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FirstEnergy Nuclear Operating Company

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L-01-057
May 18, 2001

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

Subject: Beaver Valley Power Station, Unit No. 1 and No. 2
BV-1 Docket No. 50-334, License No. DPR-66
BV-2 Docket No. 50-412, License No. NPF-73
Response to a Request for Additional Information
In Support of LAR Nos. 289 and 161

This letter provides the FirstEnergy Nuclear Operating Company (FENOC) response to a NRC Request for Additional Information (RAI) in support of License Amendment Requests (LAR) 289 and 161. The LARs were submitted by FENOC letter L-01-006 dated January 18, 2001. The proposed changes contained in the LARs propose a 1.4% power uprate for both Beaver Valley Power Station (BVPS) units.

The NRC RAI and the FENOC response are included as Attachment A. The RAI solicits details in the following areas concerning the programs and procedures that will control use of the Caldon Leading Edge Flow Meter.

1. Maintaining calibration,
2. Controlling software and hardware configuration,
3. Performing corrective actions,
4. Reporting deficiencies to the manufacturer, and
5. Receiving and addressing manufacturer deficiency reports.

As stated in letter L-01-006, FENOC requests NRC approval of this License Amendment Request by June 1, 2001 to support implementation of the power uprate for the summer of 2001. An implementation period of up to 60 days is requested following the effective date of this amendment.

This information does not change the evaluations or conclusions presented in FENOC letter L-01-006. If there are any questions concerning this matter, please contact Mr. Thomas S. Cosgrove, Manager Regulatory Affairs at 724-682-5203.

Sincerely,

Lew W. Myers

Lew W. Myers

A001

Attachment

c: Mr. L. J. Burkhart, Project Manager
Mr. D. M. Kern, Sr. Resident Inspector
Mr. H. J. Miller, NRC Region I Administrator
Mr. D. A. Allard, Director BRP/DEP
Mr. L. E. Ryan (BRP/DEP)

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I, Lew W. Myers, being duly sworn, state that I am Senior Vice President of FirstEnergy Nuclear Operating Company (FENOC), that I am authorized to sign and file this submittal with the Nuclear Regulatory Commission on behalf of FENOC, and that the statements made and the matters set forth herein pertaining to FENOC are true and correct to the best of my knowledge and belief.

FirstEnergy Nuclear Operating Company

Lew W Myers

Lew W. Myers
Senior Vice President - FENOC

COMMONWEALTH OF PENNSYLVANIA

COUNTY OF BEAVER

Subscribed and sworn to me, a Notary Public, in and for the County and State above named, this 18th day of May, 2001.

Tracey A Baczek

My Commission Expires:

Notarial Seal
Tracey A. Baczek, Notary Public
Shippingport Boro, Beaver County
My Commission Expires Aug. 16, 2001
Member, Pennsylvania Association of Notaries

NRC Request for Additional Information

Nuclear power plants are licensed to operate at a specified power, which, at operating power levels, is indicated in the control room by neutron flux instrumentation that has been calibrated to correspond to core thermal power. Core thermal power is determined by a calculation of the energy balance of the plant nuclear steam supply system. The accuracy of this calculation depends primarily upon the accuracy of measurement of flow, temperature, and pressure for feedwater, main steam, and various other systems that affect the heat balance calculations. Instrumentation for these measurements are not safety grade and their surveillance is not included in the plant technical specifications.

The uncertainty of calculating values of core thermal power determines the probability of exceeding the power levels assumed in the design basis transient and accident analyses. In this regard, to allow for uncertainties in determining thermal power (e.g., instrument measurement uncertainties), Appendix K to Part 50, Title 10 of the Code of Federal Regulations (10 CFR 50) requires loss of coolant accident (LOCA) and emergency core cooling system (ECCS) analyses to assume that the reactor had operated continuously at a power level at least 102% of the licensed thermal power. The 2% power margin uncertainty value was intended to address uncertainties related to heat sources in addition to instrument measurement uncertainties. Later, the NRC concluded that, at the time of the original ECCS rulemaking, the 2% power margin requirement appeared to be based solely on considerations associated with power measurement uncertainty.

Appendix K to 10 CFR 50 did not require demonstration of the power measurement uncertainty and mandated a 2% margin, notwithstanding that the instruments used to calibrate the neutron flux instrumentation may be more accurate than originally assumed in the ECCS rulemaking. In the June 1, 2000, *Federal Register*, (Vol. 65, No. 106, Rules and Regulations, pages 34913-34921), the Commission published a final rule to reduce an unnecessarily burdensome regulatory requirement by allowing licensees to justify a smaller margin for power measurement uncertainty by using more accurate instrumentation to calculate the reactor thermal power and thereby calibrate the neutron flux instrumentation.

By letter dated January 18, 2001, FENOC proposed changes to the Beaver Valley Power Station, Units 1 and 2 Technical Specifications. The purpose of the proposed changes is to obtain a power uprate on the basis of plant modifications that would result in improved accuracy of feedwater flow rate and feedwater temperature measurements, which are used to calculate reactor thermal power. The improved instrumentation will allow the licensee to operate the power plants with a reduced margin of 0.6% for instrumentation uncertainty and an increased power level of 1.4% of the licensed thermal power.

To complete its review of the proposed license changes, the staff requests a description of the programs and procedures that will control calibration of the Caldon Leading Edge Flow Meter (LEFM) and the pressure and temperature instrumentation whose measurement uncertainties affect the power calorimetric uncertainties listed in table 12 of WCAP-15264. In this description, please include the procedures for:

1. Maintaining calibration,
2. Controlling software and hardware configuration,
3. Performing corrective actions,
4. Reporting deficiencies to the manufacturer, and
5. Receiving and addressing manufacturer deficiency reports.

FirstEnergy Nuclear Operating Company (FENOC) Responses

Response to Item 1

Instrumentation included in Table 12 of WCAP-15264 (for Unit 1) and WCAP-15265 (for Unit 2) consists of the Leading Edge Flow Meter (LEFM), Feedwater header pressure transmitter, Steam Generator blowdown flow transmitters and indicators, and the Main Steam pressure transmitters. This instrumentation provides inputs to the plant process computer, which then performs the power calorimetric computation.

A description of procedures for maintaining calibration was addressed in part in Section 1.0, paragraph 6 of Enclosure 1 to LAR Nos. 289 and 161. New procedures are being developed for the LEFM systems per the plant design control process, based on the vendor's recommendations. The Feedwater header pressure transmitters have been replaced with new Rosemount 3051 Smart™ technology transmitters. These transmitters provide improved performance and accuracy relative to the instrumentation they replace. The existing calibration procedures for the feedwater pressure transmitters have been revised to address the calibration requirements of the Rosemount 3051 Smart™ transmitters as recommended by the manufacturer. All of the remaining instrumentation listed in Table 12 of the above mentioned WCAPs, including the plant process computers, have been and will continue to be maintained within the existing plant maintenance and calibration procedures. These procedures are used to control configuration and the calibration of both 1E and non-1E instruments. The Beaver Valley Power Station (BVPS) calibration procedures for the power calorimetric instrumentation were reviewed by Westinghouse and found to be consistent with the assumptions and methodologies of WCAPs-15264 and 15265.

The calibration frequency for the instrumentation identified in Table 12 of WCAPs-15264 and 15265 is based on 18 month refueling cycles. This calibration frequency was used as the basis for the drift values listed in Table 12. The same bases are applied to both the safety and non-safety systems and components identified in Table 12.

Response to Item 2

The methods for controlling software and hardware configuration for the LEFM were addressed, in part, in Section 3.2 paragraph 3 of Enclosure 1 to LAR Nos. 289 and 161. Additionally, Attachment C, Commitment 6, states that the LEFM software has been developed and will be maintained under a verification and validation (V&V) program compliant with the IEEE standard 7-4.3.2-1990 and ASME std. NQA-2a-90. The V&V program has been applied to the LEFM system software and hardware, and includes a detailed code review, followed by validation on the LEFM platform.

Plant process computer software changes required for adapting the new LEFM inputs are being addressed in accordance with applicable plant design control procedures. The manual calculation of reactor power and the revised process computer calculations are being verified by formal calculations performed under the plant design calculation procedure.

Software onboard the Rosemount Smart™ transmitters reside on Erasable Programmable Read Only Memory (EPROM) chips burned in at the factory. Therefore, the configuration of the software cannot be altered without the knowledge and consensus of Rosemount.

Hardware and setpoint changes are made in accordance with the plant design change process, with the same procedure being applied in varying degrees to both safety and non-safety systems and components, commensurate with their relative importance to safety.

Response to Item 3

Corrective actions are required whenever conditions are identified outside of the design or operability requirements. Conditions adverse to quality are identified using the existing plant condition reporting process. Procedure NOP-LP-2001, Revision 1, controls the BVPS condition reporting process as required by 10 CFR 50 Appendix B.

NOP-LP-2001 provides for management review of conditions; identification and tracking of corrective actions (including root cause analysis where appropriate); and corrective actions to prevent recurrence. Procedure NOP-LP-2001 is applied in varying degrees to both safety and non-safety systems and components, commensurate with their relative importance to safety.

Response to Item 4

Conditions identified with vendor equipment are reported to the vendor and processed in accordance with NOP-LP-2001, Revision 1. Review for 10 CFR 21 reportability is required for higher level investigation. Procedure NOP-LP-2001 is applied to both safety and non-safety equipment although the level of corrective actions may differ based on the safety significance of the involved equipment or the condition identified.

Response to Item 5

Conditions identified by vendors or industry events, are collected and entered into the condition reporting process for evaluation of applicability to BVPS. The condition reports are processed in accordance with NOP-LP-2001, Rev. 1, regardless of their safety significance although the level of corrective actions may differ based on the condition's safety significance.

Although some of the instruments used for thermal power measurements are not safety grade and their surveillance is not included in the plant Technical Specifications, the quality assurance and configuration control applied to them is commensurate with their relative importance to safety. Specifically, the programs and procedures used at BVPS to control the configuration and calibration of the Table 12 instruments used in the performance of the daily thermal power calorimetric possess the necessary accuracy and the quality attributes to assure that these instruments will continue to perform their function within the accuracy and measurement uncertainties assumed in the analyses.