

January 28, 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 NO. 2 - ISSUANCE OF AMENDMENT
RE: CHANGE IN TECHNICAL SPECIFICATION BORON CONCENTRATION
LIMITS (TAC NO. MB2471)

Dear Mr. Myers:

The Commission has issued the enclosed Amendment No. 125 to Facility Operating License No. NPF-73 for the Beaver Valley Power Station, Unit No. 2 (BVPS-2). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated July 25, 2001.

The amendment approves increases in the BVPS-2 TS boron concentration limits for the refueling water storage tank, accumulators, and the reactor coolant system/refueling canal during Mode 6.

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/

Lawrence J. Burkhart, 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. 125 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. 125
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 25, 2001, 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. 125, 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/

Joel T. Munday, Acting 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: January 28, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 125

FACILITY OPERATING LICENSE NO. NPF-73

DOCKET NO. 50-412

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

3/4 1-15

3/4 5-1

3/4 9-1

Insert

3/4 1-15

3/4 5-1

3/4 9-1

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 125 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 letter dated July 25, 2001 (Agencywide Documents Access and Management System Accession No. ML012120283), the FirstEnergy Nuclear Operating Company (FENOC; the licensee) submitted a request for changes to the Beaver Valley Power Station, Unit No. 2 (BVPS-2) Technical Specifications (TSs).

The requested changes would revise the BVPS-2 TS limits for boron concentration in the refueling water storage tank (RWST), reactor coolant system (RCS) accumulators, and the RCS/refueling canal during Mode 6.

These changes in the boron concentration limits in the RWST and accumulators are needed in order to accommodate the higher reactor core reactivity associated with the operation of the core at higher plant capacity factors. The higher reactivity of the core requires higher boron concentrations in the RWST and accumulators to offset the increased reactivity at the beginning-of-life cycle and to remain within the limits for the design basis accidents. These changes are expected to apply beginning with the next core reload design.

The range of boron concentration specified for the RWST in Surveillance Requirement 4.1.2.8.a.1 would be revised from “between 2000 and 2100 ppm” to “between 2400 and 2600 ppm.”

The range of boron concentration specified for the accumulators in LCO 3.5.1.c would be revised from “between 1900 and 2100 ppm” to “between 2300 and 2600 ppm.”

The minimum boron concentration specified in LCO 3.9.1.b would be revised from “greater than or equal to 2000 ppm” to “greater than or equal to 2400 ppm.”

The minimum boron concentration specified in the Action statement for LCO 3.9.1 would be revised from “ ≥ 2000 ppm” to “ ≥ 2400 ppm.”

2.0 EVALUATION

The requested increment to the minimum boron concentration TS limits in the RWST and accumulators is 400 ppm. This value is based on scoping calculations by FENOC of expected boron concentration requirements due to increases in the energy load of BVPS-2. The increased energy load will be met through an increase in the core reactivity by increasing the enrichment of the fuel. Scoping analyses of post-loss-of-coolant accident (LOCA) boron concentration requirements, performed by the licensee, indicated that 400 ppm of boron in the RWST ensures a sufficient shutdown margin. The largest increase in the calculated RCS boron concentration requirement, which correlates with a slightly higher increase in the minimum RWST/accumulator boron concentrations is well within the 400 ppm. Based on these analyses a conservative value of 400 ppm was chosen which addresses the immediate and near future core design requirements. Increases much greater than 400 ppm were judged to adversely affect the cost associated with maintaining boric acid inventories and on the operation of boron recovery and RCS cleanup systems, as well as potential post-accident consequences.

In principle, increasing the boron concentration limit is conservative for most safety criteria. However, an increase in the boron concentration limits, for a fixed volume, affects the pH of the water. This may adversely affect the post-LOCA radio-iodine removal and retention, and increase the potential for stress corrosion cracking of stainless steel components in containment. The licensee's analyses indicate that the proposed change in the limits of the boron concentrations will not be less than the lower pH limit to ensure adequate post-LOCA radio-iodine removal and retention, or greater than the upper pH limit which is set to minimize the potential for stress corrosion cracking of stainless steel components and minimize the release of hydrogen from the corrosion of aluminum.

In addition to considerations of change in the pH of water, an increase in the boron concentration in the RWST and accumulators reduces the solubility at low temperatures. Since water with boron concentrations of less than 4000 ppm remains soluble at temperatures above 32 °F, the existing requirements for freeze protection are satisfied.

Given the increased boron concentration, the switchover from cold leg to hot leg injection, following a postulated LOCA, must occur sooner to avoid boron precipitation in the reactor vessel. The licensee has performed analyses supporting a reduced hot leg switchover time of 7.0 hours based on maximum boron concentrations and borated water volumes. At this reduced hot leg switchover time, the emergency core cooling system (ECCS) flow requirements continue to be met. In addition, a manual switch between hot leg recirculation and cold leg recirculation will be performed every 11.5 hours after the initiation of hot leg recirculation at 7.0 hours. This reduced cold-to-hot leg switchover time of 7.0 hours will be incorporated into the BVPS-2 Emergency Operating Procedures upon approval and implementation of this amendment.

The Nuclear Regulatory Commission (NRC) staff finds that the proposed increases in the minimum boron concentrations and ranges of acceptable boron concentrations are

conservative. The increases in boron concentrations do not adversely affect the solubility of boron in the RCS, the potential for stress corrosion cracking of stainless steel components, or the release of hydrogen due to the corrosion of aluminum. Furthermore, the reduced cold-to-hot leg switchover time will be implemented at BVPS-2. Therefore, the NRC staff finds the proposed increases in the TS limits for minimum boron concentrations and ranges of boron concentrations for the RWST and accumulators and the RCS/refueling canal during Mode 6 acceptable. Under these changes there is reasonable assurance that the facility will operate within the acceptance criteria of the Updated Final Safety Analysis Report (UFSAR) and the health and safety of the public will not be endangered. The proposed change is, therefore, acceptable.

3.0 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.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 (66 FR 50468). 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.

5.0 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.

Principal Contributor: Yuri Orechwa

Date: January 28, 2002

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