



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

SUPPLEMENTAL SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE STATION BLACKOUT RULE (10 CFR 50.63)

COMMONWEALTH EDISON COMPANY

DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3

QUAD CITIES, NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-237, 50-249, 50-254 AND 50-265

1.0 INTRODUCTION

The NRC staff's Safety Evaluation (SE) pertaining to Commonwealth Edison Company's (CECo, the licensee) initial response to the Station Blackout (SBO) Rule, 10 CFR 50.63, was transmitted to the licensee by letter dated December 11, 1990. The staff found the licensee's proposed method of coping with the SBO to be acceptable subject to the satisfactory resolution of several recommendations that were itemized in the staff's SE. The licensee responded to the staff's SE, and specifically to the recommendations, by letter from M.H. Richter, CECo, to the Document Control Desk, U.S. Nuclear Regulatory Commission, dated February 15, 1991. The following evaluation applies to both the Dresden and Quad Cities plants unless otherwise indicated.

2.0 EVALUATION

The licensee's response to the staff's recommendations are evaluated below.

2.1 Proposed AAC Power Source (SE Section 2.2.2)

SE Recommendation:

All the connections from safety buses 23-1, 24-1, 33-1, and 34-1 to, but not including, the AAC power source output circuit breaker should be installed safety grade (Class 1E). The licensee should provide a full description including the nature and objective of this modification and AAC power source evaluation to conform to Appendix B of NUMARC 87-00 and include this description in the SBO documentation that is to be maintained by the licensee.

Licensee Response:

The licensee has proposed two AAC power sources instead of one. One of the proposed AAC power sources would be connected to a 4KV bus 1. This bus 1 would be connected to safety buses 24-1 and 23-1 for Dresden (14-1, 13-1 for Quad Cities). The other AAC power source would be connected to a 4KV bus 2. This bus 2 would be connected to safety buses 33-1 and 34-1 for Dresden (23-1, 24-1 for Quad Cities). In addition, there would be a bus-tie between safety buses 23-1 and 33-1 for Dresden (13-1, 23-1 Quad Cities). See enclosed Figure 1 for Dresden. The licensee stated that the proposed bus-tie between the Division 1

buses of the two units would be safety grade. The licensee believes that utilizing two diesel generators for the AAC power source would provide an enhanced design and preclude total loss of AAC power should one power source fail. Also, there was a concern that a single AAC diesel generator could provide fault currents which would exceed the interrupting capability of the existing 4KV safety bus breakers. The licensee stated that a description of the AAC power source modification and the safety bus cross-tie modification will be retained in the SBO files for each station.

The licensee did not state that the two proposed AAC sources would meet the criteria of NUMARC 87-00, Appendix B. However, in the licensee's May 18, 1990, submittal, the licensee stated that the single AAC source as proposed at that time would meet the criteria of NUMARC 87-00, Appendix B. Based on the above, we conclude that the two proposed AAC sources will likewise meet these criteria. If not, the licensee should advise the staff accordingly.

Staff Evaluation:

The staff finds that the use of two DG's as the AAC source for the two units and the safety grade bus-tie between the two units meets the intent of the above stated SE recommendation and is, therefore, acceptable. The licensee expects to complete these modifications by December 1995.

2.2 Condensate Inventory for Decay Heat Removal (SE Section 2.3.1, Dresden Only)

SE Recommendation: The licensee should verify that the diesel-driven fire pump(s) will have clog-free river water suction and sufficient NPSH to supply isolation condenser make up.

Licensee Response: The licensee has committed to address this recommendation and retain the supporting documentation in their SBO file.

Staff Evaluation: The licensee should provide a schedule for implementing this commitment.

2.3 Effects of Loss of Ventilation (SE Section 2.3.4)

SE Recommendation: (1a) The licensee should address the discrepancy between the 1-hour temperature and the steady state temperature calculated for the HPCI room (Dresden only), (1b) the licensee should justify the discrepancy between the 1-hour temperature given in the submittal and the calculated steady state temperature for the RCIC room (Quad Cities only), (2) the licensee should address SBO equipment that may not have been evaluated for the effects of loss of ventilation, (3) the licensee should verify whether the control room and AEERs heat-up calculations were performed using the pertinent initial maximum bounding design temperatures for these rooms in lieu of normal room temperatures. These evaluations and verifications and any resulting modifications should be included in the documentation supporting the SBO submittals that are to be maintained by the licensee.

Licensee Response: The licensee has committed to address these recommendations and retain the supporting documentation in their SBO file.

Staff Evaluation: The licensee should provide a schedule for implementing this commitment.

#### 2.4 Containment Isolation (SE Section 2.3.5)

SE Recommendation: The licensee should indicate whether the CIVs that are procedurally closed during power operation are normally locked closed or they will fail closed on loss of ac power or air. In addition, the licensee should ensure that these air or ac operated CIVs remain properly positioned during an SBO event by providing capability for valve position indication, independent of preferred and Class 1E power supplies. This information and verification including clarifications for the CIVs listing discrepancies (Dresden only) should be included in the documentation supporting the SBO submittals that are to be maintained by the licensee.

Licensee Response: The licensee has committed to address these recommendations and retain the supporting documentation in their SBO file.

Staff Evaluation: The licensee should provide a schedule for implementing this commitment.

#### 2.5 Proposed Modifications (SE Section 2.5)

##### SE Recommendation

The licensee should include a full description including the nature and objectives of the required modifications identified above in the documentation supporting the SBO submittals that are to be maintained by the licensee.

##### Licensee Response:

Under Part 1 of the SE recommendation, the licensee has committed to a revised AAC power source which the staff finds acceptable (See Section 2.1 above).

Under Part 2 of the SE recommendation, the licensee had proposed changes in the logic circuits for the shared EDG (EDG 2/3) to allow it to be connectable to the safety buses 23-1 and 33-1 simultaneously. The licensee has withdrawn this modification. The staff stated that this proposed change had no bearing on the SBO issue. For Part 3 of the SE recommendation (Dresden Station), the licensee states that the isolation condensor level indication transmitter qualifies for the SBO thermo profile with the exception of the AC power source. The licensee has committed to relocate the power supply for the level transmitter to an uninterruptable power supply.

##### Staff Evaluation:

The licensee has committed to implement this modification in October 1992. The staff finds this to be acceptable.

## 2.6 EDG Reliability Program (SE Section 2.7)

### SE Recommendation:

The licensee should provide confirmation and include it in the documentation supporting the SBO submittals that are to be maintained by the licensee, that such a program meeting the guidance of RG 1.155, Position 1.2, Items 2 through 5, is in place or will be implemented.

### Licensee Response:

The licensee has committed to implement an emergency diesel generator reliability program which will conform to RG 1.155, Position 1.2, Items 2 through 5, by December 20, 1991.

### Staff Evaluation:

The licensee has addressed this recommendation that the emergency diesel generator reliability program will conform to RG 1.155, Position 1.2, Items 2 through 5. The licensee has indicated this procedure will be implemented by December 20, 1991. The staff finds this to be acceptable.

## 3.0 CONCLUSION

The staff has reviewed the licensee's response to the staff's SE pertaining to the SBO rule (10 CFR 50.63) in their transmittal letter dated February 15, 1991. Based on our review, the staff finds the following responses to our recommendations acceptable: Proposed AAC Power Source (Section 2.1), EDG Reliability Program (Section 2.6), and Part 3 of Proposed Modifications (Section 2.5) condenser level indicator transmitter. However, the licensee has committed to resolve the following: Condensate Inventory for Decay Heat Removal, Effects of Loss of Ventilation, and Containment Isolation (Section 2.2, 2.3, and 2.4). The licensee should provide a schedule for implementing these commitments. This information should be submitted within 30 days after receipt of this Supplemental Safety Evaluation.

Principal Contributor: C. Thomas

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