

August 8, 2001

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. 1 - ISSUANCE OF  
AMENDMENT RE: DELETION OF THE STEAM/FEEDWATER FLOW  
MISMATCH AND LOW STEAM GENERATOR WATER LEVEL REACTOR TRIP  
(TAC NO. MB0837)

Dear Mr. Myers:

The Commission has issued the enclosed Amendment No. 240 to Facility Operating License No. DPR-66 for the Beaver Valley Power Station, Unit No. 1. This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated December 21, 2000.

The amendment revises TS 3/4.3.1, "Reactor Trip System Instrumentation," and associated bases to reflect the deletion of the steam/feedwater flow mismatch and low steam generator water level reactor trip.

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. 50-334

Enclosures: 1. Amendment No. 240 to DPR-66  
2. Safety Evaluation

cc w/encls: See next page

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PENNSYLVANIA POWER COMPANY

OHIO EDISON COMPANY

FIRSTENERGY NUCLEAR OPERATING COMPANY

DOCKET NO. 50-334

BEAVER VALLEY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 240

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 December 21, 2000, 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. 240 , 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 its date of issuance and shall be implemented by the first entry into MODE 2 following the Beaver Valley Power Station, Unit No. 1 Refueling Outage 14.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard Correia, 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: August 8, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 240

FACILITY OPERATING LICENSE NO. DPR-66

DOCKET NO. 50-334

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 3-4  
3/4 3-12  
B 3/4 3-1e  
B 3/4 3-1f  
B 3/4 3-1h

Insert

3/4 3-4  
3/4 3-12  
B 3/4 3-1e  
B 3/4 3-1f  
B 3/4 3-1h

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 240 TO FACILITY OPERATING LICENSE NO. DPR-66  
PENNSYLVANIA POWER COMPANY  
OHIO EDISON COMPANY  
FIRSTENERGY NUCLEAR OPERATING COMPANY  
BEAVER VALLEY POWER STATION, UNIT NO. 1  
DOCKET NO. 50-334

## 1.0 INTRODUCTION

By letter dated December 21, 2000 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML010050183), FirstEnergy Nuclear Operating Company, et al. (the licensee), submitted a request for changes to the Beaver Valley Power Station, Unit No. 1 (BVPS-1), Technical Specifications (TSs). The requested changes would eliminate the steam/feedwater flow mismatch and low steam generator (SG) water level reactor trip by taking credit for the median signal selector (MSS) which was installed in the feedwater control system (FWCS) in 1997.

The TS changes include deletion of the following:

- (1) TS Table 3.3-1, Item 15, regarding the reactor trip system instrumentation for the steam/feedwater flow mismatch and low SG water level reactor trip function.
- (2) TS Table 4.3-1, Item 15, regarding reactor trip system surveillance requirements for the steam/feedwater flow mismatch and low SG water level reactor trip function.
- (3) The associated TS Bases section for the steam/feedwater flow mismatch and low SG water level reactor trip.

It should be noted that the December 21, 2000, letter requested revisions to TS 2.2-1 in addition to the changes noted above. However, another submittal dated December 27, 2000 (ADAMS Accession No. ML003782095), requested, in part, relocation of certain requirements from TS Table 2.2-1 to Table 3.3-1 and the deletion of TS 2.2-1. In response to the licensee's letter dated December 27, 2000, the NRC staff issued License Amendment No. 239 (ADAMS Accession No. ML011910223), on July 20, 2001, which approved these changes. Consequently, changes to TS Table 2.2-1 in response to the December 21, 2000, letter, are no longer necessary. The scope of the changes requested by the December 21, 2000, remains the same and is discussed below.

## 2.0 EVALUATION

Each of the three SGs at BVPS-1 has three independent water level instrument channels which provide inputs to the reactor trip system for a reactor trip function on two-out-of-three low-low water levels. One of the SG water level instrument channels also provides an input to the FWCS. The FWCS controls the feedwater regulating valve which in turn regulates the feedwater flow into each SG. As a result, common instrument channels are used for both the reactor trip system and the control system. The Institute of Electric and Electronic Engineers, Standard 279 (IEEE 279), Section 4.7.3, "Single Random Failure," states, in part, that where a single random failure can cause a control system action that results in a generating station condition requiring protective action and can also prevent proper action of a protection system channel designed to protect against the condition, the remaining redundant protection channels shall be capable of providing the protective action even when degraded by a second random failure. To satisfy the IEEE 279 requirement, the steam/feedwater flow mismatch and low SG water level reactor trip function was added to the plant design.

In 1997, the licensee installed an MSS to the FWCS. The purpose of the MSS is to prevent a failed instrument channel from causing a disturbance in the control system that could initiate a plant transient. This MSS selects the median of the SG water level instrument channel input signals. By selecting the median signal, the control system is prevented from acting on any single, failed protection system instrument channel. Thus, the MSS will prevent adverse interaction between the FWCS and the reactor trip system. Since no adverse control system action may now result from a single, failed protection instrument channel, a second random protection system failure need not be considered, thus, eliminating the need for the steam/feedwater flow mismatch and low SG water level reactor trip function.

The MSS installed at BVPS-1 is similar to the MSS installed at BVPS-2. The BVPS-2 MSS design was approved by the NRC as documented in NUREG-1057, "Safety Evaluation Report Related to the Operation of Beaver Valley Power Station Unit 2," Supplement 5, dated May 31, 1987 (Nuclear Documents System [NUDOCS] Accession No. 8706120079). The MSS system is not part of the protection system and the MSS components are electrically isolated from SG level protection channels through safety grade isolators. Failure of the MSS does not directly compromise the ability of the protection system to perform its safety-related functions, i.e., failure of the MSS will not disable any protection channel. The MSS system has complete on-line testing capability to verify its performance. Calibration of the selector will be performed at each refueling outage.

In addition, the licensee stated that removal of the steam/feedwater flow mismatch and low SG water level reactor trip would reduce challenges to the overall plant safety systems. The plant has already experienced some inadvertent reactor trips during calibration/surveillance activities on these instrument channels related to this trip function. Greater operational flexibility will be achieved due to wider SG operating ranges, i.e., the reactor trip will be based on the SG low-low level rather than the SG low level. Elimination of the steam/feedwater flow mismatch and low SG water level reactor trip function also reduces the required surveillance/maintenance work and reduces the protection system complexity resulting in human factors benefits. Therefore, the proposed changes could enhance safe operation of the plant.

The Commission's regulatory requirements related to the content of the TSs are set forth in Chapter 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36. This regulation requires that the TSs include items in five specific categories. These categories include 1) safety limits, limiting safety system settings and limiting control settings, 2) limiting conditions for operation (LCOs), 3) surveillance requirements (SRs), 4) design features, and 5) administrative controls. However, the regulation does not specify the particular TSs to be included in a plant's license.

Additionally, 10 CFR 50.36(c)(2)(ii) sets forth four criteria to be used in determining whether an LCO is required to be included in the TSs. These criteria are as follows:

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.
2. A process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
4. A structure, system or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Existing LCOs and related SRs included as TS requirements which satisfy any of the criteria stated above must be retained in the TSs. Those TS requirements which do not satisfy these criteria may be relocated to other licensee-controlled documents.

The steam/feedwater flow mismatch and low SG water level reactor trip is an anticipatory trip for a potential sudden loss of heat sink. In an event such as loss of main feedwater or loss of offsite power, only the SG water level low-low reactor trip is credited for ensuring safe shutdown of the reactor. The steam/feedwater flow mismatch and low SG water level reactor trip is not credited in the Updated Final Safety Analysis Report (UFSAR) transient and accident analyses. As stated previously, the primary purpose of this trip function is to protect against potential adverse control and protection system interactions. This protection is no longer needed due to the installation of the MSS to the FWCS.

Criterion 1 is not met because the steam/feedwater flow mismatch and low SG water level reactor trip is not installed instrumentation that is used to detect and indicate in the control room a significant abnormal degradation of the reactor coolant pressure boundary.

The steam/feedwater flow mismatch and low SG water level reactor trip function does not meet Criterion 2 because it does not involve a process variable, design feature or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

The steam/feedwater flow mismatch and low SG water level reactor trip function no longer meets Criterion 3 because it is no longer needed as part of the reactor trip system (RTS) in any design-basis transient or accident analyses. The steam/feedwater flow mismatch and low SG water level reactor trip is intended to only be an anticipatory trip for a potential loss of heat sink event, but was, prior to installation of the MSS, necessary for RTS functionality. The MSS itself is not part of the RTS and, therefore, does not need to be covered by TSs.

The steam/feedwater flow mismatch and low SG water level reactor trip function is not a structure, system or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety and, therefore, does not meet Criterion 4.

Based on the licensee's justification, the MSS provides a sufficient safeguard against adverse control and protection system interactions and consequently, the steam/feedwater flow mismatch and low SG water level reactor trip function is no longer necessary to satisfy the IEEE 279 requirement. No credit is taken for the steam/feedwater flow mismatch and low SG water level reactor trip function in the UFSAR accident analyses. Additionally, the steam/feedwater flow mismatch and low SG water level reactor trip function does not meet any of the criteria set forth in 10 CFR 50.36(c)(2)(ii) for inclusion in the TSs. Therefore, the NRC staff finds the proposed TS changes involving the elimination of the steam/feedwater flow mismatch and low SG water level reactor trip function from the TS 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 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 (66 FR 7680). 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: H. Li

Date: August 8, 2001