

August 28, 2006

Mr. James H. Lash  
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 NO. 2 - ISSUANCE OF  
AMENDMENT RE: BATTERY CHARGER UPGRADE (TAC NO. MC8735)

Dear Mr. Lash:

The Commission has issued the enclosed Amendment No. 157 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 October 14, 2005, as supplemented March 31, 2006.

The amendment revises TSs 3/4 8.2.3 and 3/4 8.2.4 to permit implementation of design changes associated with a battery charger upgrade during the fall 2006 refueling outage.

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  
Plant Licensing Branch I-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-412

Enclosures:

1. Amendment No. 157 to NPF-73
2. Safety Evaluation

cc w/encls: See next page

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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. 157  
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 October 14, 2005, as supplemented March 31, 2006, 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. 157, 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 90 days.

FOR THE NUCLEAR REGULATORY  
COMMISSION

*/RA/*

Richard J. Laufer, Chief  
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: August 28, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 157

FACILITY OPERATING LICENSE NO. NPF-73

DOCKET NO. 50-412

Replace the following page of Facility Operating License No. NPF-73 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 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 8-9

3/4 8-12

Insert

3/4 8-9

3/4 8-12

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 157 TO FACILITY OPERATING LICENSE NO. NPF-73  
FIRSTENERGY NUCLEAR OPERATING COMPANY  
FIRSTENERGY NUCLEAR GENERATION CORP.  
OHIO EDISON COMPANY  
THE TOLEDO EDISON COMPANY  
BEAVER VALLEY POWER STATION, UNIT 2  
DOCKET NO. 50-412

1.0 INTRODUCTION

By letter dated October 14, 2005 (ADAMS Accession No. ML05000412), as supplemented by letter dated March 31, 2006 (ADAMS Accession No. ML060970122), FirstEnergy Nuclear Operating Company (the licensee) requested an amendment to the Facility Operating License No. NPF-73 for Beaver Valley Power Station, Unit No. 2 (BVPS-2), and Appendix A, Technical Specifications (TSs) of the Facility Operating License. The proposed changes would revise TS Sections 3/4.8.2.3 and 3/4.8.2.4 to permit implementation of station battery charger upgrades, including installation of new battery chargers.

The supplement dated March 31, 2006, 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 November 22, 2005 (70 FR 70642).

The licensee has proposed the following changes:

1. Revise TS Limiting Condition for Operation (LCO) 3.8.2.3 to replace references to rectifiers 2-3 and 2-4 with references to chargers 2-3 and 2-4, respectively.
2. Revise TS 3.8.2.3, Action "b" to delete reference to the rectifiers (chargers will continue to be referenced).
3. Revise TS 3.8.2.3, Action "b" to refer to "a spare charger" instead of "spare charger 2-7."
4. Revise Surveillance Requirement (SR) 4.8.2.3.2 to delete reference to "rectifier." The charger will continue to be referenced in SR 4.8.2.3.2.



5. Editorial revision to TS LCO 3.8.2.3 Train "A" and Train "B" equipment list wording to correct grammar and for consistency.
  - a. The third occurrence of the ampersand ("&") symbol in the LCO 3.8.2.3 Train "A" equipment list will be changed to read "and" to be consistent with LCO 3.8.2.4 wording.
  - b. The word "charger" in both the LCO 3.8.2.3 Train "A" and Train "B" equipment list will be changed to read "chargers" to be grammatically correct.
  - c. The word "and" in the LCO 3.8.2.3 Train "A" equipment list will be changed to an ampersand symbol to be consistent with LCO 3.8.2.4 wording.
  - d. The second occurrence of the word "and" in the LCO 3.8.2.3 Train "B" equipment list will be changed to an ampersand symbol to be consistent with LCO 3.8.2.4 wording.
6. Revise TS LCO 3.8.2.4.a and b to replace references to rectifiers 2-3 and 2-4 with references to chargers 2-3 and 2-4, respectively.
7. Revise LCO 3.8.2.4 footnote associated with Spare Charger 2-7 to delete reference to "rectifier."
8. Revise LCO 3.8.2.4 footnote associated with Spare Charger 2-7 to refer to "A spare charger" instead of "Spare Charger 2-7," and change the words "one charger or rectifier" to read "inoperable charger or charger removed from service for maintenance."
9. Revise SR 4.8.2.4.2 to delete reference to "rectifier." The charger will continue to be referenced in SR 4.8.2.4.2.
10. Editorial changes will be made to the LCO 3.8.2.4 Train "A" and Train "B" equipment list wording to correct grammar and for consistency.
  - a. The word "Busses" in both the LCO 3.8.2.3 Train "A" and Train "B" equipment list will be changed to read "busses" to be consistent with LCO 3.8.2.3 wording.
  - b. The words "Battery Banks" in both the LCO 3.8.2.3 Train "A" and Train "B" equipment list will be changed to read "battery banks" to be consistent with LCO 3.8.2.3 wording.
  - c. The word "Charger" in both the LCO 3.8.2.3 Train "A" and Train "B" equipment list will be changed to read "chargers" to correct grammar and to be consistent with LCO 3.8.2.3 wording.

## 2.0 REGULATORY EVALUATION

The following Nuclear Regulatory Commission (NRC) requirements are applicable to the NRC staff's review of the BVPS-2 license amendment request:

General Design Criterion (GDC) 17, "Electric power systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 requires, in part, that nuclear power plants have onsite and offsite electric power systems to permit the functioning of structures, systems, and components that are important to safety. The onsite system is required to have sufficient independence, redundancy, and testability to perform its safety function, assuming a single failure. The offsite power system is required to be supplied by two physically independent circuits that are designed and located so as to minimize, to the extent practical, the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. In addition, this criterion requires provisions to minimize the probability of losing electric power from the remaining electric power supplies as a result of loss of power from the unit, the offsite transmission network, or the onsite power supplies.

GDC 18, "Inspection and testing of electric power systems," requires that electric power systems that are important to safety must be designed to permit appropriate periodic inspection and testing.

10 CFR 50.36, "Technical specifications," requires a licensee's TSs to establish LCOs, which includes completion times for equipment that is required for safe operation of the facility.

10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," requires that preventive maintenance activities must not reduce the overall availability of the systems, structures, and components.

### 3.0 TECHNICAL EVALUATION

The BVPS-2, 120 Volt (V) alternating current (ac) vital bus uninterruptible power supply (UPS) consists of four independent Class 1E vital bus power supplies (2-1, 2-2, 2-3, and 2-4). Each bus provides 120 V ac power for engineered safety feature protection channel instrumentation and controls. Each vital bus UPS currently consists of an inverter, rectifier (systems 2-1 and 2-2), or rectifier/charger (systems 2-3 and 2-4), static switch/manual bypass switch, and alternate source line voltage regulator.

Each Class 1E 120 V ac vital bus normally receives power from its UPS unit which, in turn, receives power from an emergency 480 V motor control center (MCC). The UPS rectifier converts the 480 V ac to 125 V direct current (dc) and supplies it to the UPS inverter input. The interconnection with an emergency 480 V MCC provides the vital buses with the capability of an offsite (preferred) power source or an onsite (emergency) power source.

In the event that the rectifier source is lost, the inverter will receive 125 V dc directly from the 125 V dc battery. This input is normally the battery charger. Each system is designed such that the battery will not supply current to the UPS while ac power (rectifier input) is available and within specified limits.

Vital buses 2-3 and 2-4 are associated with Class 1E batteries 2-3 and 2-4, respectively. The dc loads on these systems are limited by design to only 2-3 and 2-4 channel 125 V dc circuits. For this reason, the rectifier/chargers, in addition to being the primary source of dc power to the inverter assemblies, also serve as battery chargers for these batteries.

UPS units associated with vital buses 2-1 and 2-2 receive their dc inputs from Class 1E batteries 2-1 and 2-2, respectively, via dc switchboards. Several non-vital bus Class 1E loads not in this system are also powered from these two sources; consequently, batteries 2-1 and 2-2 are provided with separate battery chargers. Blocking diodes have been added to the input circuits of inverters 2-1 and 2-2, thus preventing back-feeding from rectifiers 2-1 and 2-2, and preventing the rectifier assemblies from providing dc input to the respective battery bus.

Currently, a spare mobile battery charger is available to provide charging current to the Class 1E batteries during charger maintenance, or in the event that a Class 1E battery charger fails. This spare charger and its associated connecting receptacles are qualified for Class 1E use.

Each dc subsystem has a charging component which is sized to supply all normal continuous loads and to simultaneously recharge the battery, after the design 2-hour duty cycle discharge, to the fully charged condition in 24 hours.

The Class 1E batteries have the ability to supply normal loads for a minimum of 2 hours. The capacity of each Class 1E battery with the charger inoperable is large enough to cope with design-basis accident (DBA) conditions.

Each battery system is sized in conformance with the principles set out in the Institute of Electrical and Electronics Engineers (IEEE) Standard 308-1974, "IEEE Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations." The battery capacities for batteries 2-1 and 2-2 are 1,700 ampere hours (Ah) each. The capacities for batteries 2-3 and 2-4 are 1,140 Ah each. These capacities are sufficient to operate all connected dc loads under DBA conditions for a minimum of 2 hours.

The licensee proposed the aforementioned changes for two reasons. The replacement of battery chargers 2-1 and 2-2 are being proposed due to obsolescence. While the addition of new battery chargers 2-3 and 2-4 are being proposed to add diversity to the system, a single failure of the rectifier would no longer render the UPS and the dc bus inoperable.

### 3.1 Changes 1, 2, and 5

The licensee proposed revising TS LCOs 3.8.2.3 and 3.8.2.4 to reflect installation of new battery chargers (2-3 and 2-4). The licensee stated that these new battery chargers will satisfy the battery charging function previously satisfied by rectifiers 2-3 and 2-4 and will be capable of recharging the connected battery while simultaneously carrying the associated dc bus load on any of the Class 1E 125 V dc buses. The licensee further stated that rectifiers 2-3 and 2-4 will no longer be used for charging the battery. However, the rectifiers will continue to provide the primary source of dc power to the vital bus inverter assemblies. Since the new battery chargers will be seismically and electrically equivalent to battery chargers 2-1 and 2-2, and satisfy the applicable Updated Final Safety Analysis Report design basis, the NRC staff finds the proposed changes acceptable.

### 3.2 Changes 3 and 8

The licensee proposed revising the references to spare charger 2-7 in LCO 3.8.2.3, Action b and the footnote associated with LCO 3.8.2.4.

The NRC staff finds that the relocation of the descriptive text identifying the spare battery charger from the TSs to the TS Bases is acceptable because this type of information can be adequately controlled in the TS Bases. With the proposed change, the TSs will continue to require (in the case of LCO 3.8.2.3, Action b) and allow (in the case of the footnote associated with LCO 3.8.2.4) that a spare equivalent battery charger be placed in service when a charger is inoperable or removed from service for maintenance.

The staff also finds that revising the footnote for LCO 3.8.2.4 to indicate that a spare battery charger may be substituted for an inoperable charger or charger removed from service for maintenance is acceptable since the revised TS wording is clarified to ensure proper understanding of the requirement.

### 3.3 Changes 4, 7, and 9

The licensee proposed deleting references to "rectifier" in SR 4.8.2.3.2, in the footnote associated with LCO 3.8.2.4, and in SR 4.8.2.4.2, since the rectifiers will no longer be used to satisfy the battery charger function. The licensee stated that the rectifiers will continue to provide dc power to the inverter assemblies and this design function will continue to be verified by SR 4.8.2.1 and 4.8.2.2.

Based on this information and the addition of new battery chargers 2-3 and 2-4 to satisfy the battery charging function, the NRC staff finds these changes acceptable.

### 3.4 Changes 5 and 10

The licensee proposed revising the equipment list wording for Train "A" and Train "B" in LCOs 3.8.2.3 and 3.8.2.4 to correct grammar and for consistency. The NRC staff finds that these changes are administrative in nature, and therefore, are acceptable.

On the basis of the above discussions, the staff concludes that the proposed amendment to revise BVPS-2 TSs 3/4.8.2.3 and 3/4.8.2.4 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 amendment. The State official had no comments.

## 5.0 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 and 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 (70 FR 70642). 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.

Principal Contributor: M. McConnell

Date: August 28, 2006