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10 CFR 50.54 (f)

United States Nuclear Regulatory Commission  
ATTN: Document Control Desk  
11555 Rockville Pike  
Rockville, Maryland 20852

Braidwood Station, Unit 1  
Facility Operating License No. NPF-72  
NRC Docket No. STN 50-456

**Subject:** Braidwood 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." This bulletin requires the following information be submitted to the NRC within 60 days after plant restart following the next inspection of the reactor pressure vessel lower head penetrations:

"...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."

Pursuant to 10 CFR 50.54, "Conditions of licenses," paragraph (f), Attachment 1 to this letter provides the Braidwood Station, Unit 1 Sixty-Day response. This response is due to the NRC by December 22, 2004.

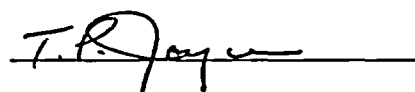
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Please direct any questions you may have regarding this submittal to Mr. Dale Ambler, Regulatory Assurance Manager, at (815) 417-2800.

I declare under penalty of perjury that the foregoing is true and correct.

Respectfully,

Executed on 12/10/04

A handwritten signature in black ink, appearing to read "T. P. Joyce", is written over a horizontal line.

T. P. Joyce  
Site Vice President  
Braidwood Nuclear Generating Station

Enclosures: Attachment, Braidwood Station Unit 1 Sixty-Day Response to NRC Bulletin 2003-02

cc: Regional Administrator – NRC Region III  
NRC Senior Resident Inspector – Braidwood Station

**ATTACHMENT**

**Braidwood 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." This bulletin requires the following information be submitted to the NRC within 60 days of plant restart following the next inspection of the reactor pressure vessel (RPV) lower head penetrations:

*Within 60 days of plant restart following the next inspection of the RPV lower head penetrations, the 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

#### **Summary of the Inspections Performed, Extent of the Inspections, and Methods Used**

During A1R11 (Fall 2004 refuel outage), a visual examination was performed on the lower vessel head surface and bottom mounted instrumentation (BMI) penetrations. The examination was conducted in accordance with Exelon corporate procedure ER-AP-335-1012, "Visual Examination of PWR Reactor Vessel Head Penetrations." The results of the examination were recorded on videotape to serve as a baseline reference for future examinations.

The examination was performed using a remotely operated zoom lens camera capable of covering the entire under-vessel area by riding on the horizontal insulation deck along and between the 58 penetration nozzles. The examination system was able to resolve the 0.044-inch high characters on an ASME Section XI, Table IWA-2210-1 chart. The actual distances viewed were less than two feet which gave extremely close views of the BMI nozzle to RPV lower head interface region, thereby ensuring any boric acid leakage would be easily identified.

All 58 penetrations were examined 360 degrees around. The examination was performed real time by certified VT-2 examiners. In addition, a certified VT-2 examiner performed an independent review of the videotaped results.

#### **Description of the As-Found Condition, Findings of Relevant Indications, and Summary of the Disposition of any Findings**

The RPV lower head visual inspection identified no evidence of any boric acid deposits in the BMI nozzle to RPV lower head interface region associated with reactor coolant leakage. Minor surface corrosion was noted adjacent to some penetrations, but was not significant enough to mask the penetration-to-vessel interface.

## **Corrective Actions Taken**

During the inspection, minor accumulations of debris were noted at penetrations #38, 43, 44, 45, and 52, with the largest deposit located at penetration #44. Issue Report 261524 was initiated to document the presence of the debris and an attempt to obtain samples at each penetration was made. Eleven samples were taken. Ten samples were smear samples that did not contain any significant material on the smear. One physical sample was obtained from penetration #44. There was no radioactivity from the penetration #44 physical sample and therefore the material could not be from the RCS. The physical sample was very light, approximately 0.003 grams (3 milligrams).

Gamma Spectroscopy was performed to characterize all samples. Further analysis was performed on the physical sample to determine its source. The results determined the physical sample taken from penetration #44 to be aluminum-silicate insulation. There was some iron (rust staining) and a chunk (100 microns) of calcium material (probably calcium carbonate) - typically found with insulation.

The activity in the smears was very low ranging from  $10^{-4}$  to  $10^{-5}$  microcuries per smear.

All radionuclides identified were activation products that could be formed from the reactor vessel material. Although fission products were present in the coolant due to a fuel leak during the previous operating cycle, none were found in the smears.

None of the smears taken indicated a typical footprint for an RCS leak. The radioisotopes that were present in the smears were Cobalt-60, Tungsten-187, Chromium-51, and Zinc-65.

Short-lived radionuclides (Sodium-24 and Cobalt-58) that are present in reactor coolant were not found in any of the smears taken. In addition, Cesium-134 that is present in the reactor coolant was not found in any of the smears.

Before and after samples were obtained, a direct visual examination was performed on the five penetrations that confirmed the debris noted during the initial remote examination was not located in the annulus around the penetrations. A final examination using the remote camera was also performed on all five penetrations.

## **Conclusion**

All 58 penetrations are acceptable with no evidence of through-wall reactor coolant leakage. The accumulated debris noted at penetrations #38, 43, 44, 45, and 52 were proven non-relevant through chemistry analysis.