

# Duquesne Light Company

Beaver Valley Power Station  
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December 20, 1990

W121 393-5256

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Reference: Beaver Valley Power Station, Unit No. 1 and No. 2  
BV-1 Docket No. 50-334, License No. DPR-66  
BV-2 Docket No. 50-412, License No. NPF-73  
Response to Safety Evaluation Report for Station Blackout  
(TAC Nos. 68510 and 68511)

Gentlemen:

By letter dated April 14, 1989, Duquesne Light Company (DLC) submitted its response to the Station Blackout (SBO) rule for Beaver Valley Power Station, Units 1 and 2, in accordance with 10 CFR 50.63. Supplemental information was provided by letters dated March 30, 1990, June 29, 1990, and July 27, 1990.

The NRC staff, by letter dated November 23, 1990, transmitted to DLC the Staff's Safety Evaluation Report (SER) related to SBO and the Technical Evaluation Report (TER) developed by Science Applications International Corporation (SAIC) for the Beaver Valley Power Station, Units 1 & 2. Based on the Staff's review, it was concluded that DLC's proposed method of dealing with a SBO to be in conformance with the Rule contingent upon receipt of confirmation from DLC that the hardware and associated procedure modifications, including those resulting from the recommendations documented in the SER, will be implemented. The letter required a response within 30 days of the date of the SER in accordance with 10 CFR 50.63(c)(4).

We have evaluated the recommendations contained in the SER and find them acceptable for implementation at BVPS. Attachment 1 to this letter describes how we plan to implement each of the recommendations. As noted in the SER, the charging pump at Unit 2 will be addressed as a discretionary load for Unit 2 under blackout conditions and procedurally addressed in the Emergency Operating Procedures (EOP's) for SBO to provide operator flexibility. The Unit 2 Emergency Diesel Generators have sufficient capacity to power the Unit 1 charging pump for the condition when Unit 1 is the blacked out unit.

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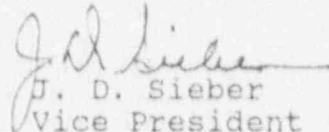
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In accordance with 10 CFR 50.63(c)(3), the modifications and procedure changes associated with the AAC cross-tie are required to be completed within two years after the notification by the Director, Office of Nuclear Reactor Regulation, which was provided on November 23, 1990. Since our Alternate AC (AAC) power source will involve cross-tying busses between Units 1 and 2, installation and testing will require successive refueling outages at both units to fully implement the cross-tie capability. Therefore, the schedule for completion may need to be extended, dependent on the scheduled refueling outage dates for Unit 1 and 2. Presently, the projected schedule for Unit 2's 3rd Refueling Outage is March 1992, and Unit 1's 9th Refueling Outage is September, 1992. At the end of the 9th Refueling Outage for BVPS Unit 1, the cross-tie for both Units should be fully operational.

If there are any questions on this matter, please contact my office.

Very truly yours,

  
J. D. Sieber  
Vice President  
Nuclear Group

cc: Dr. T. Murley, Director of Office of NRR  
Mr. J. Beall, Sr. Resident Inspector  
Mr. T. T. Martin, NRC Region I Administrator  
Mr. A. W. DeAgazi Project Manager  
Mr. R. Saunders (VEPCO)  
NUMARC

ATTACHMENT 1

BVPS Station Blackout Safety Evaluation Report  
Responses

2.2.2 Proposed AAC Power Source

Recommendation:

DLC should have appropriate procedures to ensure that the Containment Air Recirculation (CAR) fans and the Containment Instrument Air Compressors (CIAC's) are turned off in the NBO unit during LOOP conditions and a station blackout in the adjacent unit. In addition, DLC should conduct the appropriate AAC tests in accordance with the guidance of NUMARC 87-00, Appendix B, Item B.12 to demonstrate that it can be brought on line within 1 hour.

Response:

Procedures will be developed for SBO which will include provisions for shutting down the CAR fans and the CIAC's at the non-blackout unit. The procedure development will coincide with the SBO modification work for the Alternate AC (AAC) cross-tie.

Our station blackout supplemental submittal documents Beaver Valley's capability to withstand a station blackout without a charging pump at the blacked-out unit. As noted in the SER, the charging pump is a discretionary load, and, as such, station blackout procedures will be developed to direct operators to power this pump if sufficient AAC power is available during an actual event. During an actual station blackout, operators may find that some components are not needed and are not being used at the non-blackout unit. Additional AAC power that becomes available in this manner may allow the charging pump at the blacked-out unit to be energized during an actual event. This procedural flexibility is important to ensure operators respond to an actual event in a manner that minimizes its effects on the station as a whole.

Appropriate AAC tests will be conducted in accordance with the guidance of NUMARC 87-00, Appendix B, item B.12, to demonstrate AAC capability within 1 hour. As noted in the cover letter to this enclosure, installation and testing of the electrical cross-tie between units will require successive refueling outages at both units. Therefore, the projected schedule for completion of the modifications and associated testing will be the 9th refueling outage of BVPS Unit 1, in the fall of 1992.

2.3.3 Compressed Air

Recommendation:

DLC should develop procedures and simulate the appropriate actions and provide operator training to assure that decay heat removal can be adequately maintained.

Response:

Procedures will be developed and operational scenario's will be simulated as part of the operator training program for SBO to demonstrate successful heat removal operation and coordination as recommended in the SER.

Procedure development and operator training will coincide with the SBO modification work for the Alternate AC cross-tie.

2.3.4 Effects of Loss of Ventilation

Recommendation:

DLC should include in their station blackout procedures a provision to open the control room cabinet doors within 30 minutes after the onset of a station blackout event consistent with the guidance provided in NUMARC 87-00 Supplemental Questions/Answers.

Response:

The SBO procedures will include provisions for opening the appropriate cabinet doors in the control room that contain equipment required for station blackout within 30 minutes after the onset of a SBO event consistent with the guidance of NUMARC 87-00. The procedure development will coincide with the SBO modification work for the Alternate AC cross-tie.

2.3.5 Containment Isolation

Recommendation:

DLC should review the operational features of the above listed valves (noted in the SER) and ensure that the station blackout procedures provide the means for proper control of these valves to assure containment integrity for the required station blackout duration.



Response:

The SBO procedure will include provisions for proper control of these valves to ensure containment integrity, as required. It is not anticipated that the subject valves noted in the SER will need to be actuated because of a station blackout, however the valves have the capability for manual closure with position indication, independent of the blacked-out unit's power supplies, in the event containment integrity is required under SBO conditions. The procedure development will coincide with the SBO modification work for the Alternate AC cross-tie.

2.3.6 Reactor Coolant Inventory

Recommendation:

DLC should consider the additional losses (170 gpm) and verify that the results of generic analysis referenced in NUMARC 87-00 are applicable to the BVPS. DLC should also ensure that all of the assumptions in the referenced analysis bound the conditions of the BVPS reactors during the station blackout event, and include these in the documentation supporting the station blackout submittals.

Response:

Based on our analyses, a reactor coolant loss of approximately 170 gpm does not result in core uncover during a 4-hour station blackout. This conclusion is consistent with SAIC's Technical Evaluation. It should be noted that our Technical Specification limit for "maximum allowable identified RCS leakage" is 10 gpm vs. the 25 gpm assumed by SAIC. Therefore, the assumed 170 gpm leakage rate and the conclusions noted in the SER are conservative.

The assumptions and results of our analyses will be maintained as part of our SBO documentation.

2.5 Proposed Modification

Recommendation:

DLC should provide a full description including the nature and objectives of the required modifications identified above in the documentation supporting the station blackout submittals that is to be maintained by DLC.

Response:

A full description including the nature and objectives of the required Alternate AC cross-tie modification for SBO will be included in the documentation supporting SBO and maintained on site by the licensee.

Figure 1 is a diagram depicting the electrical cross-tie for Beaver Valley Power Station Units 1 & 2. The diagram identifies the new breakers to be added to existing switchgear and the new cubicle and breaker necessary for 4KVS-2D. Preliminary design work listing protection and relaying options has been developed by the Controls Engineering Department of DLC.

Concurrently, investigations are proceeding to establish options for installation of hardware items and appropriate raceway and cabling systems to tie together the control features minimizing the operator actions necessary. The design objectives will recognize the one hour maximum time period to accomplish the cross-tie.

The cross-tie is to be implemented by tying the normal 4KV busses within each unit. The normal bus of one unit will then be cross-tied to the normal bus of the second unit. Control switches will be installed in the emergency switchgear rooms and in the normal switchgear rooms. The control switches will align the protection and control circuits to allow any of four diesel generators to power either bus within the blacked out unit. The addition of these control switches will allow greater operator ease in aligning the unit rather than performing individual breaker operations.

To fully accomplish the alignment will require an operator to assure the loads have been shed from the normal busses. This will be accomplished procedurally. Procedure development will coincide with the SBO modification work for the Alternate AC cross-tie.

The projected schedule for completion of the modifications, procedures and associated testing will be the 9th refueling outage of BVPS Unit 1, in the fall of 1992.

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

Recommendation:

DLC should verify that the station blackout 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 station blackout rule response.

Response:

A QA program that meets the guidance of Regulatory Guide 1.155, Appendix A is being developed to cover the SBO equipment being installed under the SBO modification work for the Alternate AC cross-tie. The verification of an appropriate QA program for SBO equipment will be included in our supporting documentation for SBO and maintained on file by the licensee. We expect this program to be implemented by the end of 1991.

2.7 EDG Reliability Program

Recommendation:

DLC should implement an EDG reliability program which meets the guidance of RG 1.155, Section 1.2. The EDG reliability program currently being revised by DLC should be evaluated and adjusted in accordance with RG 1.155. Confirmation that such a program is in place or will be implemented should be included with the documentation supporting the station blackout submittals.

Response:

We have committed to a target reliability of 0.975 and that reliability is tracked and maintained under our existing program. We are enhancing that program based upon the guidance given in NUMARC 87-00, Appendix D and working copies of Regulatory Guide 1.9 Revision 3, as appropriate. This program will meet the guidance of RG 1.155, Section 1.2. The EDG reliability program will be fully implemented by December 31, 1991.

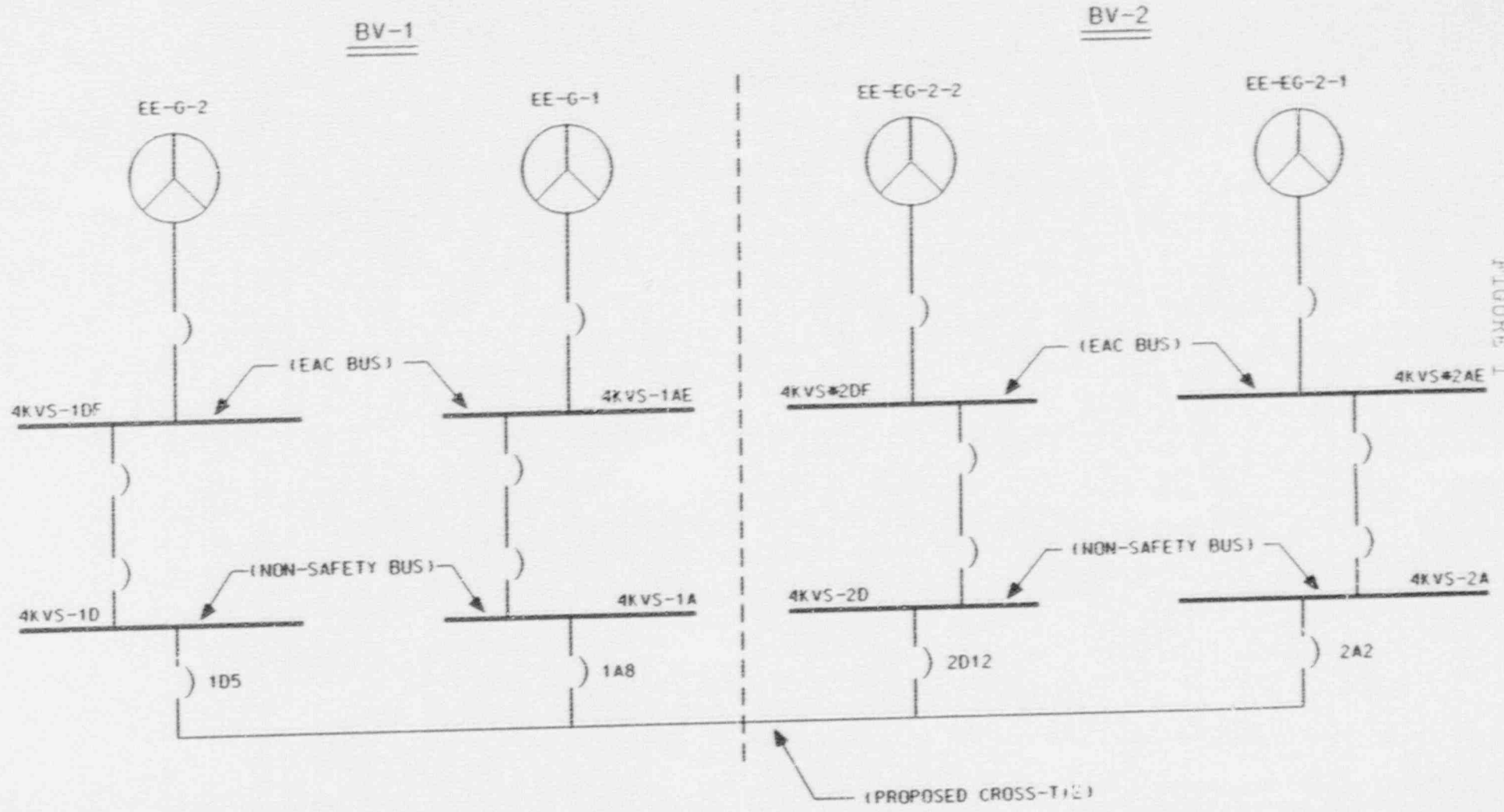


FIGURE 1 - BVPS  
Unit 1 and 2 AAC Cross-tie

ATTACHMENT 1  
FIGURE 1