from 2 hours to 4 hours. Another plant had proposed to transfer control of the plant shutdown from the control room after 1 hour to the auxiliary shutdown panel because of lack of battery capacity to power the control room. In neither of these cases had the licensee identified in his SBO submittal that there was any intent to evacuate the control room. The circumstances under which these plants propose to evacuate the control room are known and the actions necessary to conserve battery energy and transfer control to a remote shutdown panel are numerous with high potential for human error under the duress of SBO situation. It is the staff's position that evacuation of the control room is a last resort action and is not appropriate except for unforeseen circumstances which physically force evacuation. Operators are well trained and familiar with monitoring and control from the main control room and while some action outside the control room

is permitted by the rule they should not be required to leave their normal operating environment when other engineering solutions are viable for the known scenario of SBO.

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Additionally, it would be necessary to perform actions from the control room to recover from the SBO and return to normal cold shutdown conditions. It is not in the best interest of safety to voluntarily disable and evacuate the control room for mitigating SBO and recovery therefrom.

3. Incomplete or improperly performed calculations for assessing effects of loss of ventilation:

A majority of the plants that were audited had either incomplete or improperly performed calculations for assessing the effects of loss of ventilation on the operability and reliability of equipment necessary to cope with SBO. Plants that do not have an alternate ac power source (available within 10 minutes) to power ventilation systems are required to assess the effects of loss of ventilation according to the methodology described in NUMARC 87-00. The NUMARC 87-00 methodology for assessing the effects of loss of ventilation are limited to a four hour SBO duration. Plants with coping duration in excess of four hours are required to use a methodology acceptable to the NRC. The NRC audit review indicated that the licensees are not consistently adhering to the methodology as described in the NUMARC 87-00.

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4. Improper credit for hurricane procedures:

According to NUMARC 87-00, a plant may reduce its required coping duration from 8 hours to 4 hours by implementing specific pre-hurricane shutdown requirements and procedures. One plant selected the option of reducing its coping duration from 8 hours to 4 hours, but chose not to meet the shutdown requirements 2 hours prior to the arrival of the hurricane. The NRC expects the licensees to follow fully the NUMARC 87-00 guidelines for taking credit for enhanced coping capability under anticipated hurricane conditions.

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5. Improper credit for Emergency Diesel Generators (EDGs) as alternate ac (AAC) source.

A licensee (3 units) proposed using existing emergency diesel generators (EDGs) as the AAC source. However, a single cross-connect and switchgear is provided between units for the AAC power source which does not meet the guidance of R.G. 1.155 and NUMARC 87-00 (Section 2.3.1(3)(b) and Appendix C, page c4). In addition, the switchgear is located outdoors with interconnecting circuits run overhead which make it vulnerable to a weather related event or a single failure in the non-blackout unit.

6. Inadequate coping analysis and/or modifications:

Several licensees had not followed the guidance of NUMARC 87-00 regarding the pump seal leakage rate in the reactor coolant system (RCS) inventory analysis. One licensee had indicated in his submittal that he had performed the RCS inventory analysis however, during the audit it was found that no analysis had been performed. Another licensee had identified that modifications were to be made to the atmospheric dump valves but could not explain what these modifications were. Some BWR licensees had indicated that they were going to use reactor core isolation cooling (RCIC) however, they had not analyzed the suppression pool heatup to determine RCIC operability and heat capacity temperature limit. These examples are indications of deficient coping assessments as required by the R.G. 1.155 and NUMARC 87-00.

7. Lack of verification of baseline assumptions for assessing equipment operability:

During the site audit review, several licensees stated that the assessment of SBO equipment operability in the control room and other areas was not required based on the NUMARC 87-00 assumption that the equipment would be operable at a final temperature up to 120°F. However, section 1.3 of NUMARC 87-00 states: "Utilities are expected to ensure that the baseline assumptions are applicable

to their plants." Therefore, an assessment of operability for the SBO equipment not designed to operate at the ambient temperature calculated for the control room and other areas during an SBO event should have been made. The staff expects the licensees to verify the NUMARC 87-00 assumptions for applicability to their plants.

8. Lack of commitment to establish an EDG reliability program:

R.G. 1.155, Section 1.2 and NUMARC 87-00, section 3.2.4 state that an EDG reliability program should be established to ensure that the reliability of EDGs is monitored and maintained over time at the selected target levels. The licensee SBO responses have not addressed this commitment. It is expected that each licensee will commit to establish a reliability program in accordance with elements of R.G. 1.155 or NUMARC 87-00, Appendix D.

Deficiencies in the SBO supporting documentation identified during the audits include lack of completeness and tendency of the licensees to interpret or extend the guidance provided in R.G. 1.155 and NUMARC 87-00 in a manner to justify minimum design changes rather than improved protection against SBO.

RECOMMENDED ACTIONS TO BE TAKEN BY ADDRESSEES AND REPORTING REQUIREMENTS.

In order to determine whether any license or construction permit for facilities covered by this request should be modified, suspended or revoked, we require, pursuant to Section 182 of the Atomic Energy Act and 10 CFR 50.54(f), that you provide the NRC, within 30 days of this letter, a statement as to whether you have conducted your station blackout analyses in accordance with the guidelines of NUMARC 87-00 as modified by Regulation, Code 1.155, and whether the response you previously submitted accurately presents the conclusions of your analyses and is supported by technically sufficient documentation. In the event that licensees determine that previous submittals need revision, licensees should submit revisions to previous conclusions with a statement that the submittal is in conformance with the above guidance and supported by technically sufficient

documentation. This information should be submitted to the NRC, signed under oath and affirmation. The licensee should retain supporting documentation consistent with the records retention program for their facility.

This request is covered by Office of Management and Budget Clearance Number 3150-0011, which expires \_\_\_\_\_ the estimated average burden hours are 120 person-hours per license response, including assessment of the new recommendations, searching data sources, gathering and analyzing data, and the required reports. These estimated average burden hours pertain only to these identified response-related matters and do not include the time for actual implementation of requested actions. Comments on the accuracy of this estimate and suggestions to reduce the burden may be directed to the Office of Management and Budget, Room 3208, New Executive Office Building, Washington, D.C. 20503, and to the Nuclear Regulatory Commission, Records and Reports Management Branch, Office of Administration and Resources Management, Washington, D.C. 20555.