June 25, 2003

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

SUBJECT: BEAVER VALLEY POWER STATION, UNIT 2 - ISSUANCE OF AMENDMENT RE: MAIN STEAM ISOLATION VALVE (MSIV) STROKE TIME SURVEILLANCE REQUIREMENT (TAC NO. MB5686)

Dear Mr. Pearce:

The Commission has issued the enclosed Amendment No. 137 to Facility Operating License No. NPF-73 for the Beaver Valley Power Station, Unit 2 (BVPS-2). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated July 24, 2002, as supplemented February 4, 2003.

The amendment changes the MSIV full-closure stroke time of TS surveillance requirement (SR) 4.7.1.5 from 5 seconds to 6 seconds. Additionally, the once-per-92-day requirement to part-stroke exercise the MSIVs will be replaced with criteria to test each MSIV pursuant to TS 4.0.5, which requires testing in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI.

A copy of the related safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Timothy G. Colburn, Senior Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosures: 1. Amendment No. 137 to NPF-73
2. Safety Evaluation

cc w/encls: See next page

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PENNSYLVANIA POWER COMPANY

OHIO EDISON COMPANY

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

THE TOLEDO EDISON COMPANY

FIRSTENERGY NUCLEAR OPERATING COMPANY

DOCKET NO. 50-412

BEAVER VALLEY POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 137
License No. NPF-73

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by FirstEnergy Nuclear Operating Company, et al. (the licensee), dated July 24, 2002, as supplemented February 4, 2003, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-73 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 137, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the license. FENOC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard J. Laufer, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: June 25, 2003

ATTACHMENT TO LICENSE AMENDMENT NO. 137

FACILITY OPERATING LICENSE NO. NPF-73

DOCKET NO. 50-412

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove	Insert
3/4 7-9	3/4 7-9

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 137 TO FACILITY OPERATING LICENSE NO. NPF-73

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 application dated July 24, 2002, as supplemented by letter dated February 4, 2003, the FirstEnergy Nuclear Operating Company (FENOC, the licensee), requested changes to the Technical Specifications (TSs) for Beaver Valley Power Station, Unit No. 2 (BVPS-2). The supplement dated February 4, 2003, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on September 17, 2002 (67 FR 58644).

The proposed TSs change the main steam isolation valve (MSIV) full-closure stroke time of TS surveillance requirement (SR) 4.7.1.5 from 5 seconds to 6 seconds. Additionally, the once-per-92-day requirement to part-stroke exercise the MSIVs will be replaced with criteria to test each MSIV pursuant to TS 4.0.5, which requires testing in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code or Code), Section XI.

2.0 REGULATORY EVALUATION

BVPS-2 TSs currently require that each MSIV that is open, be demonstrated operable by part-stroke exercising the valve at least once per 92 days. The TSs also require verifying that each MSIV fully close within 5 seconds on any automatic closure actuation signal while in HOT STANDBY with $T_{avg} \geq 515$ °F during each reactor shutdown except that verification of full closure within 5 seconds need not be determined more often than once per 92 days.

In addition, the licensee is required by Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a, to perform inservice testing (IST) of its MSIVs in accordance with the

requirements in the 1989 Edition of ASME Code, Section XI, and ASME Operations and Maintenance Standard Part 10 (OM-10). The licensee's proposed TS change is consistent with ASME Code requirements and is consistent with Nuclear Regulatory Commission (NRC) guidance contained in Generic Letter 89-04, NUREG-1431, and NUREG-1482. There are no changes to any Code requirement or Code acceptance criteria.

3.0 TECHNICAL EVALUATION

The licensee stated that the proposed changes will enhance plant operation by re-allocating response time limits consistent with the plant safety analyses and reducing operating risk by reducing the potential for an inadvertent plant transient while at power.

The NRC staff has reviewed the licensee's regulatory and technical analysis in support of its proposed license amendment, which is described in Sections 4 and 5 of the licensee's July 24, 2002, submittal. The detailed evaluation below supports the conclusion that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by the operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

3.1 TS Section 4.7.1.5a, Part-Stroke Exercising of Main Steam Isolation Valves

The licensee has proposed to delete this section in its entirety. Currently, this section requires that each MSIV be demonstrated to be operable by, "Part stroke exercising the valve at least once per 92 days." The licensee will still be required to test MSIVs following COLD SHUTDOWN conditions in accordance with ASME Code, Section XI, and OM-10. The test will occur while in HOT STANDBY (MODE 3), $T_{avg} \geq 515$ °F, during each reactor shutdown, but is not required to be performed more that once per 92-day period.

The change to delete required stroke testing every 92 days is consistent with the guidance provided in NUREG-1482, Section 4.2.4. The guidance refers to the Bases provided in Westinghouse Standard Technical Specifications (STSs). STS Bases SR Section states, "The MSIVs should not be tested at power, since even a part-stroke exercise increases the risk of a valve closure when the unit is generating power."

This proposed change will reduce operating risk by eliminating the potential for an inadvertent plant transient while at power. This change is consistent with required Codes and is in compliance with current regulatory guidance regarding the interval between and methods for stroke testing MSIVs. The NRC staff finds this change acceptable.

3.2 TS Section 4.7.1.5b, Main Steam Isolation Valve Closure Times

The licensee has proposed to change the maximum MSIV full-closure time from 5 seconds to 6 seconds. The licensee has also proposed to delete the specific wording "on any automatic closure actuation signal while in HOT STANDBY with a $T_{avg} \geq 515$ °F, during each reactor shutdown except that verification of full closure within five seconds need not be determined more often than once per 92 days." These words are to be replaced by "when tested, pursuant to Specification 4.0.5."

Changing the TS full closure time limit from 5 to 6 seconds does not change and has no effect on the IST requirements as stated in ASME Code, Section XI, or OM-10. IST criteria or "reference values" are values established by the licensee from which to compare future tests to determine degradation of the subject component. Reference values are chosen to be as near as practical to those expected during subsequent IST. Values and test conditions are chosen to adequately model and to confirm the operational readiness of components to perform their design-basis function. NRC Information Notice 97-90 reiterates this position. Reference values may numerically be the same as the design values, however, there is no requirement for them to be so.

Code requirements do not supercede any TS requirement. This guidance is provided in NUREG-1482. BVPS-2 TSs state this in Section 4.0.5.e. The Code allows test values to be within $\pm$ 50% of the reference value for "[o]ther power operated valves with stroke times less than or equal to 10 seconds . . . " The changing of the TS limit does not change the IST "reference value." The proposed TS change of the maximum MSIV full-closure time from 5 seconds to 6 seconds still bounds the IST accepted range of values and remains conservative with respect to IST acceptance criteria.

The licensee has proposed to delete the specific wording "on any automatic closure actuation signal while in HOT STANDBY with a $T_{avg} \geq 515$ °F during each reactor shutdown except that verification of full closure within five seconds need not be determined more often than once per 92 days." These words are to be replaced by "when tested, pursuant to Specification 4.0.5." The change is a wording change only. Specification 4.0.5 invokes the ASME Code and 10 CFR 50.55a(f). All requirements and plant operating conditions to perform valve exercising and stroke-time testing remain the same. Testing is still required in MODE 3 and not more than once per 92 days, as stated in the Code. The current justification contained in the BVPS-2 IST Program defines these operational conditions in Valve COLD SHUTDOWN Justification 17. The NRC staff finds these changes acceptable.

3.3 Impact on Plant Accident Analyses and Transients

The MSIVs isolate steam flow from the secondary side of the steam generators following a high energy line break. MSIV closure terminates flow from the unaffected (intact) steam generators. One MSIV is located in each main steam line outside, but close to, containment. The MSIVs close on a main steam isolation signal generated by either low steam generator pressure or high containment pressure. The MSIVs are required to operate to meet the engineered safety feature (ESF) function for steam line isolation and are ASME Code, Class 3 valves.

The MSIVs are designed to close within 5 seconds of receipt of an automatic close signal input. The original TS SR 4.7.1.5 value was developed consistent with the MSIV design prior to initial plant startup. During the plant startup MSIV valve stroke tests, the MSIV closure times were measured in the range of 4.5 seconds to 4.9 seconds. The current requirement provides very little margin for small changes in the valve closure response time without exceeding the TS SR 4.7.1.5 limit.

The safety analyses for the design-basis accidents for this plant credit the ESF function of steam line isolation. A steam line isolation includes the time delay for automatic MSIV closure signal generation/transmission and the time delay for the MSIVs to physically close. The surveillance test which measures the time delay involved in generating an automatic MSIV

closure signal includes sensor response time and channel time (relay delay time is grouped with the MSIV closure time in the surveillance test). Measured test values for instrumentation time to generate an automatic MSIV closure signal typically occur in the range of 0.10 seconds to 0.20 seconds.

The current TS SR 4.7.1.5 criteria for each MSIV stroke time to be less than 5 seconds leaves a minimum of 2 seconds for generation of an automatic MSIV closure signal in order to meet the overall analysis assumed delay time of 7.0 seconds for steam line isolation. Two seconds for signal generation provides a very large margin from the typically measured values for this type of signal generation. This proposal provides more time (margin) for the MSIV closure time requirement while retaining the current total delay of 7.0 seconds for the ESF function of steam line isolation. This would result in a reduction in the maximum time available for automatic MSIV closure signal generation from 2.0 seconds to 1.0 seconds, however it will provide adequate closure response time without exceeding TS SR 4.7.1.5 limit. The signal generation margin would be quite large given the typically measured values of 0.10 to 0.20 seconds.

The current safety analyses which credit steam line isolation will remain unaffected since the analyses only address the overall delay time which combines both the signal generation and the the MSIV closure time, and does not individually address signal generation nor valve stroke time. Thus, the proposed change to the MSIV stroke time in TS SR 4.7.1.5 is consistent with the existing design-basis accident safety analyses. The MSIV valve stroke time/closure time limit will increase to 6 seconds and remains within the Updated Final Safety Analysis Report (UFSAR)-referenced ASME Code standard for this valve design being judged operationally acceptable.

This proposal will also replace the once-per-92-day surveillance requirement to part-stroke exercise for MSIVs. This will reduce plant risk by eliminating the potential for an inadvertent plant transient which could occur during part-stroke excercising currently required for the MSIVs with the plant at power. If an MSIV were to inadvertently fully close during part-stroke testing, a plant transient would challenge the reactor trip system and likely cause an automatic ESF safety injection signal. This is an undesirable condition which has occurred at other plants. The current requirement will be replaced by TS 4.0.5 which requires that IST be performed for ASME Code, Class 3 valves in accordance with Section XI of the ASME Code and applicable Addenda as required by 10 CFR 50.55a(f).

3.4 Risk Perspective

In its amendment application, the licensee proposed to delete the requirement to part-stroke exercise the MSIVs every 92 days and to change the verification of full closure to 6 seconds. The licensee will still be required to test MSIVs following COLD SHUTDOWN conditions in accordance with ASME Code, Section XI, and OM-10 (about once every 540 days).

The licensee stated in its submittal that the proposed change to the surveillance frequency of the MSIV part-stoke exercise does not adversely affect the unit's core damage frequency (CDF) or large early release frequency (LERF). The licensee further states that the proposed change will reduce risk by eliminating the potential for an inadvertent plant transient while exercising the MSIVs at power. The submittal states that the proposed change will retain a sufficient test frequency to identify potential MSIV malfunctions. The licensee did not perform a quantitative analysis to evaluate the risk impact of the proposed surveillance frequency change or to verify

that a sufficient test frequency to identify potential MSIV malfunctions is retained. However, the NRC staff agrees that not testing the MSIVs at power should yield a risk reduction by eliminating the potential for an inadvertent plant transient. Additionally, the staff believes that, if a significant increase in the MSIV failure rate were to occur as a result of the decrease in surveillance test frequency, the 10 CFR 50.65 Maintenance Rule requirements for monitoring the performance of structures, systems, and components within the scope of the rule should identify this increased failure rate. The licensee confirmed in a letter dated February 4, 2003, that the MSIVs on the three main steam lines at BVPS-2 are part of the main steam system which is included within the scope of the Maintenance Rule pursuant to 10 CFR 50.65. Based on the risk reduction incurred by not exercising the MSIVs at power and the expectation that the Maintenance Rule will identify a significant increase in the MSIV failure rate, the NRC staff agrees that the risk impact of the proposed change to increase the MSIV test interval from once every 92 days to once per COLD SHUTDOWN is small, and acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (67 FR 58644). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: June 25, 2003

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