



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

April 8, 1991

Docket No. 50-412  
Serial No. BV-90-010

Mr. J. D. Sieber, Vice President  
Nuclear Group  
Duquesne Light Company  
Post Office Box 4  
Shippingport, Pennsylvania 15077

Dear Mr. Sieber:

SUBJECT: ELIMINATION OF DYNAMIC EFFECTS OF POSTULATED PRESSURIZER SURGE LINE RUPTURE AND ELIMINATION OF REACTOR COOLANT SYSTEM COMPONENT SUPPORT SNUBBERS (TAC NOS. 71086 and 72111)

On October 27, 1988, Duquesne Light Company (DLC) submitted detailed information to support a proposed modification to the reactor coolant system (RCS) component supports at the Beaver Valley Power Station, Unit 2 (BVPS-2). The modification involved the elimination of several large-bore snubbers and the addition of rigid struts. These changes would be possible through exclusion from consideration of the dynamic effects of postulated piping failures in accordance with General Design Criterion 4 (GDC 4) of Appendix A to 10 CFR Part 50. Exclusion of these considerations is based upon the concept of leak-before-break (LBB) which utilizes advanced fracture-mechanics and the plant leak-detection ability during operation. The modifications would improve RCS reliability and reduce occupational radiation exposure.

The use of LBB for RCS piping was initially approved for BVPS-2 on October 11, 1985. Later, the discovery of fluid thermal-stratification in the pressurizer surge lines (PSL) at BVPS-2 and at other facilities necessitated reevaluation of the PSL as discussed in Bulletin 88-11. Therefore, limited approval only for the proposed modification was granted on March 3, 1989, and again on October 12, 1990, pending completion of our evaluation of the PSL. The staff's evaluation of DLC's program in response to Bulletin 88-11 was issued January 18, 1990.

By letters dated May 15, 1990, and August 10, 1990, DLC submitted additional information on the evaluation of the PSL. The May 15, 1990, letter provided a LBB analysis consistent with the assumptions used to show compliance with the ASME Section III Code. Specifically, the faulted load was based in part on the thermal load resulting from a thermal-stratification differential of 315° F between the hot leg and the pressurizer. Based on our review of the latest submittals, we find that our previous conclusion that the PSL was in compliance with GDC 4 is still valid. Furthermore, we find that the conclusion is valid even without the currently imposed temperature differential limit of 200°F for the PSL.

The August 10, 1991, letter submitted WCAP-12093, Supplement 3, (Proprietary) entitled Evaluation of Pressurizer Surge Line Transients Exceeding 320°F for

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Beaver Valley Unit 2. This supplement provides an assessment of the effects of occurrences of temperature differentials between the hot leg and the pressurizer that were greater than the 315°F limit that was assumed in the analysis that was accepted in January 1990. During the startup from the first refueling outage, differentials greater than 320°F were detected on several occasions. Thus, the impact of those occurrences of excessive temperature differentials upon PSL stresses and cumulative fatigue usage factors had to be reassessed to ensure that code compliance of the surge line would be maintained for its design life.

Based on our evaluation of the information contained in WCAP-12093, Supplement 3, we conclude that the assessment contained therein is acceptable to reaffirm PSL code compliance. DLC also indicated that the operating procedures were modified to prevent reoccurrence of unacceptable temperature differentials. We find this corrective action to be acceptable.

Our evaluation of this issue is now completed. We conclude that with the proposed RCS support configuration, the piping components and supports will be stressed within the USAR allowable limits under all the pertinent design basis loading conditions and the stratified flow loading conditions in the PSL, excluding loads associated with large RCS pipe rupture.

This concludes our review efforts related to TAC Nos. 71086 and 72111.

Sincerely,

/s/

Albert W. De Agazio, Sr. Project Manager  
Project Directorate I-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

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