

February 11, 2000

Mr. L. W. Myers
Senior Vice President
Beaver Valley Power Station
Post Office Box 4
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY 1 AND 2 - EVALUATION OF FIRST CONTAINMENT
INSPECTION INTERVAL IWE/IWL PROGRAM REQUEST FOR RELIEF (TAC
NOS. MA7357 AND MA7358)

Dear Mr. Myers:

By letter dated November 29, 1999, Duquesne Light Company (DLC) submitted a request for relief (BV3-IWE1-1, Rev. 0) from, and proposed an alternative to, certain requirements of Subsection IWE and IWL of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code for the Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS-1 and BVPS-2). This relief request was submitted as part of the first 10-year primary containment inservice inspection program interval.

On the date of the November 29, 1999, letter, DLC was the licensed operator for BVPS-1 and BVPS-2. On December 3, 1999, DLC's ownership interests in both BVPS-1 and BVPS-2 were transferred to the Pennsylvania Power Company, and DLC's operating authority for BVPS-1 and BVPS-2 was transferred to FirstEnergy Nuclear Operating Company (FENOC). By letter dated December 13, 1999, FENOC requested that the Nuclear Regulatory Commission (NRC) continue to review and act upon all requests before the Commission which had been submitted by DLC.

Accordingly, the NRC staff has completed its review of this relief request and the proposed alternative. As described in the enclosed safety evaluation, the NRC staff has authorized the alternative in relief request BV3-IWE1-1, Rev. 0 for the first 10-year primary containment inservice inspection program interval pursuant to 10 CFR 50.55a(a)(3)(ii) based on a determination that compliance with the Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

L. W. Myers

-2-

If you have any questions regarding this evaluation, please contact the Beaver Valley Project Manager, Daniel Collins at (301) 415-1427.

Sincerely,

/RA/

Marsha Gamberoni, Acting Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure: Safety Evaluation

cc w/encl: See next page

L. W. Myers

-2-

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
REGARDING A RELIEF REQUEST FOR THE FIRST 10-YEAR PRIMARY
CONTAINMENT INSERVICE INSPECTION PROGRAM INTERVAL
PENNSYLVANIA POWER COMPANY
OHIO EDISON COMPANY
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
THE TOLEDO EDISON COMPANY
FIRSTENERGY NUCLEAR OPERATING COMPANY
BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2
DOCKET NOS. 50-334 AND 50-412

1.0 INTRODUCTION

In the Federal Register dated August 8, 1996 (61 FR 41303), the Nuclear Regulatory Commission (NRC) amended its regulations in Title 10 of the Code of Federal Regulations, Section 50.55a (10 CFR 50.55a; the rule) to incorporate by reference the 1992 edition with 1992 addenda of Subsections IWE and IWL of Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (B&PV Code). Subsections IWE and IWL provide the requirements for inservice inspection (ISI) of Class CC (concrete containment), and Class MC (metallic containment) of light-water cooled power plants. The effective date for the amended rule was September 9, 1996, and it requires the licensees to incorporate the new requirements into their ISI plans and to complete the first containment inspection by September 9, 2001. However, a licensee may propose alternatives to, or submit a request for relief from, the requirements of the regulation pursuant to 10 CFR 50.55a(a)(3) and (g)(5). In order to obtain authorization or relief, the licensee must demonstrate that: (1) the proposed alternative provides an acceptable level of quality and safety; (2) compliance would result in a hardship or unusual difficulty without a compensating increase in the level or quality and safety; or (3) conformance is impractical for its facility.

By the letter dated November 29, 1999 (L-99-175), Duquesne Light Company (DLC) proposed an alternative to the requirements of Subsections IWE and IWL of Section XI of the ASME Code for the Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS-1 and 2). The NRC's findings with respect to authorizing the alternative or denying the proposed request are discussed in this evaluation.

On the date of the November 29, 1999, letter, DLC was the licensed operator for BVPS-1 and BVPS-2. On December 3, 1999, DLC's ownership interests in both BVPS-1 and BVPS-2 were transferred to the Pennsylvania Power Company, and DLC's operating authority for BVPS-1

and BVPS-2 was transferred to the FirstEnergy Nuclear Operating Company (FENOC). By letter dated December 13, 1999, FENOC requested that the NRC continue to review and act upon all requests before the Commission which had been submitted by DLC.

2.0 EVALUATION

2.1 Relief Request BV3-IWE1-1: Examination Category E-D, Items E5.10 and E5.20, Visual Examination of Seals and Gaskets.

2.1.1 Code Requirement:

Examination Category E-D, Item Nos. E5.10 and E5.20 of Table IWE-2500-1, ASME, Boiler and Pressure Vessel (B&PV) Code, Section XI, 1992 Edition, 1992 Addenda, as amended by 10 CFR Part 50.55a, requires that seals and gaskets on air locks, hatches, and other devices receive a VT-3 visual examination once each interval to ensure containment leak-tight integrity.

2.1.2 Specific Relief Requested:

In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requests relief from the Code-required visual examination, VT-3, of seals and gaskets on airlocks, hatches, and other devices requiring VT-3 examination once each interval to assure containment leak-tight integrity.

2.1.3 Licensee's Basis for Requesting Relief (as stated):

"The leak-tight integrity of resilient seals and gaskets is periodically verified by the 10 CFR Part 50, Appendix J, Primary Containment Leakage Program. Also, in the 1993 Addenda of ASME Section XI, Table IWE-2500-1, Category E-D, Note 1, has been revised to not require disassembly of the connections solely for the purpose of conducting examinations.

- **Electrical Penetrations**

Two types of electrical penetration assemblies are used: canister and unitized header. All electrical penetration assemblies are fabricated and tested in accordance with the ASME B&PV Code. These seals and gaskets cannot be inspected without the disassembly of the penetration to gain access to the seals and gaskets. All penetration assemblies are leak tested in accordance with 10 CFR Part 50, Appendix J, Option B.

- **Air Locks**

The Personnel and Emergency Air Locks utilize inner and outer doors with double gasket surfaces to ensure leak-tight integrity. These air locks also contain other gaskets and seals, such as handwheel shaft seals, electrical penetrations, blank flanges, and equalizing pressure connections which require disassembly to gain access to the gaskets and seals. All of these assemblies are leak tested in accordance with 10 CFR Part 50, Appendix J, Option B.

- Equipment Hatch

The equipment hatch utilizes a double gasket to ensure leak-tight integrity. The equipment hatch is currently leak tested in accordance with 10 CFR Part 50, Appendix J, Option B.

- Containment Penetrations

Containment penetrations whose design incorporates resilient seals, or gaskets are: containment purge blind flanges, fuel transfer tube blind flanges, and other penetrations that contain gaskets and seals which require disassembly to gain access to the gaskets and seals. These penetrations are currently leak tested in accordance with 10 CFR Part 50, Appendix J, Option B.

The examinations of seals and gaskets requires that the joints, which are proven adequate through Appendix J leak rate tests, be disassembled. For the electrical penetrations, this involves a pre-maintenance Appendix J leak rate test, and disconnecting cables at electrical penetrations. If enough cable slack is not available, disassembly of the joints, removal and examination of the seals and gaskets, reassembly of the joints, reconnecting the cables if necessary, post-maintenance testing of the cables, and then a post-maintenance Appendix J leak rate test of the penetration would be required.

For the Containment Personnel and Emergency Air Locks, blind flanges, and the Equipment Hatch, the work required would be similar except for the disconnecting, reconnecting, and testing of cables. This imposes the risk that equipment could be damaged. As identified above, the ASME B&PV Code, Section XI, 1992 Edition, 1993 Addenda, recognizes that disassembly of joints to perform these examinations is not warranted. Examination Category E-D was modified to state that sealed or gasket connections need not be disassembled solely for performance of examinations. However, without disassembly, most of the surface of the seals and gaskets are inaccessible. When these assemblies are tested in accordance with 10 CFR Part 50, Appendix J, degradation of the seal or gasket material is identified by an increase in the leakage rate. Corrective measures are applied and the component re-tested.

On the basis of the above information, a VT-3 examination of seals and gaskets in accordance with Section XI constitutes a burden without a compensating increase in quality or safety. Testing the seals and gaskets in accordance with 10 CFR Part 50, Appendix J provides acceptable assurance of the leak-tight integrity of the seals and gaskets.”

2.1.4 Licensee’s Proposed Alternative (as stated):

“The leak-tight integrity of seals and gaskets is verified with the 10 CFR Part 50, Appendix J, Primary Containment Leakage Testing Program.”

2.1.5 Licensee's Proposed Implementation Schedule (as stated):

“ This relief request is applicable to the initial interval of the Containment Inspection Program.”

2.1.6 Staff Evaluation of BV3-IWE1-1:

The licensee proposes to use, in lieu of performing the VT-3 examinations for containment penetration seals and gaskets, the existing primary containment leakage testing program for leakage testing containment penetrations in accordance with 10 CFR Part 50, Appendix J.

In accordance with the 1992 Edition, with 1992 Addenda, of Subsections IWE and IWL of Section XI of the Code, which is incorporated by reference in 10 CFR 50.55a, seals and gaskets require 100 percent VT-3 examination during each inspection interval at BVPS- 1 and 2. In its request, the licensee stated that because the seals and gaskets associated with these penetrations are not accessible for examination when the penetration is assembled, containment penetrations seals and gaskets must be disassembled and re-assembled for the purpose of performing the VT-3 visual examination. These activities (a pre-maintenance Appendix J test, de-termination of cables at electrical penetrations if enough cable slack is not available, disassembly of the joints, removal and examination of the seals and gaskets, re-assembly of the joints, re-termination of the cables if necessary, post-maintenance testing of cables, and post-maintenance Appendix J testing of the penetration) associated with a VT-3 visual examination would introduce the possibility of component damage that would not otherwise occur.

The periodical leakage testing of components in accordance with 10 CFR Part 50, Appendix J is conducted for the specific purpose of demonstrating containment leakage integrity (i.e. that containment leakage is within the acceptable limits of the plant Technical Specifications). This testing will detect local leakage at containment peak accident pressure and measure leakage across the leakage-limiting boundary of containment penetrations whose designs incorporate resilient seals, gaskets, sealant compounds, and electrical penetrations fitted with flexible metal seal assemblies. Thus, satisfactory performance of an Appendix J test on a component demonstrates not only its acceptability for providing containment integrity, but demonstrates the integrity of its associated seals and gaskets as well. Any components which fail an Appendix J test are required to be repaired and successfully pass a post-maintenance Appendix J test prior to being returned to service; gaskets and seals are inspected and/or replaced during the repair process. Thus, disassembly of joints for the sole purpose of performance of visual examinations is unwarranted; this is recognized in the 1993 Addenda to Section XI, Examination Category E-D, Footnote 1. Requiring the licensee to disassemble components for the sole purpose of inspecting seals and gaskets would place a significant hardship on the licensee without a compensating increase in the level of quality and safety.

On the basis discussed above, the staff finds that the integrity of the containment penetration seals and gaskets is verified by the leakage rate testing required by 10 CFR Part 50, Appendix J, and that the alternative proposed by the licensee will provide

reasonable assurance of the functionality and integrity of the containment penetration seals and gaskets during the inspection interval. Thus, given the hardship associated with code compliance, imposition of the Code requirements would result in hardship without a compensating increase in the level of quality and safety. For this reason, the licensee's proposed alternative contained in Relief Request BV3-IWE1-1 is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the first 10-year primary containment inservice inspection program interval.

3.0 CONCLUSION

The NRC staff has evaluated the licensee's November 26, 1999, submittal for BVPS-1 and 2. Based on the information provided in the request for relief, the staff concludes that for BV3-IWE1-1, compliance with the Code requirements would result in a burden without a compensating increase in the level of quality and safety, and that the licensee's proposed alternatives will provide reasonable assurance of containment pressure integrity. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the first 10-year primary containment inservice inspection program interval.

Principal Contributors: T. Cheng
D. Collins

Date: February 11, 2000