



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

April 16, 2009

Mr. Peter P. Sena III
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop A-BV-SEB1
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENTS RE: SPRAY ADDITIVE SYSTEM BY CONTAINMENT SUMP PH CONTROL (TAC NOS. MD9734 AND MD9735)

Dear Mr. Sena:

The Commission has issued the enclosed Amendment No. 283 to Facility Operating License No. DPR-66 for the Beaver Valley Power Station, Unit No. 1 (BVPS-1) and Amendment No. 168 to Facility Operating License No. NPF-73 for the Beaver Valley Power Station, Unit No. 2 (BVPS-2). These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated September 24, 2008, as supplemented by letter dated November 10, 2008.

These amendments revise TSs associated with replacing sodium hydroxide with sodium tetraborate as a chemical additive for containment sump pH control following a loss-of-coolant accident at BVPS-2. Due to common TSs for BVPS-1 and 2, administrative changes were made to the BVPS-1 license to reflect the BVPS-2 changes.

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,

A handwritten signature in black ink, appearing to read "Madiyah S. Morgan".

Madiyah S. Morgan, Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosures:

1. Amendment No. 283 to DPR-66
2. Amendment No. 168 to NPF-73
3. Safety Evaluation

cc w/encls: Distribution via ListServ



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FIRSTENERGY NUCLEAR OPERATING COMPANY

FIRSTENERGY NUCLEAR GENERATION CORP.

DOCKET NO. 50-334

BEAVER VALLEY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 283
License No. DPR-66

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 September 24, 2008, as supplemented by letter dated November 10, 2008, 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.

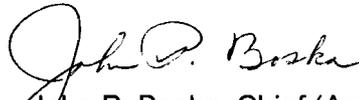
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-66 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 283, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented prior to achieving Mode 4 during startup from the BVPS-2 refueling outage in the fall of 2009.

FOR THE NUCLEAR REGULATORY COMMISSION



John P. Boska, Chief (Acting)
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the License and
Technical Specifications

Date of Issuance: April 16, 2009

ATTACHMENT TO LICENSE AMENDMENT NO. 283

FACILITY OPERATING LICENSE NO. DPR-66

DOCKET NO. 50-334

Replace the following page of the Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove
3

Insert
3

Replace the following pages of 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
3.6.8-1
3.6.8-2

Insert
3.6.8-1
3.6.8-2
3.6.9-1

- (3) FENOC, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
 - (4) FENOC, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;
 - (5) FENOC, pursuant to the Act and 10 CFR Parts 30, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This amended license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter 1: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level
FENOC is authorized to operate the facility at a steady state reactor core power level of 2900 megawatts thermal.
 - (2) Technical Specifications
The Technical Specifications contained in Appendix A, as revised through Amendment No. 283, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.
 - (3) Auxiliary River Water System
(Deleted by Amendment No. 8)

3.6 CONTAINMENT SYSTEMS

3.6.8 Unit 1 Spray Additive System

LCO 3.6.8 The Spray Additive System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spray Additive System inoperable.	A.1 Restore Spray Additive System to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.8.1 Verify each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.8.2 Verify spray additive tank solution volume is ≥ 4700 gallons.	184 days
SR 3.6.8.3 Verify spray additive tank NaOH solution concentration is $\geq 19.5\%$ and $\leq 20\%$ by weight.	184 days
SR 3.6.8.4 Verify each spray additive automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.8.5	Verify that each chemical injection pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.6.8.6	Verify on recirculation flow that each chemical injection pump develops the required flow rate.	In accordance with the Inservice Testing Program

3.6 CONTAINMENT SYSTEMS

3.6.9 Unit 2 Containment Sump pH Control System

LCO 3.6.9 The Containment Sump pH Control System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment Sump pH Control System inoperable.	A.1 Restore Containment Sump pH Control System to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.9.1 Perform a visual inspection of the six sodium tetraborate storage baskets to verify the following: a. Each storage basket is in place and intact; and, b. Collectively contain \geq 292 cubic feet of sodium tetraborate.	18 months
SR 3.6.9.2 Verify that a sample from the sodium tetraborate baskets provides adequate pH adjustment of containment sump borated water.	18 months



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FIRSTENERGY NUCLEAR OPERATING COMPANY

FIRSTENERGY NUCLEAR GENERATION CORP.

OHIO EDISON COMPANY

THE TOLEDO EDISON COMPANY

DOCKET NO. 50-412

BEAVER VALLEY POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 168
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 September 24, 2008, as supplemented by letter dated November 10, 2008, 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. 168, 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 prior to achieving Mode 4 during startup from the BVPS-2 refueling outage in the fall of 2009.

FOR THE NUCLEAR REGULATORY COMMISSION



John P. Boska, Chief (Acting)
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the License
and Technical Specifications

Date of Issuance: April 16, 2009

ATTACHMENT TO LICENSE AMENDMENT NO. 168

FACILITY OPERATING LICENSE NO. NPF-73

DOCKET NO. 50-412

Replace the following page of the Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove

3a

Insert

3a

Replace the following pages of 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

3.6.8-1

3.6.8-2

Insert

3.6.8-1

3.6.8-2

3.6.9-1

transactions shall have no effect on the license for the BVPS Unit 2 facility throughout the term of the license.

- (b) Further, the licensees are also required to notify the NRC in writing prior to any change in: (i) the term or conditions of any lease agreements executed as part of these transactions; (ii) the BVPS Operating Agreement, (iii) the existing property insurance coverage for BVPS Unit 2, and (iv) any action by a lessor or others that may have adverse effect on the safe operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations set forth in 10 CFR Chapter 1 and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

FENOC is authorized to operate the facility at a steady state reactor core power level of 2900 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 168, 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.

3.6 CONTAINMENT SYSTEMS

3.6.8 Unit 1 Spray Additive System

LCO 3.6.8 The Spray Additive System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spray Additive System inoperable.	A.1 Restore Spray Additive System to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.8.1 Verify each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
SR 3.6.8.2 Verify spray additive tank solution volume is ≥ 4700 gallons.	184 days
SR 3.6.8.3 Verify spray additive tank NaOH solution concentration is $\geq 19.5\%$ and $\leq 20\%$ by weight.	184 days
SR 3.6.8.4 Verify each spray additive automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.8.5	Verify that each chemical injection pump starts automatically on an actual or simulated actuation signal.	18 months
SR 3.6.8.6	Verify on recirculation flow that each chemical injection pump develops the required flow rate.	In accordance with the Inservice Testing Program

3.6 CONTAINMENT SYSTEMS

3.6.9 Unit 2 Containment Sump pH Control System

LCO 3.6.9 The Containment Sump pH Control System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment Sump pH Control System inoperable.	A.1 Restore Containment Sump pH Control System to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.9.1 Perform a visual inspection of the six sodium tetraborate storage baskets to verify the following: a. Each storage basket is in place and intact; and, b. Collectively contain \geq 292 cubic feet of sodium tetraborate.	18 months
SR 3.6.9.2 Verify that a sample from the sodium tetraborate baskets provides adequate pH adjustment of containment sump borated water.	18 months



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 283 AND 168 TO FACILITY OPERATING

LICENSE NOS. DPR-66 AND NPF-73

FIRSTENERGY NUCLEAR OPERATING COMPANY

FIRSTENERGY NUCLEAR GENERATION CORP.

OHIO EDISON COMPANY

THE TOLEDO EDISON COMPANY

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-334 AND 50-412

1.0 INTRODUCTION

By application dated September 24, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082730716), as supplemented by letter dated November 10, 2008 (ADAMS Accession No. ML083180133), the FirstEnergy Nuclear Operating Company (licensee), requested changes to the Technical Specifications (TSs) for Beaver Valley Power Station, Unit Nos. 1 and 2 (BVPS-1 and 2). The supplement dated November 10, 2008, 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 January 27, 2009 (74 FR 4772).

The proposed changes would revise TSs associated with replacing sodium hydroxide (NaOH) with sodium tetraborate (NaTB) as a chemical additive for containment sump pH control following a loss-of-coolant accident (LOCA) at BVPS-2. Due to common TSs for BVPS-1 and 2, administrative changes were made to the BVPS-1 license to reflect the BVPS-2 changes.

2.0 REGULATORY EVALUATION

2.1 Description of System

BVPS-2 currently uses NaOH as the buffering agent for the post-LOCA recirculation fluid. The NaOH is stored in one spray additive tank, which contains a minimum of 8500 gallons of a NaOH solution with a concentration of 23 - 25 percent by weight. Upon receipt of a containment isolation Phase B signal, two positive displacement chemical injection pumps deliver the NaOH to the Quench Spray System (QSS) pump suctions. This chemical addition is intended to facilitate the removal of radioactive iodine from the containment atmosphere by achieving a spray pH of between 8.5 and 10.5. Upon depletion of the water source for the QSS (refueling water storage tank extreme low-low level signal), NaOH remaining in the spray additive tank is diverted from the quench spray pump suctions to the containment sump. The resulting sump fluid has a calculated minimum pH of 8.14 and a maximum of 9.03.

2.2 Proposed TSs Changes

TS 3.6.8 would be modified to be applicable to BVPS-1 only by changing the title from "Spray Additive System" to "Unit 1 Spray Additive System" and by modifying the Surveillance Requirements (SRs) to remove all BVPS-2 requirements.

TS 3.6.9 would be added to address requirements for the new BVPS-2 containment sump pH control system. The proposed TS 3.6.9 would specify a Limiting Condition for Operation, Applicability and Actions that is consistent with TS 3.6.8. Two SRs would also be included. SR 3.6.9.1 would require performance of a visual inspection of the six NaTB storage baskets to verify that each storage basket is in place and intact, and, that the baskets collectively contain greater than or equal to 292 cubic feet of NaTB. SR 3.6.9.2 would require verification based upon sampling that the NaTB would provide adequate pH adjustment of borated water.

2.3 Regulatory Requirements and Guidance

The Nuclear Regulatory Commission (NRC) staff review addressed the impact of the proposed change from NaOH to NaTB on the containment sump performance, especially potential chemical effect impact on sump screen blockage and head loss.

The containment sump (also known as the emergency recirculation sump) is part of the emergency core cooling system (ECCS). Every nuclear power plant is required by Section 50.46 of Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR) to have an ECCS to mitigate a design-basis accident. 10 CFR 50.46(a) states in part, that each "pressurized light-water nuclear power reactor must be provided with an [ECCS] that must be designed so that its calculated cooling performance following postulated loss-of-coolant accidents (LOCA) conforms to the criteria set forth in paragraph (b) of this section." 10 CFR 50.46(b)(5), "Long-term cooling," states, "After any calculated successful initial operation of the ECCS, the calculated core temperature shall be maintained at an acceptably low value and decay heat shall be removed for the extended period of time required by the long-lived radioactivity remaining in the core."

NUREG-0800, Section 6.5.2, "Containment Spray as a Fission Product Cleanup System," which states, in part, that long-term iodine retention may be assumed only when the equilibrium sump solution pH, after mixing and dilution with the primary coolant and ECCS injection, is above 7.

Regulatory Guide 1.82, Revision 3, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident," Section 1.1.2, which states, in part, that debris that could accumulate on the sump screen should be minimized.

3.0 TECHNICAL EVALUATION

At BVPS-2, post-LOCA containment pool buffering is primarily required to control the radiological consequences of the accident by reducing the release of iodine fission products from the pool to the atmosphere as molecular iodine. Maintaining a pH above 7 prevents significant amounts of iodine, released from failed fuel and dissolved in the recirculation water, from converting to a volatile molecular iodine form and evolving into the atmosphere. The pH of the sump water at BVPS-2 is currently controlled by the addition of NaOH buffer to the boric acid solution of the ECCS injection water that becomes a portion of the sump water after a LOCA. However, inspection of the sump chemistry has indicated that NaOH reacts with certain insulation materials forming insoluble aluminum-based precipitates. These precipitates, when generated in significant quantities, may block the flow of fluid through the strainers in the sump. To reduce the potential for strainer blockage by chemical precipitates, the licensee proposes to change the buffer in the sump water from NaOH to NaTB. The NaTB will be stored in baskets and dissolved when the post-LOCA sump water reaches the basket elevation.

The method of introducing the buffer material to the post-LOCA environment is different for NaTB than for NaOH. BVPS-2 will install 6 wire baskets to hold the NaTB. The licensee confirmed that the baskets are adequately sized to hold the required amount of NaTB. The minimum amount of NaTB, 13,980 lbs (6,341 kg), was determined by the licensee. Their analyses included consideration of minimum and maximum quantities of boron and borated water. The analyses also included radiolysis of air and water, and the radiolysis of chloride-bearing electrical cable insulation and jacketing. The licensee determined that the minimum amount of NaTB required to maintain the minimum sump pH of 7.0 is greater than or equal to 13,980 lbs (6341 kg). The NRC staff performed an evaluation to confirm the licensee's pH calculations. The NRC staff reviewed the licensee's methodology, assumptions, and performed hand calculations to verify the resulting pH value after 30 days. The NRC staff's independent verification demonstrated the containment sump pH would remain above 7 for at least 30 days with the quantities of NaTB described above.

The licensee had calculated that the minimum volume required to be in the baskets would be 292 cubic feet assuming a minimum density of NaTB of 48 lbs/ft³ and maximum hydration. The initial loading of the baskets would be based on weight. Once the baskets are filled, the fill level of the basket would be noted and documented for reference in evaluating volume. There would be periodic surveillances to verify that the NaTB volume is at the fill level. However, NaTB has the potential to densify, and therefore, occupy less volume than when initially installed. Although, densification of the above NaTB would not have an effect on the calculated pH levels,

if the volume in the basket has decreased then more fresh NaTB would be added to re-establish the original fill level. The licensee calculated the maximum pH to be 8.27, if the baskets were filled to maximum capacity and at maximum NaTB densification. This is within the acceptance criterion for the sump of maintaining a pH between 7.0 and 10.5. The NRC staff has performed an evaluation of the analysis and assumptions and has found it to be acceptable.

3.1 NRC Staff's Finding

3.1.1 BVPS-1

The change in buffer does not have a regulatory or technical significance to BVPS-1 and only administrative changes will be made in regard to BVPS-1 TS; therefore, the NRC staff finds the changes to BVPS-1 portion of the TS acceptable.

3.1.2 BVPS-2

The NRC staff reviewed the licensee's regulatory and technical analyses related to the impact of the proposed change from NaOH to NaTB on containment sump performance, particularly the potential impact from chemical effects on sump screen blockage and head-loss aspects of design-basis accidents. The licensee's evaluation determined that NaTB is an acceptable alternative to NaOH based on the "Integrated Chemical Effects Test Project: Test #5 Data Report," on industry testing of buffers outlined in WCAP-16596-NP, "Evaluation of Alternative Emergency Core Cooling System Buffering Agents," and through plant-specific application of the chemical model developed in WCAP-16530-NP, "Evaluation of Post-Accident Chemical Effects in Containment Sump Fluids to Support [Generic Safety Issue] GSI-191." Under the existing NaOH conditions, the WCAP-16350-NP model predicts approximately 707.7 lbs (320.9 kg) of chemical precipitates for a reactor coolant system loop cross-over leg break and 305.5 lbs (138.6 kg) of chemical precipitates for a reactor vessel nozzle break. For the proposed NaTB condition using conservative values for pH, temperature, and quantities of contributing materials, the model predicts approximately 254.2 lbs (115.3 kg) of chemical precipitates for a reactor coolant system loop cross-over leg break and 198.4 lbs (90.0 kg) of chemical precipitates for a reactor vessel nozzle break. Based on the WCAP-16530-NP model, the switch from NaOH to NaTB results in a reduction in the mass of predicted chemical precipitates of approximately 453.5 lbs (205.6 kg) for a reactor coolant system loop cross-over leg break and 107.1 lbs (48.6 kg) for a reactor vessel nozzle break.

The NRC staff finds that changing buffer materials from NaOH to NaTB at BVPS-2 will result in an improved situation from a chemical effects standpoint. However, despite the significant reduction in the total amount of chemical precipitates, the WCAP-16530-NP model still predicts approximately 254.2 lbs (115.3 kg) of precipitate for a reactor coolant system loop cross-over leg break and 198.4 lbs (90.0 kg) of precipitate for a reactor vessel nozzle break of precipitate under NaTB conditions. The licensee will need to demonstrate acceptable ECCS performance under the proposed NaTB conditions in its responses to Generic Letter (GL) 2004-02. The NRC staff will be reviewing the licensee's approach to resolving potential chemical effects associated with NaTB as part its review of the licensee's submittal in response to GL 2004-02.

Based on verification calculations, the NRC staff finds that replacing the NaOH containment sump buffer with NaTB in the quantities specified by the licensee will provide acceptable containment sump buffering such that the sump pH will be maintained in an acceptable range under LOCA conditions for BVPS-2. Although potential chemical effects exist with the use of NaTB in the BVPS-2 containment, the staff determined that the quantity of chemical effects at BVPS-2 will be lower with NaTB compared to NaOH. Based on the proper buffering to be provided by NaTB in the quantities specified and the relative reduction in the mass of chemical precipitates in the case of a LOCA, the staff finds that the replacement of NaOH with NaTB in the quantities specified is acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (74 FR 4772). Accordingly, the amendments meet 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 amendments.

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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: E. Wong

Date: April 16, 2009

April 15, 2009

Mr. Peter P. Sena III
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mail Stop A-BV-SEB1
P.O. Box 4, Route 168
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 - ISSUANCE OF AMENDMENTS RE: SPRAY ADDITIVE SYSTEM BY CONTAINMENT SUMP PH CONTROL (TAC NOS. MD9734 AND MD9735)

Dear Mr. Sena:

The Commission has issued the enclosed Amendment No. 283 to Facility Operating License No. DPR-66 for the Beaver Valley Power Station, Unit No. 1 (BVPS-1) and Amendment No. 168 to Facility Operating License No. NPF-73 for the Beaver Valley Power Station, Unit No. 2 (BVPS-2). These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated September 24, 2008, as supplemented by letter dated November 10, 2008.

These amendments revise TSs associated with replacing sodium hydroxide with sodium tetraborate as a chemical additive for containment sump pH control following a loss of coolant accident at BVPS-2. Due to common TSs for BVPS-1 and 2, administrative changes were made to BVPS-1 license to reflect the BVPS-2 changes.

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

Sincerely,
/ra/

Nadiyah S. Morgan, Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosures:

1. Amendment No. 283 to DPR-66
2. Amendment No. 168 to NPF-73
3. Safety Evaluation

cc w/encls: Distribution via ListServ

Amendment No.: ML090780352
made.

*Input received. No substantive changes

OFFICE	LPLI-1/PM	LPLI-1/LA	CSGB/BC	ITSB/BC	OGC	LPLI-1/BC
NAME	NMorgan	SLittle	AHiser*	RElliot	BMizuno	JBoska (Acting)
DATE	4/2/09	4/1/09	12/3/2008	4/9/09	4/10/09	4/15/09

OFFICIAL RECORD COPY