

10 CFR 50.73

October 25, 2010
BW100116

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 2010-004-00 – Unit 2 Unplanned Limiting Condition for Operation Entry Due to Low Header Pressure on the 2B Essential Service Water Pump

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 August 24, 2010, during performance of a surveillance on the 2B essential service water pump, essential service water system discharge pressure was reduced to below design requirements. 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 October 25, 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 2010-004-00

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)

NRC FORM 366 <small>(9-2007)</small>	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010	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 Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)			

1. FACILITY NAME Braidwood Station, Unit 2	2. DOCKET NUMBER 05000457	3. PAGE 1 of 4
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4. TITLE
Unplanned Limiting Condition for Operation Entry Due to Low Header Pressure on the 2B Essential Service Water Pump

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
08	24	2010	2010	- 004	- 00	10	25	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 §: <i>(Check all that apply)</i>			
10. POWER LEVEL 94%	<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 <i>(Include Area Code)</i> (815) 417-2800

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	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					15. EXPECTED SUBMISSION DATE		
<input type="checkbox"/> YES <i>(If yes, complete 15. EXPECTED SUBMISSION DATE)</i>				<input checked="" type="checkbox"/> NO	MONTH	DAY	YEAR
					N/A	N/A	N/A

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

On August 24, 2010, Operations was performing a surveillance on the 2B essential service water (SX) pump, which directs throttling of SX flow through the component cooling (CC) heat exchanger through the Unit 2 CC heat exchanger outlet valve 2SX007, to raise total SX system flow to 24,000 gpm. During surveillance performance, an incorrect flow instrument for data collection was used to determine total SX system flow.

At 1140, while throttling open the 2SX007 valve, SX system pressure decreased to less than 89 psig, and the main control room received an SX low system pressure alarm. Operations throttled closed the 2SX007 valve to restore SX system pressure to greater than 90 psig to clear the alarm. During the event, SX pressure decreased to 65 psig, and total SX flow increased to approximately 34,450 gpm.

The root cause of the event is the surveillance did not clearly identify the instrument to be used. The surveillance directed the use of a flow element instead of the ultrasonic flow instrument. The corrective action to prevent recurrence is to revise the SX pump surveillances to identify the total scope of the ASME surveillance in the purpose, and revise steps to specifically identify the use of the ultrasonic flow meter, equipment number and noun name, and location.

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.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Braidwood Station, Unit 2	05000457	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 4
		2010	- 004	- 00	

NARRATIVE

A. Plant Operating Conditions Before The Event:

Event Date: August 24, 2010	Event Time: 1140 CDT
Unit: 2 MODE: 1	Reactor Power: 94 percent
Unit 2 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 August 24, 2010, Operations was performing an American Society of Mechanical Engineers (ASME) surveillance on the 2B essential service water (SX) [BI] pump. The surveillance directs throttling of SX flow through the component cooling (CC) [CC] heat exchanger through the Unit 2 CC heat exchanger outlet valve 2SX007, to raise total SX system flow to 24,000 gpm.

Operators obtained all required as-found data and were in the process of raising flow through the CC heat exchanger, but used an incorrect flow instrument for data collection, reading a flow indicator for SX flow to the Unit 2 CC heat exchanger inlet, and not the indicator for total SX system flow.

At 1140, while throttling open the 2SX007 valve, Unit 2 CC heat exchanger flow increased to approximately 22,000 gpm, and SX system pressure dropped. When SX system pressure dropped to 89 psig, the main control room received an SX low system pressure alarm. Operations throttled closed the 2SX007 valve to restore SX system pressure to greater than 90 psig to clear the alarm.

During the event, SX pressure decreased to 65 psig, and total SX flow increased to approximately 34,450 gpm.

It was determined that with SX operating at reduced system pressure, if an emergency actuation signal had occurred, pump flow and performance could not be predicted based on available vendor data. 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 root cause for this event is the surveillance did not clearly identify the instrument to be used. The surveillance directed the use of a flow element instead of the ultrasonic flow instrument.

The operator read the wrong flow instrument while the 2SX007 valve was throttled open to increase flow. The 2B SX pump surveillance instructs the user to adjust SX flow through the Unit 2 CC heat exchanger using flow element 2FE-SX147, to obtain a total SX system flow of 24,000 gpm. The operators adjusted the 2SX007 valve to achieve flow rate of 24,000 gpm using flow instrument 2FI-SX031, which provides indication of SX flow through Unit 2 CC heat exchanger, and not total SX system flow. However, the flow rate cannot be read from a flow element. The surveillance instruction should have referenced the flow as read from the ultrasonic flow meter installed at 2FE-SX147. While this information can be deduced from the various steps in the surveillance, this information is never clearly stated.

Additionally, the surveillance assumes that the reader knows the flow reading is obtained from the ultrasonic flow meter hooked up at the flow element in the SX pump room. In this event, the operator incorrectly determined that

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 4
		2010	- 004	- 00	

NARRATIVE

the flow was to be set using the local flow indicator located around the corner from the control switch for the 2SX007 valve. The equipment number for the flow indicator was 2FI-SX031. Since the procedure step did not reference the ultrasonic flow meter or the location of flow element 2FE-SX147, the operators were unaware that the flow was to be obtained at the 2B SX pump. Additionally, the noun name for flow element 2FE-SX147 is *2B Essential Service Water Pump Suction Flow Element*. This flow element noun name was not provided in the procedure. The operators could not find the flow element at the pump because the equipment name tag was tucked under the insulation blanket of the SX pipe. The operators were aware that flow could not be read from a flow element and incorrectly determined the flow element supplied indication to 2FI-SX031.

If the location of the flow element, the noun name, or the ultrasonic flow instrument was identified in the procedure step, the operators would have the appropriate cues that the local gauge 2FI-SX031 was the wrong gauge to use to set the flow.

D. Safety Consequences:

There were no actual safety consequences impacting plant or public safety as a result of this event. The SX system remained available during this transient.

The SX system supplies cooling water to transfer heat from various safety related and non-safety related systems and equipment to the ultimate heat sink. The SX system is needed in every phase of plant operations and, under accident conditions, supplies adequate cooling water to systems and components that are important to safe plant shutdown or to mitigate the consequences of the accident. Under normal operating conditions, the SX system provides component and room cooling (mainly via the CC system). During shutdowns, SX also ensures that the residual heat is removed from the reactor core. The SX system may also supply makeup water to fire protection [KP] systems and the steam generators via the auxiliary feedwater [BA] system for cooling of the plant.

Engineering determined the maximum flow from the event was 34,450 gpm, which is on the pump curve generated for the 2B SX pump from the pump vendor. Therefore, the pump remained in the tested region during performance of the surveillance testing and did not reach a run-out condition.

Evaluation of the low SX pressure effects indicates that both units and trains of SX were capable of mitigating the effects of design bases events. During the period where the low pressure condition of 65 psig existed, post-accident nominal flows to various equipment such as reactor containment fan coolers (RCFCs) [VA] and emergency diesel generator (DG) [EK] jacket water coolers would probably not be met since the throttle valve positions for this equipment is established at a nominal SX pump discharge pressure of 94 psig. In these conditions, operating procedures provide sufficient procedural guidance to perform appropriate actions to restore SX header pressure to maintain operability of the SX supported systems.

This event did not result in a safety system functional failure.

E. Corrective Actions:

The corrective action to prevent recurrence is to revise the SX pump surveillances to identify the total scope of the ASME surveillance in the purpose, and revise steps to specifically identify the use of the ultrasonic flow meter, equipment number and noun name, and location.

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.	4 OF 4
		2010	- 004	- 00	

NARRATIVE

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