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 NOS. 1 AND 2 (BVPS-1 and 2)
RELIEF REQUEST 1-TYP-3-B5.70-1 (TAC NOS. MB1132 AND MB1133)

Dear Mr. Myers:

By its letter dated February 6, 2001, FirstEnergy Nuclear Operating Company, the licensee, submitted Relief Request (RR) 1-TYP-3-B5.70-1, Revision 1. This request involved a limited volumetric examination in lieu of 100% volumetric examination for steam generator nozzle-to-safe end welds for BVPS-1. In response to a United States Nuclear Regulatory Commission (NRC) staff request for additional information, the licensee submitted Revision 2 to the RR by letter dated July 16, 2001.

The NRC staff concludes that compliance with the American Society of Mechanical Engineers (ASME) Code ultrasonic testing (UT) examination coverage requirement is impractical and, consequently, RR 1-TYP-3-B5.70-1, Revision 2, is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the two subject welds at BVPS-1 for the third 10-year inservice inspection interval.

The February 6, 2001, letter also included notification that four previously approved RRs applicable to BVPS-1 and 2, are no longer valid due to NRC rulemaking regarding expedited implementation of ASME XI, Appendix VIII. The NRC staff acknowledges that the following RRs are no longer valid and that the licensee will follow the applicable code requirements and regulations: (1) 1-TYP-3-APP-I-1, Revision 0, regarding UT examiner renewal qualification for bolting for BVPS-1, (2) 1-TYP-3-UT-1, Revision 0, regarding alternative UT examination techniques for BVPS-1, (3) 2-TYP-2-APP-I-1, Revision 0, regarding UT examiner renewal qualification for bolting for BVPS-2, and (4) 2-TYP-2-UT-1, Revision 0, regarding alternative UT examination techniques for BVPS-2.

Sincerely,

/RA/
Richard P. Correia, Acting Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure: Safety Evaluation

cc w/encl: See next page

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Richard P. Correia, Acting Chief, Section 1
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Docket Nos. 50-334 and 50-412
Enclosure: Safety Evaluation
cc w/encl: See next page
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF 1-TYP-3-B5.70-1, REVISION 2

BEAVER VALLEY POWER STATION UNIT NO. 1 (BVPS-1)

THIRD 10-YEAR INSERVICE INSPECTION (ISI) INTERVAL

1.0 INTRODUCTION

By letter dated February 6, 2001 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML010450100), FirstEnergy Nuclear Energy Company, the licensee, submitted relief request (RR) 1-TYP-3-B5.70-1, Revision 1, for BVPS-1. The RR involved limited volumetric examination coverage in lieu of the 100% volumetric examination coverage required under the American Society of Mechanical Engineers (ASME) Section XI, Subsection IWB-2500(b), Table IWB-2500-1, Examination Category B-F, Item B5.70, for steam generator nozzle-to-safe end welds. In response to a United States Nuclear Regulatory Commission (NRC) staff request for additional information, the licensee submitted Revision 2 to the RR by letter dated July 16, 2001 (ADAMS Accession No. ML012050234).

2.0 BACKGROUND

Inservice inspection of the ASME Code Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). As stated in 10 CFR 50.55a(g)(6)(i), the NRC may grant relief for Code requirements determined to be impractical when it determines that granting such relief is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, “Rules for Inservice Inspection of Nuclear Power Plant Components,” to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by

reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the third 10-year ISI interval at BVPS-1 is the 1989 Edition.

3.0 THE COMPONENTS FOR WHICH RELIEF IS REQUESTED

Steam generator nozzle-to-safe end welds: DLW-LOOP1-2-F04 and DLW-LOOP1-3-F05

3.1 Code Requirement and Regulatory Requirements (as stated):

Item No. B5.70 (IWB-2500-1, Category B-F) requires a surface and a volumetric examination.

3.2 Licensee's Basis for Relief

The steam generator nozzle-to-safe end welds are austenitic welds that connect the nozzles to loop piping elbows. The as-cast surface of the nozzle precludes examination from the nozzle side of the weld. Ultrasonic testing (UT) examinations can be performed on the surface of the welds. The opposite sides of the two subject welds are A351 Grade CF8M cast elbows, machined for a distance of approximately 3 inches from the surface edge of the welds.

Two sets of (axially and circumferentially) contoured 45 degree, side-by-side, refracted longitudinal wave search units were used to perform the examinations.

Previous examinations identified a limitation in axial direction 1 due to the distance from the weld to the edge of the machined surface on the elbow. This reported limitation may have been conservatively calculated. Subsequent examinations and plots on the profiled weld area have shown that this distance is adequate to attain coverage of the required volume in axial scan direction 1. UT examinations performed during the current (3rd) inspection interval on the two welds resulted in complete coverage in axial scan direction 1, no coverage in axial scan direction 2 (nozzle side), and a newly identified curvature limitation in both circumferential scan direction 3 and 4. The total coverage of approximately 52% of the required volume was obtained.

3.3 Licensee's Proposed Alternative Examination

The alternative to the examination requirement will be to use the completed surface examination and the completed UT examination that were performed to the maximum extent possible. The percentage of the required examination volume that was limited was recorded on the examination report and in the outage summary report.

3.5 Evaluation

The ASME Code requires 100% volumetric and surface examination of the subject steam generator nozzle-to-safe end welds. The as-cast surface and taper of the nozzles preclude examination from the nozzle side of the two subject welds. The licensee can perform UT examinations on the surface of the welds and the cast elbow side of the welds are machined for approximately 3 inches from the surface edge of the welds. Previous examinations of the subject weld identified limitations in the axial scan direction 1 due to the distance from the weld to the edge of the machined surface on the elbow. The current UT examinations performed on

the two subject welds resulted in complete coverage in axial scan direction 1, no coverage in axial scan direction 2 (nozzle side), and limitations in circumferential scan directions 3 and 4 were noted (the licensee noted a loss of contact of the search unit as the search unit approached the curvature of the cast channel head). The combined examinations resulted in a total coverage of 52% of the required volume for each weld. To meet the coverage requirements of the ASME Code, the nozzle, the safe ends, and associated piping would require modification to allow access for examination. Imposition of this requirement would be a significant burden on the licensee. Therefore, compliance with the ASME Code UT examination coverage requirement is impractical.

4.0 CONCLUSION

The NRC staff finds based on the 52% UT examination coverage in conjunction with the 100% surface examination coverage, that these inspections provide reasonable assurance of structural integrity. Therefore, RR 1-TYP-3-B5.70-1, Revision 2, is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the two subject welds at BVPS-1 for the third 10-year ISI interval. The NRC staff has determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

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Date: August 8, 2001

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