

10 CFR 50.73

February 18, 2013  
BW130017

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

Braidwood Station, Units 1 and 2  
Facility Operating License Nos. NPF-72 and NPF-77  
NRC Docket Nos. STN 50-456 and STN 50-457

Subject: Licensee Event Report 2012-003-01 – Fuel Handling Incident Area Radiation Monitors  
Inoperable Due to Incorrect Alarm Setpoints

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee Event Report System." This is a supplement to Licensee Event Report 2012-003-01 which was submitted on August 2, 2012. This LER is being supplemented to reflect that the event has additionally been determined to be reportable under 10 CFR 50.73(a)(2)(v)(C), any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material.

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

Respectfully,



Daniel J. Enright  
Site Vice President  
Braidwood Station

Enclosure: LER 2012-003-01

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 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**  
Fuel Handling Incident Area Radiation Monitors Inoperable Due to Incorrect Alarm Setpoints

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
06	03	2012	2012	003	01	02	18	2013	Braidwood Station, Unit 2	05000457
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

<b>9. OPERATING MODE</b>  1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (Check all that apply)									
<b>10. POWER LEVEL</b>  099	<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 checked="" 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 Chris VanDenburgh, 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	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

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	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 May 30, 2012, and June 1, 2012, setpoint adjustments on fuel handling incident area radiation monitors 1AR011J and 1AR012J were performed.

On June 3, 2012 at 1200, Operations declared 1AR011J Inoperable due to the detector drifting high, and the required compensatory actions were implemented. At 1230, during a review of 1AR011J and 1AR012J performance, Operations determined that the setpoint for 1AR012J was not set in accordance with Technical Requirements Manual 3.3.p and Technical Specification (TS) 3.3.6. 1AR012J was declared Inoperable, and compensatory actions were implemented. On June 3, 2012, at 1621, 1AR012J setpoints were restored and the monitor was declared Operable. On June 6, 2012 at 1540, 1AR011J was repaired and returned to Operable status.

The root causes of this event were determined to be: 1) Operations used the incorrect procedure attachment and did not validate the need to adjust 1AR012J setpoint; and 2) a lack of procedural guidance or alarm response guidance that checks if the 1/2AR011J or 1/2AR012J monitors have operable setpoints.

Corrective actions to prevent recurrence included addressing personal accountability for the isolated human performance error during setpoint adjustments of 1AR012J, and revising procedures to include guidance to trigger implementing setpoint changes for 1/2AR011J and 1/2AR012J (these actions are complete).

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**NARRATIVE**

**A. Plant Operating Conditions Before the Event:**

Event Date: June 3, 2012

Unit: 1                      MODE: 1                      Reactor Power: 99 percent

Unit 1 Reactor Coolant System [AB]:                      Normal operating temperature and pressure

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

Pertinent Containment Ventilation (VQ) [VA] Isolation Instrumentation:

Containment ventilation isolation instrumentation closes the containment isolation valves in the minipurge and normal purge systems. The action isolates the containment atmosphere from the environment to minimize releases of radioactivity in the event of an accident. Two radiation monitoring channels (1/2RE-AR011 and 1/2RE-AR012) provide input to the containment ventilation isolation. Each of the purge systems has inner and outer containment isolation valves in its supply and exhaust ducts. A high radiation signal from 1/2RE-AR011 initiates Train A containment isolation valves, which closes the inner containment isolation valves. A high radiation signal from 1/2RE-AR012 initiates Train B containment isolation valves, which closes the outer containment isolation valves.

The associated monitors for the 1/2RE-AR011 and 1/2RE-AR012 are the fuel handling incident area radiation [IL] monitors 1/2AR011J and 1/2AR012J. To maintain these radiation monitors operable, the radiation monitor setpoint must be within 10 mR/hr of containment background radiation levels. The basis for maintaining the alarm setpoint within 10 mR/hr is to initiate a containment isolation signal with a small rise in containment radiation level.

**Description of Event:**

On May 30, 2012, setpoint adjustments on 1AR011J and 1AR012J were performed. On May 31, 2012, 1AR011J was receiving alert alarms, and on June 1, 2012, setpoints were again adjusted on the 1AR011J and 1AR012J monitors.

On June 3, 2012 at 1200, Operations declared 1AR011J Inoperable due to the detector drifting high. The required compensatory actions of Technical Requirements Manual (TRM) 3.3.p, "Radiation Monitoring Instrumentation," and Technical Specification (TS) 3.3.6, "Containment Ventilation Isolation Instrumentation" were implemented. Additionally, because the detector would not be repaired within four hours, TS 3.6.3, "Containment Isolation Valves," Condition A was entered. TS 3.6.3 Condition A is for one or more penetration flow paths with one containment isolation valve inoperable. The Required Action is to isolate the affected penetration flow path within four hours.

On June 3, 2012, at 1230, during a review of 1AR011J and 1AR012J performance, Operations determined that the setpoint for 1AR012J was not set in accordance with TRM 3.3.p and TS 3.3.6 requirements. The setpoint had previously been set incorrectly on June 1, 2012. 1AR012J was declared Inoperable, and compensatory actions were implemented. Additionally, with the setpoints for both 1AR011J and 1AR012J exceeded, TS 3.6.3 Condition B was applicable. TS 3.6.3 Condition B is for one or more penetration flow paths with two containment isolation valves inoperable. The Required Action is to isolate the affected penetration flow path within one hour.

On June 3, 2012, at 1621, 1AR012J setpoints were restored and the monitor was declared Operable. On June 6, 2012, at 1540, 1AR011J was repaired and returned to Operable status.

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For the period of June 1 - 3, 2012, the setpoint for 1AR012J was incorrect for a time period greater than allowed by TS. A review of the previous three years was performed, which included a review of reactor power history, setpoint change documentation, and instrument reading for 1/2AR011J and 1/2AR012J. This review identified additional occurrences where the setpoints of one or both monitors were above required values. Additionally, operator logs were reviewed to determine whether a containment purge occurred (the purge valves were in service and open) during those time periods:

1. Unit 1, June 1 - 3, 2012 (this event) – 1AR012J monitor only. No containment purge occurred;
2. Unit 1, December 15, 2011 – both monitors. Containment purge occurred during this time frame;
3. Unit 1, September 3, 2011, during response to an unplanned power change – both monitors. No containment purge occurred;
4. Unit 1, July 13 - 14, 2011, during response to an unplanned power change – both monitors. No containment purge occurred; and
5. Unit 2, from October 24, 2010, through January 24, 2011 – both monitors. Containment purge occurred during this time frame.

No occurrences were identified during refueling activities in containment.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), any operation or condition which is prohibited by the plant's Technical Specifications. Additionally, with both trains of containment ventilation inoperable, this event is reportable under 10 CFR 50.73(a)(2)(v)(C), any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material.

**B. Cause of Event**

The root causes of this event were determined to be:

1. Contrary to procedure, Operations used the incorrect procedure attachment and did not validate the need to adjust 1AR012J setpoint.

The procedure for 1/2AR011J and 1/2AR012J setpoint changes contains a series of attachments for different plant operating modes. One attachment is for Mode 1-4 power changes. Another attachment is for setpoint changes once the unit has reached 100 percent reactor power. For this event, Unit 1 reached 100 percent reactor power on May 26, 2012.

On both May 30, 2012 and June 1, 2012, setpoint adjustments on 1AR011J and 1AR012J were performed. The attachment for Mode 1-4 power changes (the incorrect attachment) was used by Operations for the adjustment. The senior reactor operator did not review the procedure or validate that the attachment provided was the correct attachment for the current mode. In addition, on June 1, 2012, the operators did not validate the need to adjust 1AR012J, which had not demonstrated a trend increase similar to 1AR011J. The radiation monitors, 1/2AR011J and 1/2AR012J, normally track together, but because of a materiel condition deficiency associated with 1AR011J, 1AR012J was not alarming and had a much more linear track to the radiation levels. Operations did not check the background radiation levels or the 1AR012J readings prior to performing the setpoint adjustment to both 1AR011J and 1AR012J. Following completion of the setpoint adjustment, the new setpoint was outside the 10 mR/hr required per the TRM and was non-conservative.

2. There is no procedural guidance or alarm response guidance that checks if the 1/2AR011J or 1/2AR012J monitors have operable setpoints.

The existing design of the plant does not have an alarm when the containment radiation deviates from setpoint by greater than 10mR/hr. If procedure guidance existed that triggered monitoring the background radiation to

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check for operability limits, then there would be a higher probability of recognizing when 1/2AR011J and 1/2AR012J monitors are inoperable.

**D. Safety Consequences:**

This condition had no actual safety consequences impacting plant or public safety. Braidwood did not experience an event where a containment ventilation isolation was required but would not have actuated at the appropriate radiation level in containment due to an incorrect setpoint.

With both trains of containment ventilation inoperable, this event is considered a condition that could have prevented the fulfillment of a safety function.

The fuel handling incident area radiation monitors 1/2AR011J and 1/2AR012J ensure containment isolation dependability by satisfying the requirements of NUREG-0800 and NUREG-0737.

TS 3.3.6 and TRM 3.3.p, provide insight to the allowable setpoints for the 1/2AR011J and 1/2AR012J monitors. Specifically, TS Table 3.3.6-1, Note (b) states "...Trip setpoint shall be established such that actual submersion dose rate is <10 mR/hr in the Containment Building. The trip setpoint may be increased above this value in accordance with the methodology established in the Offsite Dose Calculation Manual." TRM Table T3.3.p-1, Note (b) states "...For containment purge or vent the setpoint value may be increased up to twice the maximum concentration activity in the containment determined by the sample analysis performed prior to each release in accordance with the Offsite Dose Calculation Manual (ODCM) provided the value is ≤ 10% of the equivalent limits with the Noble gases to ≤ 500 mrem/yr to the whole body and to ≤ 3000 mrem/yr to the skin."

The containment atmosphere radioactivity, in order to contribute 10% of the ODCM limit for off-site dose, would indicate approximately 640 mR/hr on the 1/2AR011J and 1/2AR012J monitors. This dose rate is higher than the 1/2AR011J and 1/2AR012J setpoints during the last three years (all setpoints were less than 200mR/hr, including refuel outage evolutions). Additionally, the effluent monitor setpoints for the low range noble gas detectors (1/2PR28J) are set at 1% of the ODCM limit for alert alarm and 10% of the ODCM limit for high alarm. These monitors would provide an indication to Operations that effluents are approaching the ODCM limits.

The maximum identified setpoints established for 1/2AR011J and 1/2AR012J during the period evaluated in this report was determined to be less than the 640 mrem/hr derived during the 10% ODCM calculation discussed above. Using the methods established in the ODCM, the 1/2AR011J and 1/2AR012J monitors would have provided a containment isolation signal prior to containment radiation levels reaching a level that challenged the established limits.

**E. Corrective Actions:**

Corrective actions to prevent recurrence:

- Coach the personnel responsible for the setpoint adjustments of 1AR012J (this action is complete).
- Procedures revised to include guidance to trigger implementing setpoint changes for 1/2AR011J and 1/2AR012J (this action is complete).

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F. Previous Occurrences:

No previous, similar Licensee Event Reports were identified at the Braidwood Station.

G. Component Failure Data:

Manufacturer  
N/A

Nomenclature  
N/A

Model  
N/A

Mfg. Part Number  
N/A