March 23, 2002

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

SUBJECT: BEAVER VALLEY POWER STATION, UNIT 2 - EVALUATION OF INSERVICE TESTING RELIEF REQUEST (TAC NO. MB3745)

Dear Mr. Myers:

By letter dated January 4, 2002, as supplemented by letter dated February 1, 2002, FirstEnergy Nuclear Operating Company submitted a request for relief (VRR3) from, and proposed an alternative to, certain inservice testing requirements of Section XI of the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* for certain motor-operated valves at the Beaver Valley Power Station, Unit 2.

The NRC staff has completed its review of this relief request and the proposed alternative. As described in the enclosed safety evaluation, the Nuclear Regulatory Commission staff has authorized VRR3 for the remainder of the second interval pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(a)(3)(i), on the basis that the proposed alternative provides an acceptable level of quality and safety.

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

Sincerely,

/RA/

Joel T. Munday, Acting Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING A REQUEST FOR RELIEF FROM INSERVICE

TESTING OF CERTAIN MOTOR-OPERATED VALVES

PENNSYLVANIA POWER COMPANY

OHIO EDISON COMPANY

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

THE TOLEDO EDISON COMPANY

FIRSTENERGY NUCLEAR OPERATING COMPANY

BEAVER VALLEY POWER STATION, UNIT 2

DOCKET NO. 50-412

1.0 INTRODUCTION

By letter dated January 4, 2002, as supplemented by letter dated February 1, 2002, FirstEnergy Nuclear Operating Company (FENOC), the licensee for Beaver Valley Power Station, Unit 2 (BVPS-2) submitted a request for relief (VRR3) from, and proposed an alternative to, certain inservice testing (IST) requirements of Section XI of the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code) for certain motor-operated valves at BVPS-2

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, requires that the IST of certain ASME Code, Class 1, 2, and 3, pumps and valves be performed in accordance with Section XI of the ASME Code and applicable addenda, except where proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a(a)(3)(i) or (a)(3)(ii), or relief has been requested and granted pursuant to 10 CFR 50.55a(f)(6)(i). In proposing alternatives or requesting relief, the applicant 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 of quality and safety, or (3) conformance is impractical for its facility. Nuclear Regulatory Commission (NRC) guidance contained in Generic Letter (GL) 89-04, “Guidance on Developing Acceptable Inservice Testing Programs,” provides alternatives to the ASME Code requirements which are acceptable. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, “Guidelines for Inservice Testing at Nuclear Power Plants.”

2.0 BACKGROUND

By letters dated January 4, and February 1, 2002, FENOC submitted a request for relief from the exercise requirements of ASME Code, Section XI, for certain motor-operated valves at BVPS-2. Specifically, the licensee's Relief Request, VRR3, seeks relief from quarterly testing of the recirculation spray (RSS) heat exchanger service water supply (SWS) isolation valves [2SWS*MOV103A/B] and the SWS header isolation valves [2SWS*MOV106A/B]. These valves are currently required to be tested each refueling outage and are cycled during the SWS full-flow tests as noted in Valve Refueling Outage Justifications 46 and 47. However, testing can also be performed on-line during certain times of the year when SWS cooling load demands are low, or during cold shutdowns of sufficient duration. The licensee will test these valves during cold shutdown of sufficient duration and at scheduled refueling outages. The licensee proposes to test these valves on-line in the weeks just prior to a refueling outage. However, if the tests cannot be performed on-line due to high heat-load demands, the licensee will perform the tests during the refueling outage.

3.0 CODE REQUIREMENTS

OM-10, Section 4.2.1.1, requires that active Category B valves be tested nominally every 3 months (quarterly), or during cold shutdowns if exercising is not practicable during plant operation, or during refueling outages if exercising is not practicable during plant operation or cold shutdowns. More specifically, OM-10, Section 4.2.1.1, requires quarterly testing if the test is being performed during normal operation. Therefore, relief is needed because the licensee's proposal to not test the valves quarterly but, rather, only during the weeks just prior to a refueling outage, deviates from the ASME Code requirements.

4.0 LICENSEE'S BASIS FOR RELIEF

The licensee states that 2SWS*MOV103A/B cannot be cycled open and closed during normal plant operation without directing service water (Ohio River Water) flow to the RSS heat exchangers and/or connecting SWS piping. The piping and heat exchangers are normally maintained in a dry lay-up condition in order to maintain them in an operationally ready state. Plant operating experience has shown that the introduction of service water deposits Asiatic clams, other marine life, river mud, and silt, into the heat exchangers and connecting piping, and would degrade the operational readiness of the system. Draining and cleaning of the RSS heat exchangers (in addition to piping) would lead to increased maintenance, radiological exposure and possibly a plant shutdown if cleaning of the RSS heat exchangers could not be accomplished within the required 72-hour LCO action time of Technical Specification 3.7.4.1. Therefore, exercising these valves quarterly is considered impractical during normal operation.

The licensee states that pretest alignment of the SWS subsystems would be required to enable as much cooling flow as possible to the station loads placed on the SWS header in service, if SWS valves [2SWS*MOV106A/B] were to be closed and the SWS pumps were to be shut down (without also directing flow to the RSS heat exchangers). This would involve extremely time-consuming valve line-ups that are not desirable during plant operation. These valve line-ups are estimated to take more than one shift (8 hours) per train to perform—both before and after the test.

The licensee states that because both SWS subsystems must be maintained operable during normal operation, SWS valves [2SWS*MOV103A/B] must be opened with flow to the RSS heat exchangers when also closing SWS valves [2SWS*MOV106A/B]. Opening SWS valves [2SWS*MOV103A/B] has been shown to be impractical during normal operation, therefore, testing of SWS valves [2SWS*MOV106A/B] is also considered to be impractical during normal operation.

The licensee states that previously SWS valves [2SWS*MOV103A/B] and [2SWS*MOV106A/B] have been full-stroke exercised and timed open and closed during refueling outages during performance of the SWS full-flow tests (2OST-30.13A and B) by placing SWS flow through the RSS heat exchangers. In order to avoid impact on refueling outages when performing the SWS full-flow tests, relief is requested to allow performing this test on-line—in the weeks just prior to the refueling outage. After performing the test on-line, the RSS heat exchangers will be drained to remove most of the mud, silt, Asiatic clams, and other marine life, flushed into the heat exchangers. Actual cleaning of the heat exchangers will occur during the refueling outage as part of the testing program that the licensee implemented in response to GL 89-13, "Service Water System Problems Affecting Safety-related Equipment." Therefore, performing this test in the weeks just prior to the refueling outage will minimize the impact of the test on the station while ensuring that the heat exchangers are maintained operationally ready.

The licensee states that testing prior to a refueling outage may not always be possible during certain times of the year when the SWS cooling demand is high. Closing SWS valves [2SWS*MOV106A/B] would interrupt flow of cooling water to the inservice Primary Component Cooling and Secondary Component Cooling water and chiller unit heat exchangers and could result in undesirable thermal transients, operational concerns (stability problems) and a potential plant trip, if the plant is at power. Therefore, in these situations, testing will be performed during the refueling outage (consistent with ASME Code requirements) rather than on-line in the weeks just prior to the refueling outage. The licensee states that they have reviewed this testing from a risk perspective and it is considered to be acceptable when appropriate environmental conditions exist.

5.0 PROPOSED ALTERNATIVE TESTING

SWS valves [2SWS*MOV103A/B] and [2SWS*MOV106A/B] will be full-stroke exercised and timed open and closed at a refueling outage frequency while on-line (in the weeks just prior to the refueling outage) or during the refueling outage, if not tested within the previous 92 days, per 2OST-30.13A and 2OST-30.13B (SWS Full Flow Tests). SWS valves [2SWS*MOV103A/B] and [2SWS*MOV106A/B] will be full-stroke exercised and timed open and closed during cold shutdowns of sufficient duration per 2OST-1.10 (Cold Shutdown Valve Exercise Test).

6.0 EVALUATION

OM-10, Section 4.2.1.1, requires that active Category B valves be tested nominally every 3 months or during cold shutdowns (if exercising is impractical during plant operation) or during refueling outages (if exercising is impracticable during plant operation or cold shutdowns). More specifically, OM-10, Section 4.2.1.1, requires quarterly testing if the test is to be performed during normal operation.

SWS valves [2SWS*MOV103A/B] and [2SWS*MOV106A/B] could be tested during normal operation by diverting service water flow through RSS heat exchangers or by alignment of the SWS subsystems to enable as much cooling flow as possible to the station heat loads placed on the SWS header in service. If a flow path through the RSS heat exchangers is used for the test, the introduction of service water deposits Asiatic clams, other marine life, river mud, and silt into the heat exchangers and connecting piping and would degrade the operational readiness of the system. As a result, post-test draining and cleaning of the RSS heat exchangers would be necessary. These post-test activities would lead to increased maintenance, radiological exposure and possibly a plant shutdown, if cleaning of the RSS heat exchangers could not be accomplished within the Technical Specification-required, 72-hour limiting condition for operation action time. On the other hand, if SWS subsystems were aligned to perform the required test, the associated valve line-ups are estimated to take more than one shift (8 hours) per train to perform—both before and after the test. These extremely time-consuming valve line-ups would be burdensome and undesirable during plant operation. Accordingly, the licensee has provided a justification for these valves, [2SWS*MOV103A/B] and [2SWS*MOV106A/B], that would allow these valves to be tested during cold shutdowns of sufficient duration or during refueling outages.

The affected valves have been tested in conjunction with the performance of the SWS full-flow tests (in accordance with GL 89-13) during refueling outages. Because of the impact on refueling outages of performing the SWS full-flow tests, the licensee proposes to perform this test in the weeks just prior to the refueling outage. Following the test, the RSS heat exchangers will be drained to remove most of the mud, silt, Asiatic clams, and other marine life, flushed into the heat exchangers. The actual time-consuming cleaning of the heat exchangers will be performed during the refueling outage as part of the GL 89-13 program. The post-test system draining will not completely clean the heat exchangers, but it will provide, for a few weeks, reasonable assurance of the operability of the affected heat exchangers. Therefore, performing this test in the weeks just prior to the refueling outage will help minimize the impact of the test on the station while the operational readiness of heat exchangers could be reasonably assured until the refueling outage. This also explains why on-line testing of the RSS heat exchangers could be performed just prior to refueling outage, but not at any other time during normal operation. However, the change of the SWS full-flow test from the refueling outage to the weeks just prior to the refueling outage would cause a similar change in test frequency for the associated valves. Relief is needed from the ASME Code requirements because testing the valves during certain periods when the plant is at power (only within the weeks just prior to the refueling outage), but not at other times of normal operation, deviates from the ASME Code requirements.

As discussed above, the licensee has provided a justification to perform the required test at either cold shutdowns or refueling outages. As a result, the test interval between two tests allowed by the ASME Code could be as long as 18 months. When tests are scheduled to be performed during refueling outages, the licensee's proposed alternative to perform the test a few weeks before the refueling outage is well within the range allowed by the plant technical specification and will not result in any significant impact on the operability of the affected valves. In addition, testing prior to a refueling outage may not always be possible during certain times of the year when SWS cooling demand is high. Under these conditions, testing will be performed during the refueling outage as required by the ASME Code instead of on-line in the weeks just prior to the refueling outage as proposed in the alternative test. As such, the licensee's proposal to perform the required tests at a refueling outage frequency while on-line

(in the weeks just prior to the refueling outage) or during the refueling outage, if not tested within the previous 92 days, will provide reasonable and comparable assurance of valve operational readiness. Furthermore, these valves will continue to be full-stroke exercised and tested during cold shutdowns of sufficient duration. The NRC staff finds that the licensee's proposed alternative testing would provide an acceptable level of quality and safety. Therefore, the proposed alternative testing is authorized for the remainder of the second interval pursuant to 10 CFR 50.55a(3)(i).

7.0 CONCLUSION

The NRC staff evaluated the licensee's submittal and finds that the proposed alternative testing to the requirements of OM-10, Section 4.2.1.1, will provide reasonable assurance of operational readiness and an acceptable level of quality and safety. Therefore, the proposed alternative testing is authorized for the remainder of the second interval pursuant to 10 CFR 50.55a(3)(i).

Principal Contributor: Y.S. Huang

Date: March 23, 2002