

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

November 9, 2004

10 CFR 50.54(f)

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
11555 Rockville Pike  
Rockville, Maryland 20852

Serial No. 03-459E  
NAPS/JHL R0  
Docket No. 50-338  
License No. NPF-4

**VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)**  
**NORTH ANNA POWER STATION UNIT 1**  
**SIXTY-DAY RESPONSE TO NRC BULLETIN 2003-02**  
**LEAKAGE FROM REACTOR PRESSURE VESSEL LOWER HEAD PENETRATIONS**  
**AND REACTOR COOLANT PRESSURE BOUNDARY INTEGRITY**

On August 21, 2003 the NRC issued NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity." The bulletin requested licensees to provide a description of their reactor pressure vessel (RPV) lower head penetration inspection programs that they have previously implemented at their plants, as well as a description of the RPV lower head penetration inspection programs that they will be implementing during the next and subsequent refueling outages. This information was provided for North Anna Units 1 and 2 in a letter dated November 17, 2003 (Serial No. 03-459A).

The bulletin also requested that a summary of the inspection results be submitted to the NRC within 60 days of plant restart following the next inspection of the RPV lower head penetrations. The report is to include the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the lower head, any findings of relevant indications of through-wall leakage, and a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found. Dominion performed the requested inspection of the Unit 1 RPV lower head penetrations during the fall 2004 refueling outage that was completed on October 6, 2004. The requested 60-day response documenting the inspection of the RPV lower head penetrations for North Anna Unit 1 is provided in the attachment.

If you have any questions or require additional information, please contact Mr. Thomas Shaub at (804) 273-2763.

Very truly yours,



L. N. Hartz  
Vice President – Nuclear Engineering

Attachment

Sixty-Day Response to NRC Bulletin 2003-02, Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity, North Anna Power Station Unit 1

Commitments made in this letter: None

cc: U.S. Nuclear Regulatory Commission  
Region II  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW  
Suite 23T85  
Atlanta, GA 30303-8931

Mr. S. R. Monarque  
U. S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Mail Stop 8-H12  
Rockville, MD 20852

Mr. M. T. Widmann  
NRC Senior Resident Inspector  
North Anna Power Station

Mr. M. Grace – ANII  
North Anna Power Station



**ATTACHMENT**

**Serial No. 03-459E**

**Sixty-Day Response to NRC Bulletin 2003-02  
Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor  
Coolant Pressure Boundary Integrity**

**North Anna Power Station Unit 1**

**Virginia Electric and Power Company  
(Dominion)**

**Sixty-Day Response to NRC Bulletin 2003-02  
Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor  
Coolant Pressure Boundary Integrity  
North Anna Power Station Unit 1**

On August 21, 2003 the NRC issued Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity." The bulletin requested licensees to provide information related to inspections that have been performed to verify the integrity of the reactor pressure vessel (RPV) lower head bottom-mounted instrumentation (BMI) penetration nozzles within sixty-days of the completion of the outage in which the inspections were completed. The sixty-day response for North Anna Power Station Unit 1 is provided below.

**Requested Information**

*Within 60 days of plant restart following the next inspection of the RPV lower head penetrations, subject PWR addressees should submit to the NRC a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the lower head, any findings of relevant indications of through-wall leakage, and a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found.*

**Response**

Station Procedure 1-PT-48.4, Bare Metal Inspection of Vessel BMI Nozzles, was performed on the RPV lower head to inspect for any potential boric acid leakage from the bottom-mounted instrumentation nozzles. No evidence of leakage was discovered on the outside of the RPV lower head insulation. The RPV lower head insulation panels were removed to allow access to the instrumentation nozzles. The nozzle inspection was performed by VT-2 Level II certified individuals by either direct visual inspection or by visual inspection aided by the use of mirrors. A 360-degree bare-metal visual examination of the 50 bottom-mounted instrumentation penetration nozzles was performed. No evidence of leakage or lower head wastage was observed. However, the inspection identified some minor rusting (not attributed to boric acid corrosion) and paint peeling on the lower head. A supplemental video recording of the penetration nozzles and lower head was made as a baseline reference for future inspection efforts. Since there were no boric acid deposits observed, no disposition of findings or corrective actions were necessary.

In addition to the minor rusting, the inspection identified anomalies at the inconel to stainless steel transition welds for penetrations 36 and 48. The penetration 36 anomaly was determined to be tape residue and was evaluated as satisfactory. Penetration 48 had a small amount of fibrous material on the side of the nozzle in the area of the transition weld of the two nozzle halves. The amount of material was approximately 1/4 inch long and 1/16 inch wide. After removing the fibrous material, a liquid penetrant examination of penetration 48 was performed and no recordable indications were

identified. Analysis of a sample of the fibrous material determined that there was no boron in the sample. It is likely that the material was from the insulation.