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10 CFR 50.73

February 22, 2013  
Byron Ltr 2013 – 0030  
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U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Byron Station, Unit 1 and Unit 2  
Facility Operating License Nos. NPF-37 and NPF-66  
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: Licensee Event Report 2012-003-01, "Containment Area Radiation Monitors Inoperable for Longer than Allowed by Technical Specifications Due to Inadequate Procedure Controls"

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee event report system." The LER involves a June 4, 2012, discovered condition involving inadequate procedural controls for installing setpoints on required Technical Specifications containment area radiation monitors.

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. David Gudger, Regulatory Assurance Manager, at (815) 406-2800.

Respectfully,



Timothy J. Tulon  
Site Vice President  
Byron Station

TJT/JEL/cy

Enclosure: LER Number 454-2012-003-01

**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](mailto: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**

Byron Station, Unit 1

**2. DOCKET NUMBER**

05000454

**3. PAGE**

1 OF 5

**4. TITLE**

Containment Area Radiation Monitors Inoperable for Longer than Allowed by Technical Specifications Due to Inadequate Procedure Controls

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	04	2012	2012	- 003 -	01	02	22	2013	Byron Station, Unit 2	05000455
									FACILITY NAME	DOCKET NUMBER

**9. OPERATING MODE**

1

**11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)**☐ 20.2201(b)☐ 20.2203(a)(3)(i)☐ 50.73(a)(2)(i)(C)☐ 50.73(a)(2)(vii)☐ 20.2201(d)☐ 20.2203(a)(3)(ii)☐ 50.73(a)(2)(ii)(A)☐ 50.73(a)(2)(viii)(A)☐ 20.2203(a)(1)☐ 20.2203(a)(4)☐ 50.73(a)(2)(ii)(B)☐ 50.73(a)(2)(viii)(B)☐ 20.2203(a)(2)(i)☐ 50.36(c)(1)(i)(A)☐ 50.73(a)(2)(iii)☐ 50.73(a)(2)(ix)(A)☐ 20.2203(a)(2)(ii)☐ 50.36(c)(1)(ii)(A)☐ 50.73(a)(2)(iv)(A)☐ 50.73(a)(2)(x)☐ 20.2203(a)(2)(iii)☐ 50.36(c)(2)☐ 50.73(a)(2)(v)(A)☐ 73.71(a)(4)☐ 20.2203(a)(2)(iv)☐ 50.46(a)(3)(ii)☐ 50.73(a)(2)(v)(B)☐ 73.71(a)(5)☐ 20.2203(a)(2)(v)☐ 50.73(a)(2)(i)(A)☒ 50.73(a)(2)(v)(C)☐ OTHER☐ 20.2203(a)(2)(vi)☒ 50.73(a)(2)(i)(B)☐ 50.73(a)(2)(v)(D)Specify in Abstract below  
or in NRC Form 366A**10. POWER LEVEL**

100

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME

David Gudger, Regulatory Assurance Manager

TELEPHONE NUMBER (Include Area Code)

(815) 406-2800

**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

**14. SUPPLEMENTAL REPORT EXPECTED**☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE)☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH

DAY

YEAR

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

In accordance with Technical Specifications (TS) 3.3.6, "Containment Ventilation Isolation Instrumentation," the setpoints for the containment Area Radiation (AR) monitors 1/2AR011J and 1/2AR012J are required to be set less than or equal to 10 mR/hr above the background radiation level in containment. The procedural controls for installing these setpoints for these monitoring channels did not account for the lowering background radiation level that occurs while reactor power is being reduced. Consequently, during a power reduction, with the setpoint constant and background levels reducing, the TS setpoint limit of being less than or equal to 10 mR/hr above background would be exceeded and would make the channel inoperable. Once Mode 5 was reached the setpoints were adjusted to shutdown background levels. In addition, when returning to power from an outage, the setpoints for full power operations were installed while in Mode 5 based on anticipated full power background levels. TS required actions and completion times were inadvertently exceeded for both radiation monitors being inoperable during Unit startup and power ascension.

The cause of the condition was inadequate procedural controls to ensure compliance with the TS setpoint requirements for 1/2AR011J and 1/2AR012J radiation monitors. Procedural controls were added to ensure 1/2AR011J and 1/2AR12J setpoints are adjusted as necessary to ensure compliance with TS during changing containment background radiation conditions.

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**NARRATIVE**

Background

The Containment Purge (VQ) [VA] penetration line contains automatic inside and outside containment isolation valves and is normally isolated. This VQ line is occasionally opened to maintain containment pressure within limits.

When the VQ containment isolation valves are opened, an automatic VQ isolation would occur upon a safety injection signal, general containment isolation signals or from high radiation inside containment signals. The high radiation signals are generated from two Area Radiation (AR) [IL] monitoring channels located within containment (i.e., 1/2AR011J and 1/2AR012J). In accordance with Technical Specifications (TS) 3.3.6, "Containment Ventilation Isolation Instrumentation," the setpoints for the monitors are required to be set less than or equal to 10 mR/hr above the background radiation level in containment. To avoid spurious VQ isolation actuations from radiation spikes, the setpoint is set close to the 10 mR/hr limit.

With the setpoints on both monitors greater than 10 mR/hr above the background radiation level, both the radiation monitor channels are considered inoperable. TS 3.3.6 Condition B requires immediate entry into Condition B of TS 3.6.3, "Containment Isolation Valves," for inoperable VQ containment isolation valves. Condition B requires the VQ purge penetration to be isolated by a closed and de-activated automatic or remote manual valve within one hour. If this required action and completion time is not met then Condition E requires the Unit to be in Mode 3 in six hours and Mode 5 in 36 hours.

A. Plant Operating Conditions Before the Event

Unit 1 was in Mode 1 — Power Operations at approximately 100% power.

Reactor Coolant System (RC) [AB]: Normal operating temperature and pressure. No structures, systems, or components were inoperable at the start of this event that contributed to the event.

Unit 2 was in Mode 1 — Power Operations at approximately 100% power.

Reactor Coolant System: Normal operating temperature and pressure. No structures, systems, or components were inoperable at the start of this event that contributed to the event.

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## NARRATIVE

B. Description of Event

Prior to May 2011, the procedural controls for installing the setpoints for the 1/2AR011J and 1/2AR012J monitoring channels did not account for the lowering background radiation levels that occurs while reactor power is being reduced. Consequently, during a power reduction, with the setpoint constant and near its limit and background levels reducing, the TS setpoint limit of being less than or equal to 10 mR/hr above background would be exceeded. Once Mode 5 was reached the setpoints were adjusted to shutdown background levels. In addition, when returning to power from an outage, the setpoints for full power operations were installed while in Mode 5 based on anticipated full power background levels. Consequently, until full power background radiation level was reached the setpoint was greater than 10 mR/hr above background radiation level. Therefore, the 1/2AR011J and 1/2AR012J were inoperable during the startup and power ascension which typically takes several days.

On May 24, 2011, the flawed procedural setpoint practice was recognized while shutdown for a maintenance outage for Unit 2. The condition was entered into the corrective action program (CAP) and reviewed for reportability as a condition prohibited by TS. The reportability review focused on the Unit shutdown and a determination was made that a condition prohibited by TS did not occur because Unit 2 was in a Mode of non-applicability (i.e., Mode 5) before any TS required actions and associated completion times were exceeded. However, at the time, a historical reportability review of other potential occurrences of being in condition prohibited by TS was not conducted.

On June 4, 2012, Byron Station was notified by Braidwood Station of a similar condition occurring at their site for which they concluded was a condition reportable to the NRC. Byron Station reconsidered the May 24, 2011 condition for potential reportability and concluded that for the Unit refueling shutdowns, prior to May 2011; TS 3.6.3 Required Actions Completion Times were likely not exceeded. This is because TS 3.6.3 would require the Unit to be in Mode 3 in six hours and Mode 5 in 36 hours. Unit refueling shutdowns nominally would be in Mode 3 within six hours and Mode 5 with 36 hours. However, for power reductions that did not go to Mode 3 and Unit startups, TS 3.6.3 Required Actions Completion Times were likely exceeded. For example, the startup and power ascension following the Unit 1 spring 2011 refueling outage had a duration of over 7 days. TS would have required Unit 1 be placed in Mode 5 within 36 hours once Mode 4 was entered with 1AR011J and 1AR012J inoperable. Therefore, this condition is reportable to the NRC in accordance with 10 CFR 50.73 (a)(2)(i)(B) as an operation or condition prohibited by the plant's TS. Additionally, with both trains of containment ventilation isolation 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.

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C. Cause/s of the Event

Prior to May 2011, inadequate procedural controls existed to ensure compliance with the TS setpoint requirements for 1/2AR011J and 1/2AR012J radiation monitors.

Contributing causes include a lack of a periodic operational surveillance that verifies the 1/2AR011J and 1/2AR012J setpoints are set correctly, also a lack of adequate training to Operators concerning the relationship of containment radiation background level changes and its impact on the 1/2AR011J and 1/2AR012J radiation monitors setpoints.

D. Safety Significance

The safety consequences to this event were minimal. The automatic isolation signal from the 1/2AR011J and 1/2AR012J would have occurred but been delayed until the higher setpoint was reached. Even though the setpoints were higher than prescribed by TS, VQ isolation would have occurred prior to offsite dose limits, as defined in the Offsite Dose Calculation Manual, being challenged.

In addition, for containment releases a Process Radiation (PR) [IL] monitor (i.e., 1/2 PR001) monitors the release flow path and its alarm setpoint is set conservatively based on actual containment atmosphere grab samples to alert Operators of possible changing conditions within containment. The alarm response directs Operators to isolate the containment release. In addition, the 1/2PR011 monitors directly monitor the radioactivity in the containment and also alerts the Operators to possible changing conditions within containment.

The automatic VQ isolation from a safety injection and general containment isolation signals were unaffected. The effects on fuel handling events in Mode 6 would be negligible since the setpoint changes were adjusted to within 10 mR/hr in Mode 5 prior to fuel moves and re-adjusted after completion of fuel moves in preparation for returning to power. With both trains of containment ventilation isolation inoperable this event is considered a condition that could have prevented the fulfillment of a safety function.

E. Corrective Actions

Procedural controls were added to ensure 1/2AR011J and 1/2AR012J setpoints are adjusted as necessary to ensure compliance with TS during changing containment background radiation conditions.

Training will be provided to licensed operators on the operability impact of a deviation of background radiation levels and the 1/2AR011J and 1/2AR012J setpoints.

In addition to correcting the radiation monitor setpoint issues, the circumstances surrounding the CAP inadequate historical reportability review of the May 24, 2011 event will be evaluated to determine if any appropriate improvement actions are warranted.

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NARRATIVE

F. Previous Occurrences

No similar previous events were identified at Byron Station in the previous three years.