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Braidwood Station
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10 CFR 50.73

November 15, 2010
BW100124

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

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

Subject: Licensee Event Report 2010-003-00 – Unit 1 Through-weld Leak of the Line from the
1B Seal Injection Filter to the Vent Valve

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee event report system", paragraph (a)(2)(i)(B), any operation or condition which is prohibited by the plant's Technical Specifications. On September 15, 2010, a through wall leak was identified between the 1B seal injection filter and the seal injection filter vent valve, and was determined to have existed for a period longer than allowed by Technical Specifications. 10 CFR 50.73(a) requires an LER to be submitted within 60 days following discovery of the event. Therefore, this report is being submitted by November 15, 2010.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this submittal, please contact Mr. Ronald Gaston, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,



Amir Shahkarami
Site Vice President
Braidwood Station

Enclosure: LER 2010-003-00

cc: NRR Project Manager – Braidwood Station
Illinois Emergency Management Agency – Division of Nuclear Safety
US NRC Regional Administrator, Region III
US NRC Senior Resident Inspector (Braidwood Station)

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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4. TITLE
Through-weld Leak of the Line from the 1B Seal Injection Filter to the Vent Valve

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	15	2010	2010	- 003	- 00	11	15	2010	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
10. POWER LEVEL 100	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Ronald Gaston, Regulatory Assurance Manager	TELEPHONE NUMBER (Include Area Code) (815) 417-2800
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH N/A	DAY N/A	YEAR N/A
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On September 15, 2010, at 0758, Operations was notified that a potential for leakage existed on a weld on a 3/4-inch diameter stainless steel line which extends from the reactor coolant pump seal water injection filter to the 1B seal water injection filter vent valve. Limiting Condition for Operation (LCO) 3.5.5, "Seal Injection Flow," was conservatively entered based on a postulated failure of this line due to pressure boundary leakage. The LCO was exited at 0939 when the 1B seal injection filter, including the potentially leaking vent pipe, was isolated from the chemical volume and control system within the allowed completion time of the LCO. At 1121 on September 15, 2010, following cleaning, a through-weld leak was confirmed on one weld through visual inspection.

The cause of the leakage was determined to be transgranular stress corrosion cracking (TGSCC) that was accelerated by the existence of an original fabrication flaw. The corrective action was to repair the through-weld leak. This action has been completed.

There were no actual safety consequences impacting plant or public safety as a result of the event.

This event is reportable under 10 CFR 50.73(a)(2)(i)(B), any operation or condition which is prohibited by the plant's Technical Specifications.

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NARRATIVE

A. Plant Operating Conditions Before The Event:

Event Date:	September 15, 2010	Event Time:	0758 CDT
Unit: 1	MODE: 1	Reactor Power:	100 percent
Unit 1 Reactor Coolant System (RC) [AB]:	Normal operating temperature and pressure		

B. Description of Event:

No structures, systems or components were inoperable at the start of this event that contributed to the event.

On September 14, 2010, in an infrequently-accessed area of the plant, dried boric acid was identified on a 3/4-inch diameter stainless steel line which extends from the 1B reactor coolant pump seal water injection [CB] filter 1CV01FB to the 1B seal water injection filter vent valve, 1CV8385B. The line designation could not be determined in-field. Upon further investigation, the boric acid deposits were determined to be on two welds of the line with identification 1CV72AB-3/4-inch (an American Society of Mechanical Engineers (ASME) Class 2 Safety Related component).

On September 15, 2010, following the positive identification of the component with the boric acid deposits, Engineering initiated additional actions to identify the exact source of leakage (e.g., possible leakage from a component above the location where the boric acid was identified; through-wall leakage in the piping; or through-weld leakage).

On September 15, 2010, at 0758, Operations was notified that a potential for leakage existed. In accordance with procedures, the line was determined to be inoperable, and Limiting Condition for Operation (LCO) 3.5.5, "Seal Injection Flow," was conservatively entered based on a postulated failure of this line due to pressure boundary leakage. LCO 3.5.5 contains a four hour action statement to adjust seal injection flow, and if not able to do so, place the Unit in Mode 3 in six hours. Actions to positively identify the exact source of leakage were initiated.

On September 15, 2010, at 0939, the LCO was exited when the 1B seal injection filter, including the potentially leaking vent pipe, was isolated from the chemical volume and control (CV) system within the allowed completion time of the LCO. On September 15, 2010 at 1121, following cleaning, a through-weld leak was confirmed on one weld through visual inspection.

Based on inspection of the pipe flaw by Engineering, the through-weld leak was determined to have existed for a period of time prior to discovery. Based on this information, the line was inoperable for a longer period of time than the LCO 3.5.5 allowed. Therefore, this event is reportable under 10 CFR 50.73(a)(2)(i)(B), any operation or condition which is prohibited by the plant's Technical Specifications.

C. Cause of Event

The cause of the leakage was determined to be transgranular stress corrosion cracking (TGSCC) that was accelerated by the existence of an original fabrication flaw.

A metallurgical analysis of the defect was not performed. The area where the through-wall indication had developed is in a very congested area of the pipe chase, and the removal of the defect area to capture a metallurgical sample would have required at least four field welds (some with limited access for welder), and some

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NARRATIVE

structural supports would need to be removed. Therefore, a field repair of the existing weld was determined to be the preferred option.

Since the defective segment of weld containing the through wall defects was ground out and repaired instead of being removed for metallurgical analysis, the actual damage mechanism can not be confirmed. In the absence of the laboratory metallurgical analysis results, the damage mechanism was determined based on field observations, operating experience and known materials degradation mechanisms for the specific materials and service environment. Additionally, the original construction records were retrieved and reviewed. The records do not indicate that any excavations were made and it appears there were no apparent welding difficulties based on the weld history review. Final visual and liquid penetrant would not detect any subsurface defects created during the welding process.

The line is for the seal water injection filter 1CV01FB which is normally isolated and not in service unless the 1A seal water injection filter is removed from service to facilitate filter change-out. The 1CV01FB filter is normally isolated with no flow through it or the vent line, essentially creating a stagnant condition. Given the normally stagnant nature of this line it is highly likely that TGSCC was the in-service damage mechanism that drove pre-existing weld flaw(s) to a through-wall leaking condition. Stagnant conditions are known to be conducive to TGSCC in borated stainless steel piping systems. The socket weld configuration essentially provided a crevice along the inside surface, which is more conducive to TGSCC than the bulk pipe internal environment.

D. Safety Consequences:

There were no actual safety consequences impacting plant or public safety as a result of this event.

An evaluation concluded that it is reasonable to expect the RCS injection flow from the CV pumps to meet design bases assumed flows even assuming the worst case scenario of a complete severance of the 1B seal injection filter housing vent line. Therefore, this event did not result in a safety system functional failure.

Lines of this size (≤ 1 inch diameter) have been found to have a negligible impact on risk. The Probabilistic Risk Assessment (PRA) model accounts for very small loss of coolant accidents (LOCAs) based on plant specific and industry LOCA rates. RCS piping failures that could occur based on original design and construction failures are assumed to be bounded by the Braidwood Very Small LOCA rate. The above statements demonstrate that this failure would represent a negligible impact on the baseline core damage frequency and large early release frequency models.

E. Corrective Actions:

The corrective action was to excavate the flaw in the existing socket weld and perform an ASME Code weld repair of the through-wall leak of the weld in Line 1CV72AB-3/4-inch. This action has been completed.

F. Previous Occurrences:

There have been no previous, similar events identified at the Braidwood Station in the past three years.

G. Component Failure Data:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model</u>	<u>Mfg. Part Number</u>
N/A	N/A	N/A	N/A