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L-08-362

10 CFR 50.55a(a)(3)(ii)

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Beaver Valley Power Station, Unit Nos. 1 and 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
Proposed Alternative to American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section XI, Paragraph IWA-5244 Examination Requirements (Request No. BV3-IWA-5244-1)

Pursuant to 10 CFR 50.55a(a)(3)(ii), FirstEnergy Nuclear Operating Company (FENOC) hereby requests Nuclear Regulatory Commission (NRC) approval of proposed alternatives to American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section XI, paragraph IWA-5244(b)(1) for buried portions of ASME Code Class 3 river water, service water, and auxiliary feedwater system piping. Paragraph IWA-5244(b)(1) requires that system pressure tests of isolable buried components be conducted to determine either the rate of pressure loss or change in flow between the ends of the buried components.

The proposed alternatives include the use of system full flow tests for Beaver Valley Power Station Unit No. 1 (BVPS-1) river water system buried piping and Beaver Valley Power Station Unit No. 2 service water system buried piping, and the use of demineralized water storage tank level indication for BVPS-1 auxiliary feedwater system buried piping. FENOC requests approval of these alternatives by December 11, 2009.

The proposed alternatives provide reasonable assurance of the structural integrity of the buried piping and are described in detail in the enclosure.

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There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at 330-761-6071.

Sincerely,

Peter P. Sena III

Enclosure:

10 CFR 50.55a Request Number BV3-IWA-5244-1

cc: Mr. S. J. Collins, NRC Region I Administrator
Mr. D. L. Werkheiser, NRC Senior Resident Inspector
Ms. N. S. Morgan, NRR Project Manager
Mr. K. L. Howard, NRC DLR Project Manager
Mr. D. J. Allard, Director BRP/DEP
Mr. L. E. Ryan (BRP/DEP)

Proposed Alternative
in Accordance with 10 CFR 50.55a(a)(3)(ii)

1.0 ASME Code Components Affected

Component Numbers:

Beaver Valley Power Station Unit No. 1 (BVPS-1) River Water Piping

24"-WR-101-301	6"-WR-90-301	6"-WR-91-301
24"-WR-102-301	6"-WR-674-157W	6"-WR-675-157W

Beaver Valley Power Station Unit No. 2 (BVPS-2) Service Water Piping

2-SWS-030-41	2-SWS-030-82	2-SWS-012-162
2-SWS-030-81	2-SWS-024-63	2-SWS-012-161
2-SWS-030-40	2-SWS-024-62	

BVPS-1 Auxiliary Feedwater Piping

8"-WD-22-151	6"-WD-23-151	6"-WD-24-151

Code Class: 3

Examination Category: D-B

Item Number: D2.10

2.0 Applicable Code Edition and Addenda

American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section XI, 2001 Edition through 2003 Addenda.

3.0 Applicable Code Requirement

Paragraph IWA-5244 of ASME Code Section XI contains requirements for the visual examination of buried components. The following code requirement is applicable when a visual examination of buried components cannot be performed.

ASME Code Section XI, Paragraph IWA-5244(b)(1) states:

> *"The system pressure test for buried components that are isolable by means of valves shall consist of a test that determines the rate of pressure loss. Alternatively, the test may determine the change in flow between the ends of the buried components. The acceptable rate of pressure loss or flow shall be established by the Owner."*

4.0 Reason for Request

Paragraph IWA-5244(b)(1) of ASME Code Section XI requires that system pressure tests of isolable buried components be conducted to determine either the rate of pressure loss or change in flow between the ends of the buried components. This requirement is applicable to the buried portions of the affected river and service water system piping at BVPS-1 and BVPS-2. At BVPS-1, the affected piping includes both 24-inch river water system supply headers, and the 6-inch supply lines to the diesel generator cooling system heat exchangers. The requirement is also applicable to the two 6-inch and one 8-inch supply lines from the primary plant demineralized water storage tank to the three auxiliary feedwater pumps. At BVPS-2, the affected piping includes both 30-inch service water system supply headers, as well as, the two 24-inch supply lines to the recirculation spray heat exchangers, and two 12-inch supply lines to rod control and diesel generator cooling system heat exchangers.

The affected pipe lines utilize butterfly valves for isolation. While suitable to provide isolation between equipment trains and/or other components, these valves are not capable of maintaining the leak-tight isolation function required to conduct the pressure loss test required by paragraph IWA-5244(b)(1).

As an alternative to a test that determines system pressure loss, paragraph IWA-5244(b)(1) states that the test may determine the change in flow between the ends of the buried components. However, the affected pipe lines lack the plant instrumentation necessary to determine a flow rate between the ends of the buried pipe via direct measurement, and lack a sufficient length of accessible straight pipe by which flow could be determined using an ultrasonic flow measurement device.

Performing either of the tests described in paragraph IWA-5244(b)(1) would require hardware changes and cause a hardship. The pressure loss test would require hardware changes, and determining the flow rate between the ends of the buried components would require installation of upstream flow monitoring instrumentation.

5.0 Proposed Alternative and Basis for Use

As alternatives to testing requirements of paragraph IWA-5244(b)(1), FENOC proposes the use of plant surveillances, with operating conditions, and flow acceptance criteria appropriate to the locations being tested. Specifically, FENOC proposes to use the system full flow test for the BVPS-1 river water and BVPS-2 service water system buried piping, and use primary plant demineralized water storage tank level indication in the control room for the BVPS-1 auxiliary feedwater system buried piping.

5.1 BVPS-1 River Water System and BVPS-2 Service Water System Buried Piping

Operating surveillance tests are performed every 18 months on the river water and service water systems to verify adequate flow to all of the safety related loads. Use of these tests, in lieu of the quarterly pump operating surveillance tests, is more appropriate for the Beaver Valley Power Station piping configurations because, in

addition to the buried supply headers, many downstream safety related loads are also supplied via buried pipe lines. Many of these downstream buried pipe lines do not experience flow during quarterly pump tests. However, all of the affected buried pipe lines at BVPS-1 and BVPS-2 experience flow during the performance of the 18-month full flow tests, which verify that adequate flow is being provided to all of the downstream safety related loads.

These BVPS-1 and BVPS-2 operating surveillance tests require full flow through each train of equipment. The BVPS-1 'A' and 'B' train river water system full flow test procedures contain measured parameters and flow acceptance criteria (adjusted to river water level) for all of the downstream safety related loads, including the diesel generator cooling system heat exchangers which are supplied through buried supply lines. The acceptability of the 24-inch supply headers is demonstrated during the tests by confirming that the downstream safety related loads are being supplied within their flow acceptance criteria.

The BVPS-2 'A' and 'B' train service water system full flow test procedures also contain measured parameters and flow acceptance criteria (adjusted to river water level) for all of the downstream safety related loads, including the recirculation spray heat exchangers, and diesel generator cooling system heat exchangers. These downstream safety related loads are supplied by buried branch lines off the two main 30-inch service water system supply headers. The acceptability of the 30-inch supply headers is demonstrated during the tests by confirming that the downstream safety related loads are being supplied within their flow acceptance criteria.

For both BVPS-1 and BVPS-2, separate measured values are obtained and flow acceptance criteria exist for all of the loads supplied through the buried piping subject to paragraph IWA-5244 requirements. This includes the buried river water and service water system main headers and individual buried lines to downstream safety related river water and service water system loads. Thus the river water and service water system full flow tests provide adequate data to detect significant leakage in any of the individual buried lines subject to the tests. If, during an operating surveillance test, the minimum flow could not be achieved through either the main header or one or more of the downstream loads, and the cause of the deviation could not be attributed to the test instruments being used, the system would be declared inoperable and a condition report would be generated in accordance with the FENOC Corrective Action Program as required by the existing operating surveillance test. Further corrective actions (for example, maintenance on the associated pump, system walk-downs, and so forth) would be initiated as necessary to restore the system to an operable status.

The above proposed alternative to the testing requirements of paragraph IWA-5244(b)(1) would identify significant leakage and provide reasonable assurance of the structural integrity of the affected river water and service water system buried pipe lines.

5.2 BVPS-1 Auxiliary Feedwater System Buried Piping

The three auxiliary feedwater system pumps at BVPS-1 are supplied through buried pipe lines from the primary plant demineralized water storage tank (PPDWST). Plant Technical Specifications require that the PPDWST be operable in Modes 1, 2, 3, and in Mode 4 when the steam generator(s) is(are) relied upon for heat removal. Operability of PPDWST is defined as PPDWST level greater than or equal to 130,000 gallons, which is verified by Operations surveillance every 12 hours.

In the normal system arrangement, the three valves between the PPDWST and their respective buried lines are open. Thus, buried auxiliary feedwater pipe lines 8"-WD-22-151, 6"-WD-23-151, and 6"-WD-24-151 are exposed to static head pressure from the PPDWST under normal operating conditions. A significant drop in PPDWST level, which could be evidence of a leak in one or more of the buried auxiliary feedwater lines, would be evident in the control room and identified during the required Operations surveillance. This would result in declaring the PPDWST inoperable and identifying the condition in the FENOC Corrective Action Program. Corrective actions would be initiated as necessary to determine the cause of the decrease in PPDWST level and to restore the PPDWST to operable status.

The above proposed alternative to the testing requirements of paragraph IWA-5244(b)(1) would identify significant leakage and provide reasonable assurance of the structural integrity of the affected auxiliary feedwater system buried pipe lines.

6.0 Duration of Proposed Alternative

The duration of the proposed alternative is for the remainder of the BVPS-1 and BVPS-2, fourth and third 10-year Inservice Inspection Intervals, respectively, both scheduled to end in 2018.

7.0 Precedent

Similar requests for relief from the ASME Code Section XI, paragraph IWA-5244 requirement for a test of the buried portion of service water piping (by measuring the rate of pressure loss or change in flow between the ends of the buried components) were submitted for the Byron Station and Cooper Nuclear Station (See Reference 8.1 - Relief Request I3R-07, and Reference 8.3 - Relief Request PR-06). Alternatively the licensees proposed the use of quarterly pump testing to confirm that flow during operation is not impaired and to verify the integrity of the piping. The NRC staff authorized the proposed alternatives as described in References 8.2 and 8.4.

8.0 References

8.1 Letter from Mr. Joseph A. Bauer, Manager - Licensing, Exelon Generation to the U. S. Nuclear Regulatory Commission, Subject: "Inservice Inspection Program Relief Requests," dated April 20, 2006.

8.2 Letter from Mr. Michael L. Marshall, Jr., Chief Plant Licensing Branch III-2, Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation to Mr. Christopher M. Crane, President and Chief Nuclear Officer, Exelon Generation Company LLC, Subject: "Byron Station, Unit Nos. 1 and 2, and Braidwood Station Unit Nos. 1 and 2 Evaluation of Inservice Inspection Program Relief Requests I3R-07 and I2R-46 Pertaining To Essential Service Water Buried Piping (TAC Nos. MD1757, MD1758, MD1759 And MD1760)," dated January 16, 2007 (Accession Number ML063260074).

8.3 Letter from Mr. Randall K. Edington, Vice President - Nuclear and Chief Nuclear Officer, Nebraska Public Power District to the U. S. Nuclear Regulatory Commission, Subject: "10 CFR 50.55a Requests for Fourth Ten-Year Inservice Inspection Interval, Cooper Nuclear Station, Docket No. 50-298, DPR-46," dated February 23, 2006 (Accession Number ML060590300).

8.4 Letter from Mr. D. Terao, Chief Plant Licensing Branch IV, Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation to Mr. Randall K. Edington, Vice President - Nuclear and Chief Nuclear Officer, Nebraska Public Power District, Subject: "Cooper Nuclear Station Re: Fourth 10-Year Interval Inservice Inspection Request for Relief No. PR-06 (TAC No. MD0286)," dated October 2, 2006 (Accession Number ML062260217).