

Duquesne Light Company

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JOHN D. SIEBER
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July 20, 1992

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

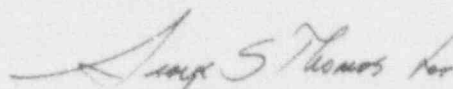
**Subject: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPP-73
Combined Inspection Report 50-334/91-80 and 50-412/91-80
Electrical Distribution System Functional Inspection**

Attached is a supplemental response to our previous submittal of June 12, 1992, which provided a schedule for the resolution of the Unresolved Items resulting from the above referenced inspection.

This response is being provided as a result of a telephone conference on July 10, 1992 between Mr. J. E. Beall of USNRC Region I and Mr. Nelson R. Tonet of my staff on this subject. It further clarifies the timing of our efforts to address the unresolved item "Setting of Degraded Grid Relays."

If there are any questions concerning this response, please contact Mr. Nelson R. Tonet at (412) 393-5210.

Sincerely,

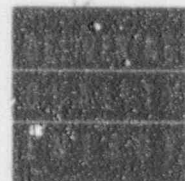

J. D. Sieber

Attachment

cc: Mr. L. W. Rossbach, Sr. Resident Inspector
Mr. T. T. Martin, NRC Region I Administrator
Mr. M. W. Hodges, Director, Division of Reactor Safety
Mr. A. W. DeAgazio, Project Manager
Mr. M. L. Bowling (VEPCO)

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DUQUESNE LIGHT COMPANY
Nuclear Group
Beaver Valley Power Station Units 1 and 2

Combined NRC Inspection 50-334/91-80 and 50-412/91-80
Electrical Distribution System Functional Inspection
Supplemental Response for Unresolved Items

Unresolved Item (50-334/91-80-04 and 50-412/91-80-04) - Setting of Degraded Grid Relays

Description of Unresolved Item

A review was performed of degraded grid relay settings and reset capability, coordination with the EDG start and fast bus transfer schemes, and applicable schematics. This review determined that the degraded grid relays on the 4160 V and 480 V safety related buses were set at 90% +/-1.6% of their respective nominal bus voltage. Therefore, the minimum theoretical voltages allowed on the switchgear and on the load center buses, before the appropriate automatic action takes place, are 3677 V and 424 V, respectively.

To ensure that the specified settings adequately protect the safety related motors from undervoltage conditions, the continuous ratings of the motors were also surveyed. A sampling of several 4160 V and 480 V motors revealed a continuous rating of 90% of the nominal (nameplate) voltage, i.e., 3744 V and 414 V (460 V x 0.9), respectively. A comparison of the above values shows that, under degraded voltage conditions, the 4160 V motor would be operating at a voltage below their minimum continuous rating and that a 10 V margin exists for the 480 V motors. In addition, when the cable voltage drop from the bus to the motors is taken into consideration, the voltage at the motors' terminals could be considerably less than the motors' continuous rating.

The 90% relay setting was verified through a review of several Relay Setting Sheets and is in accordance with the guidelines contained in BV-1 and BV-2's "Protective Relay Philosophy and Practices for 4160 V and 480 V Systems", Engineering Standard No. ES-E-004, Revision 0, dated September 11, 1989, and ES-E-003, Revision 0, dated February 14, 1989, respectively. The +/-1.6% tolerance was calculated in a Westinghouse analysis of the relay loop.

The team discussed the concern with the licensee who pointed out that the settings were in agreement with Item 6 of Table 3.3-4 of BV-1 and BV-2's Technical Specification. The licensee also indicated that the transformer tap settings kept the bus voltage near the nominal values. However, they were unable to provide an analysis to show that the motors could be operated below their continuous rating should a degraded voltage condition exist.

The setting of the degraded grid relays and/or the capability of the safety related motors to operate below their continuous setting is unresolved pending appropriate analysis or justification by the licensee.

Original Response

Proposed Resolution:

The current degraded grid relay setpoints were established recognizing that equipment will operate below 90% of nameplate voltage for periods of time with minimal impact on the equipment and that corrective actions would be taken to improve degraded grid conditions. The electrical grid in the BVPS area is very strong and does not operate at degraded voltage conditions or normally experience voltage excursions of a magnitude to cause low voltage concerns.

The degraded grid relay setpoints will be addressed by the upgrade of applicable electrical calculations. Pending completion of this effort, the use of interim setpoints will be investigated and implemented, if appropriate. Final setpoint determination will be made after completion of the necessary calculational efforts.

Scheduled Date:

- 50-334/91-80-04 - Interim setpoints implemented - 5th refueling outage
Final setpoints implemented - 11th refueling outage
- 50-412/91-80-04 - Interim setpoints implemented - 4th refueling outage
Final setpoints implemented - 5th refueling outage

Supplemental Response

The Nuclear Engineering Department is analyzing the issue of degraded grid relay setpoints to establish a basis for implementing interim setpoints, if deemed appropriate. Any interim setpoints will be sufficiently conservative to address the concerns of this Unresolved Item. Following completion of analytical efforts to upgrade existing electrical calculations, any interim setpoints will be readjusted accordingly. The schedule to accomplish these setpoints is as stated in our June 12, 1992 submittal and as identified above (i.e., the 9th refueling outage and the 4th refueling outage at Unit 1 and Unit 2, respectively).