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June 11, 2002  
BW020052

United States Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Braidwood Station, Unit 2  
Facility Operating License No. NPF-77  
NRC Docket No. STN 50-457

Subject:      Braidwood Station Unit 2 Thirty-Day Response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity"

References:    1) Exelon Generation Company, LLC and U. S. NRC teleconference held May 2, 2002, regarding the results of the Braidwood Unit 2 Reactor Vessel Head Inspection

                  2) Letter from J. A. Benjamin (Exelon Generation Company, LLC) to NRC, "Exelon/AmerGen Response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," dated April 1, 2002

On March 18, 2002, the NRC issued NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity." This bulletin required that the following information be submitted to the NRC within 30 days after plant restart following the next inspection of the reactor vessel head to identify any degradation:

- the inspection scope and results, including the location, size, and nature of any degradation detected; and
- the corrective actions taken and the root cause of the degradation.

In addition, in the Reference1 teleconference, representatives of the NRC requested that this 30-day bulletin response document the Braidwood Station response to the following two questions:

- *It was indicated that the spills that have occurred at Braidwood Station were cleaned. Was all boric acid material removed such that the bare metal of the head was visible?*


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- *Can bare metal inspections of the reactor pressure vessel head be performed at Braidwood Station Unit 1 and Unit 2?*

Pursuant to 10 CFR 50.54, "Conditions of licenses," paragraph (f), the Attachment to this letter provides the Braidwood Station, Unit 2, 30-day response. Based on a Braidwood Station, Unit 2 restart of May 12, 2002, this response is due to the NRC by June 11, 2002.

If you have any questions or desire additional information regarding this letter, please contact Ms. Amy Ferko, Regulatory Assurance Manager, at (815) 417-2699.

Sincerely,

  
James D. von Suskil  
Site Vice President  
Braidwood Station

Attachment: Thirty-Day Response to NRC Bulletin 2002-01, Braidwood Station, Unit 2

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

STATE OF ILLINOIS )  
COUNTY OF WILL )

IN THE MATTER OF )

EXELON GENERATION COMPANY, LLC )

Docket Number

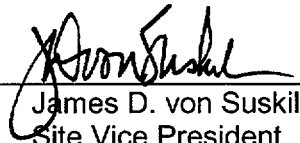
BRAIDWOOD STATION - UNIT 2 )

STN 50-457

**SUBJECT: Braidwood Station Unit 2 Thirty-Day Response to NRC Bulletin 2002-01,  
"Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure  
Boundary Integrity"**

**AFFIDAVIT**

I affirm that the content of this transmittal is true and correct to the best of my knowledge, information and belief.

  
James D. von Suskil  
Site Vice President  
Braidwood Station

Subscribed and sworn to before me, a Notary Public in and

for the State above named, this 11 day of

June, 2002

  
Notary Public



**ATTACHMENT**

**Thirty-Day Response to NRC Bulletin 2002-01  
"Reactor Pressure Vessel Head Degradation and Reactor Coolant  
Pressure Boundary Integrity"**

**Braidwood Station Unit 2**

**Exelon Generation Company, LLC**

## Attachment

### Thirty-Day Response to NRC Bulletin 2002-01

#### Braidwood Station Unit 2

On March 18, 2002, the NRC issued NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity." This bulletin requires that the following information be submitted to the NRC within 30 days after plant restart following the next inspection of the reactor pressure vessel (RPV) head to identify any degradation:

2. *Within 30 days after plant restart following the next inspection of the reactor pressure vessel head to identify any degradation, all PWR addressees are required to submit to the NRC the following information:*
  - A. *the inspection scope and results, including the location, size, and nature of any degradation detected,*
  - B. *the corrective actions taken and the root cause of the degradation.*

In a May 2, 2002 teleconference, the NRC also asked the following questions:

- *It was indicated that the spills that have occurred at Braidwood Station were cleaned. Was all boric acid material removed such that the bare metal of the head was visible?*
- *Can bare metal inspections of the reactor pressure vessel (RPV) head be performed at Braidwood Unit 1 and Unit 2?*

#### **Braidwood Station Unit 2 Response**

- A. *the inspection scope and results, including the location, size, and nature of any degradation detected,*

#### Response

During the ninth refueling outage for Braidwood Station Unit 2 (i.e., A2R09) a qualified, effective visual exam was performed that covered 100% of the reactor pressure vessel (RPV) head surface including all 79 vessel head penetrations (VHPs). These VHPs include two Reactor Vessel Level Indication System (RVLIS) penetrations, five thermocouple penetrations, one vent pipe, 53 control rod drive mechanism penetrations, and 18 spare penetrations.

The visual examination was considered qualified because it was conducted using a procedure specifically written to identify boric acid on the head surface as well as around the VHPs. The examination used Certified VT Level II/III examiners and required specific training on boric acid detection. The training was based on EPRI Report 1006296, "Visual Examination for Leakage of PWR Reactor Head Penetrations," and its accompanying video tape. The examination was considered effective because the exam was performed on vessel surface under the head insulation and was performed within 6" - 12" of all areas of the RV Head using a fixed focus color camera with integrated light source. The combination of lighting and resolution for the

remote camera system at the examination distance was capable of resolving the 0.105 inch character height lettering on a Section XI, Table IWA-2210-1 test chart. The examination along with the resolution verifications were recorded on video.

The examination included 100% of the vessel head surface and a 360 degree view of all VHPs with the exception of the head vent penetration which was obscured for approximately 90 degrees due to a section of angle iron which supports the head insulation. However, because of the slight clearance between the bottom of the support steel and the head surface, boric acid deposits around the head vent would have been detectable.

Evidence of previous leakage reported from thermocouple/RVLIS bolted connections, discussed in a letter from J. A. Benjamin (Exelon Generation Company, LLC) to NRC, "Exelon/AmerGen Response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," dated April 1, 2002, was seen on several penetration housings. However, there were no fixed boric acid deposits on the RPV head surface. Any loose deposits of boric acid trailing down from the penetration housings was negligible and were cleaned as part of the examination process. Post cleaning examinations revealed no evidence of any carbon steel head corrosion or wastage. In addition, debris accumulated around the VHPs that could interfere with leakage detection was vacuumed and a post cleaning examination was performed. There was no evidence of any active leakage or leakage from any VHPs.

*B. the corrective actions taken and the root cause of the degradation.*

Response

There were no corrective actions taken or root cause investigations performed as no RPV head degradation was identified.

*It was indicated that the spills that have occurred at Braidwood Station were cleaned. Was all boric acid material removed such that the bare metal of the head was visible?*

Response

As discussed above, evidence of previously reported leakage from thermocouple/RVLIS bolted connections was seen trailing down several penetrations housings. In most cases the boric acid did not make it down to the RV head surface. In those cases, where loose boric acid was seen at the bottom of VHP housing at the head surface, the area was cleaned and the post cleaning examinations clearly showed that the head surface was clean and free of any corrosion, pitting, or wastage.

*Can bare metal inspections of the reactor pressure vessel (RPV) head be performed at Braidwood Station, Unit 1 and Unit 2?*

Response

As demonstrated by the examination performed during refueling outage A2R09, qualified and effective visual examinations are possible at Braidwood Station, Unit 2. A visual examination

under the RPV Head insulation has not yet been performed at Braidwood Station Unit 1; however, it is expected that, barring any significant differences in RPV head insulation configuration, a similar exam could be performed.