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Vice President724-682-5234
Fax: 724-643-8069May 19, 2005
L-05-092U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001**Subject: Beaver Valley Power Station (BVPS), Unit No. 2
BV-2 Docket No. 50-412, License No. NFP-73
NRC Bulletin 2003-02
Lower Head Inspection 60-Day Report for 2R11**

References:

1. NRC Bulletin 2003-02: Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Water Boundary Integrity dated August 21, 2003
2. FirstEnergy Nuclear Operating Company (FENOC) Response to NRC Bulletin 2003-02 for BVPS (Letter L-03-138, dated September 19, 2003)

During the recent BVPS Unit 2 2R11 Refueling Outage, a visual inspection of the reactor pressure vessel (RPV) lower head penetrations was performed. This inspection was conducted per the FENOC response for BVPS (Reference 2) to NRC Bulletin 2003-02 (Reference 1). A 60-day report, detailing the inspection results, is being provided. The BVPS Unit 2 Evaluation Report for 2R11 RPV Lower Head Penetration Inspections is enclosed with this letter.

There are no new regulatory commitments contained in this letter. If there are any questions concerning this matter, please contact Mr. Larry R. Freeland, Manager, Regulatory Compliance at 724-682-4284.

Sincerely,


L. William Pearce

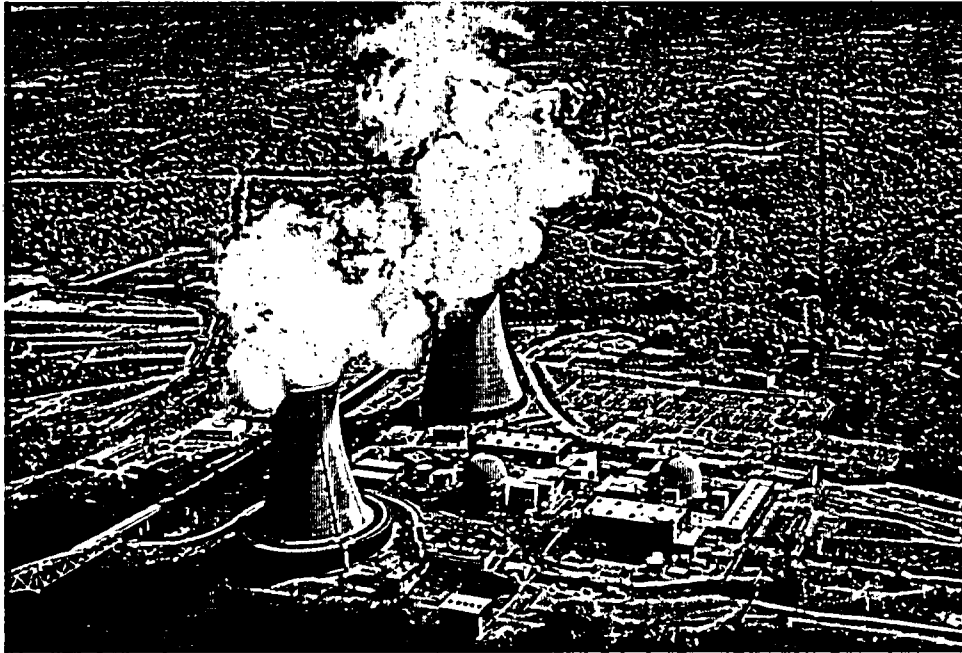
Enclosure

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c: Mr. T. G. Colburn, NRR Senior Project Manager
Mr. P. C. Cataldo, NRC Senior Resident Inspector
Mr. S. J. Collins, NRC Region I Administrator

FirstEnergy Nuclear Operating Company (FENOC)



Evaluation Report for

2R11

Beaver Valley Unit 2

RPV Lower Head Penetration

Inspections

(Ref: NRC Bulletin 2003-02)

April 2005

References

1. NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity," August 21, 2003.
2. L-03-138, "Response to NRC Bulletin 2003-02," BVPS Units 1 and 2, September 19, 2003.
3. L-03-191, "BV-2 Lower Head Inspection 60-Day Report," December 2, 2003.

Introduction

NRC Bulletin 2003-02 was issued on August 21, 2003 following the discovery of two leaking RPV lower head penetrations at South Texas Project Unit 1 during the spring of 2003 (Reference 1). The Reactor Coolant System (RCS) leakage was determined to have resulted from through-wall axial indications in the Alloy 600 tube material.

The BVPS Unit 2 commitments to Bulletin 2003-02 for the 2R11 refueling outage were as follows:

1. Visual inspection of all 50 Bottom-Mounted Instrumentation (BMI) penetrations including 100% of the circumference of each penetration as it enters the RPV lower head. (Reference 2).
2. The scope for the next Unit 2 Refueling Outage (2R11, Spring 2005) will include an as-found visual exam for comparison to 2R10 documentation, subsequently followed by a cleaning of the potentially interfering deposits from the area of interest to the extent practical, and an as-left baseline of the resulting conditions. (Reference 3)

RPV Lower Head Configuration

The BVPS Unit 2 reactor vessel lower head contains 50 BMI penetrations fabricated of Alloy 600 tube material. The penetrations have an outer diameter of 1.5" and are clearance fit into the bottom of the reactor vessel. The tubes are attached to the vessel by an Alloy 82/182 attachment weld on the inside diameter surface of the vessel.

The BVPS Unit 2 reactor vessel is insulated. In order to facilitate the 2R10 exams, two removable access doors were installed in the vertical portion of the insulation, 180 degrees apart. During 2R11, these doors provided access for the remote visual inspection crawler and manual cleaning operations.

2R10 Inspection Background (Fall 2003)

During the first visual inspection of the Unit 2 BMI penetrations (2R10, Fall 2003), dry white residue was observed in or near the annulus between the reactor vessel and the penetration tube of 18 penetrations. Similar residue was observed on the vessel surface around virtually every penetration. The residue did not have the visual appearance of boric acid.

A comprehensive follow-up investigation as to the characterization and source of the residue was performed. Included in the investigation were chemical analysis, light microscopy, SEM-EDS analysis, and review of packaging and shipping records. The conclusion of this investigation was that the residue most likely consisted of tape residue left behind from the

original packaging and shipment of the reactor vessel. A more detailed description of the investigation can be found in Reference 3.

Because the residue had the potential to hinder future inspections of the BMI penetrations, FENOC committed to clean the residue from the area of interest to the extent practical during the 2R11 refueling outage.

Inspections/Cleaning Performed in 2R11 (Spring 2005)

The visual inspections of the RPV lower head penetrations were performed by Westinghouse/R. Brooks using a remote camera crawler. Access to the penetrations was achieved from two locations 180° apart. The remote crawler, equipped with a pan, tilt, and zoom (~20x) camera, rode on the horizontal surface of the insulation to provide a view of the penetration annulus from almost directly underneath each penetration.

The visual exam was documented on videotape. The exam used the same indexing protocol as is common on remote visual exams of the top of the RPV head. Each of the 50 penetrations was divided into 4 quadrants (A, B, C, and D). Video footage was obtained of all 200 quadrants inspected. The visual examinations were performed by Westinghouse/R. Brooks and Wesdyne VT-2 qualified personnel, in accordance with the requirements of the Westinghouse Quality Assurance Program. The visual exam review and final disposition of results were performed by FENOC Level II or III visual examiners and the onsite ANII. The examiners' observations for each quadrant were logged as part of the site specific procedure.

An as-found visual inspection was performed on all 50 BMI penetrations. Videotapes and still images from the 2R10 (Fall 2003) visual inspection were used to evaluate penetrations having residue in or near the annulus. No indications of leakage or change in conditions were identified during the as-found exam.

A manual cleaning of the 18 penetrations previously identified was performed using long-handled stainless steel brushes. In addition, Penetration 12 was added to the cleaning scope during 2R11 exam. (Penetration 12 did not show a change in condition or residue obstructing the annulus. Cleaning of residue on the penetration tube was performed in an effort to establish the best conditions possible.) In total, cleaning attempts were made on 31 quadrants of 19 penetrations.

An as-left inspection was performed on the 19 penetrations where cleaning was performed in order to re-establish the baseline conditions. In most cases, all of the residue in or near the annulus was successfully removed. In some cases, the angle of the penetrations and the location of the residue relative to the access openings prohibited complete removal, but conditions were improved. Videotapes and still images of the post-cleaning conditions are available for review during subsequent inspections, if necessary. FENOC visual examination personnel accepted the as-left conditions as "Satisfactory".

Conclusion

Visual inspection of the 50 Beaver Valley Unit 2 RPV lower head penetrations (and the cleaning of 19) within the scope of NRC Bulletin 2003-02 were completed during 2R11 in accordance with BVPS commitments identified in FENOC Bulletin responses L-03-138 and L-03-191. The as-found visual inspection identified no indications of leakage or change in conditions on any of

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the 50 BMI penetrations. The as-left condition of the BMI penetrations is an acceptable baseline for comparison to future visual examination results, if required. Future inspections will be performed in accordance with the frequencies and methods previously identified in BVPS commitments to Bulletin 2003-02.