

Duquesne Light Company

Beaver Valley Power Station
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January 11, 1994

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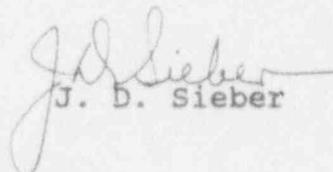
**Subject: Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
Inspection Report 50-412/93-25
Reply to Notice of Violation**

In response to NRC correspondence dated December 6, 1993, and in accordance with 10 CFR 2.201, the attached reply addresses the Notice of Violation transmitted with the subject inspection report.

Note that we have performed a detailed review of the circumstances surrounding the alleged violation. Based on this evaluation, we respectfully request that this violation be withdrawn.

If there are any questions concerning this response, please contact Mr. N. 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. G. E. Edison, Project Manager
Mr. Jacque P. Durr, Chief, Engineering Branch
Division of Reactor Safety, Region I

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**ELECTRIC
UTILITY of
THE YEAR**

DUQUESNE LIGHT COMPANY
Nuclear Power Division
Beaver Valley Power Station Unit 2

Reply to Notice of Violation

Inspection Report 50-412/93-25
Letter dated December 6, 1993

VIOLATION (Severity Level IV, Supplement I)

Description of Violation (50-412/93-25-01)

10 CFR Part 50, Appendix B, Criterion V, requires, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Beaver Valley, Unit 2, UFSAR, Section 17.2.5, titled "Instructions, Procedures and Drawings," implements the above requirement.

Table 1 of licensee Procedure 2CMP-75-FISHER VLV-1M, Issue 4, Revision 0, contained in Work Request Number 003370 for valve 2CHS-LCV460B requires the 7/8" body-to-bonnet studs be torqued to 340 ft-lbs.

Contrary to the above, on April 5, 1992, the 7/8" body-to-bonnet studs were torqued until the body-to-bonnet gap was metal to metal within 0.002" and not to 340 ft-lbs as required in the above procedure.

Discussion of Alleged Violation:

Maintenance Work Request MWR-3370 made repairs to valve 2CHS-LCV460B during the Beaver Valley Unit 2 (BV-2) Third Refueling Outage (2R3). The 2R3 repair was necessary because the valve had previously leaked and had been temporarily repaired by leak repair injection. The repair procedure, 2CMP-75-FISHER VLV-1M, Issue 4, Revision 0, specified torquing the body-to-bonnet stud nuts to 340 ft-lbs. Since the valve body design and the valve location in the plant prevented use of a torque wrench, a procedure field revision, 92-PG2-023, was issued on 4/1/92 to permit the following alternate tightening method:

"Using an alternating sequence, incrementally tighten body nuts until body-to-bonnet gap is metal to metal within 0.002 inch."

The body-to-bonnet stud nuts were subsequently tightened using this alternate method on 4/5/92. This work was verified by a Quality Control Inspector.

The NRC letter transmitting the violation expressed the concerns that applying torque to the body-to-bonnet studs of a safety related category 1 valve without controlling the amount of torque may create excessive tensile stress on the studs or may have created an under torqued configuration. Duquesne Light Company has evaluated these concerns and provides the following:

1. Discussions with Maintenance personnel assigned to this work indicated that the body-to-bonnet stud nuts were tightened using a wrench no longer than one foot long, and that no "cheater bars" or torque multiplying devices were used. It is reasonable to assume that a mechanic could not apply a force of more than 150 to 250 lbs. in tightening these nuts. Based on the use of a one foot long lever arm, the maximum torque applied would be conservatively estimated to be approximately 250 ft-lbs. This is well below the 340 ft-lbs specified in the vendor technical manual. In addition, we have calculated that a torque of 573 ft-lbs would be required to cause yielding in the studs.
2. In order for the body-to-bonnet gasket to provide a tight seal against leakage, the gasket must be compressed a certain specified amount during initial joint tightening. In the case of 2CHS-LCV460B, the gasket compression is limited by the joint design. Once body-to-bonnet metal to metal contact is obtained, the full gasket compression is achieved and further tightening will not further compress the gasket. We have calculated that the minimum nut torque necessary to compress the gasket to its optimum operating thickness is 120 ft-lbs. Based on a one foot lever arm and a minimum applied force of 150 lbs, a torque of 150 ft-lbs or greater would have been applied by the mechanic tightening the nuts. This would be more than enough to obtain the correct gasket compression. In fact, metal to metal contact within 0.002 inch was obtained in accordance with the procedure field revision in tightening the joint. It is also calculated that a 120 ft-lb joint preload is sufficient to prevent joint separation under system design pressure. A post maintenance in-service leak check was performed at normal operating temperature and pressure on 2CHS-LCV460B after repairs were made during 2R3 and no leakage was detected. This valve has been in service for more than one full fuel cycle and no body-to-bonnet leaks have been reported.

Based on the above discussion, we have determined that the torque applied to the body-to-bonnet studs was acceptable and did not create excessive tensile stresses or an under torqued configuration.

In conclusion, we respectfully request that the violation be withdrawn for the following reasons:

- A procedure field revision was processed prior to work on the valve to allow the alternate torque method to be used.
- The field revision provided a reasonable alternative to tightening the nuts to a specified torque value.
- The body-to-bonnet stud nuts were torqued using an alternating sequence and incrementally tightened until the body to bonnet gap was metal to metal within 0.002". This acceptance criteria was based on dimensions taken from an approved vendor drawing with the addition of a 2 mil (0.002") tolerance. This work was verified by a Quality Control Inspector.
- The alternate torque method used, compressed the flexitallic gasket so that it was fully activated and no subsequent leakage has been detected.
- A calculation to determine the actual torque applied based on the amount of gasket compression was subsequently performed and confirmed that the studs were not over torqued and that the joint is not in an under torqued configuration. This calculation is available for review.