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Braidwood Station
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Braceville, IL 60407-9619

10 CFR 50.73

December 4, 2015
BW150110

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

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

Subject: Licensee Event Report 2015-002-00 – Automatic Actuation of Auxiliary Feedwater and Automatic Reactor Trip Signal due to Startup Feedwater Pump Failing to Start on Demand and Motor Driven Feedwater Pump Elevated Bearing Temperature Exceeding Limits

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee Event Report System."

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

Respectfully,

A handwritten signature in black ink, appearing to read "Marri Marchionda-Palmer".

Marri Marchionda-Palmer
Site Vice President
Braidwood Station

Enclosure: LER 2015-002-00

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)
Illinois Emergency Management Agency - Braidwood Representative



LICENSEE EVENT REPORT (LER)
(See Page 2 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 and Information Collections Branch (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.

1. FACILITY NAME Braidwood Station, Unit 2	2. DOCKET NUMBER 05000457	3. PAGE 1 OF 3
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4. TITLE
Automatic Actuation of Auxiliary Feedwater and automatic Reactor Trip signal due to Startup Feedwater Pump Failing to Start on Demand and Motor Driven Feedwater Pump Elevated Bearing Temperature Exceeding Limits

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
10	05	2015	2015	002	00	12	04	2015	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

9. OPERATING MODE 3	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
	<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)
10. POWER LEVEL 000	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input checked="" 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 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

LICENSEE CONTACT Phillip J. Raush, 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
X	SJ	10 X 19 XS HVC	P025	Y	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	DAY	YEAR
		N/A	N/A	N/A

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On October 4, 2015 at 2317 hours, during the planned Unit 2 down power for entry into a refueling outage, the start-up feedwater (FW) pump failed to start. As a result, the motor driven FW pump (MDFWP) was used to supply FW to the steam generators for decay heat removal and cooldown.

On October 5, 2015 at 0038 hours, with the unit in Mode 3, MDFWP high journal bearing temperatures exceeded limits, and the pump was manually secured. Before the operating crew manually started the auxiliary feedwater (AF) system, the 2C steam generator low level reactor trip/AF actuation (Lo-2) setpoint was reached, resulting in an auto actuation of both trains of the AF system and an automatic reactor trip signal.

The cause of the failure of the startup FW pump to start was due to a pump starting interlock not making up. The corrective action planned is to create a post-maintenance test to perform an interlock check following maintenance of the startup FW pump.

The MDFWP elevated bearing temperatures were determined to be normal during low flow conditions experienced during the plant cooldown. Corrective actions completed included revising an operating procedure increasing allowable pump bearing temperatures.



**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

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 and Information Collections Branch (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.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Braidwood Station, Unit 2	05000457	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 3
		2015	- 002	- 00	

NARRATIVE

A. Plant Operating Conditions Before the Event:

Event Date: October 5, 2015

Unit: 2 Mode: 3 Reactor Power: 000 percent

Unit 2 Reactor Coolant System [AB]: Temperature: 532 degrees F, Pressure: 1927 psig

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

B. Description of Event:

NOTE: During normal operation, feedwater (FW) [SJ] to the steam generators is provided by two turbine-driven FW pumps. During plant shutdown, feedwater is normally transferred to a startup FW pump, or alternately, a motor-driven FW pump. The startup FW pump is the preferred pump at operation below 15% power to provide better steam generator level control.

On October 4, 2015 at 2317 hours, during the planned Unit 2 down power for entry into a refueling outage the start-up FW pump failed to start. As a result, the motor driven FW pump (MDFWP) was used to supply FW to the steam generators for decay heat removal and cooldown.

On October 5, 2015 at 0038 hours, with the unit in Mode 3, MDFWP high journal bearing temperatures exceeded limits, and the pump was manually secured. To maintain steam generator levels, the operating crew initially attempted to use condensate booster [SD] pumps as a feedwater source, followed by initiating actions to manually start auxiliary feedwater (AF) [BA].

At 0105 hours, the 2C steam generator low level reactor trip/AF actuation (Lo-2) level setpoint of 36.3 percent was reached, resulting in an auto actuation of both trains of the AF system and an automatic reactor trip signal. The reactor trip system functioned as expected. There were no issues following the auto initiation of AF. This condition is being reported in accordance with 10CFR50.73(a)(2)(iv)(A), any event or condition that resulted in the manual or automatic actuation of the reactor protection system (RPS) with the reactor not critical, and an automatic actuation of the auxiliary feedwater system. This LER is being submitted in follow-up to NRC Event Notification (ENS) 51450 made on October 5, 2015.

C. Cause of Event

The auto actuation of the AF pumps was due to the startup FW pump failing to start on demand and the MDFWP not operating within procedural prescribed bearing temperature limits at reduced flow.

The cause of the failure of the startup FW pump to start was due to a pump starting interlock not making up. For the MDFWP, subsequent to the event it was determined that the elevated bearing temperatures observed were normal for the conditions the pump was operated.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Braidwood Station, Unit 2	05000457	YEAR	SEQUENTIAL NUMBER	REV NO.	3 OF 3
		2015	- 002	- 00	

NARRATIVE

D. Safety Consequences:

This condition had no actual safety consequences impacting plant or public safety. The AF pumps started and supplied water to the steam generators as expected on a Lo-2 steam generator level.

Normal FW flow is not required to support design basis accidents. Loss of normal FW flow is a postulated design basis accident, which results in actuation of the AF system. The AF system was available and automatically actuated as required to support the loss of normal feedwater. Therefore there was no loss of safety function due to this event.

E. Corrective Actions:

Corrective action planned – For the startup FW pump, a post-maintenance test will be created to perform an interlock check following maintenance of the startup FW pump.

Corrective action completed – For the MDFWP, the procedure requirement to secure the pump was revised to incorporate revised bearing temperatures.

F. Previous Occurrences:

There have been no previous Licensee Event Reports at Braidwood on this issue.

G. Component Failure Data:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model</u>	<u>Mfg. Part Number</u>
Pacific Pumps Div. Dresser	Start-up Feedwater Pump	10 X 19 XS HVC	N/A