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Manager, Regulatory Assurance

10 CFR 50.73

W3F1-2019-0055

August 23, 2019

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

Subject: Licensee Event Report (LER) 2019-006-00  
Unplanned Loss of Both Trains of Broad Range Gas Monitors Results in a  
Condition that Could Have Prevented Fulfillment of a Safety Function

Waterford Steam Electric Station, Unit 3 (Waterford 3)  
NRC Docket No. 50-382  
Renewed Facility Operating License No. NPF-38

The enclosed report is being sent pursuant to 10 CFR 50.73.

This letter contains no new regulatory commitments.

If you have any questions or require additional information, please contact the Regulatory Assurance Manager, Paul Wood, at (504) 464-3786.

Respectfully,

A handwritten signature in blue ink that reads "Paul Wood" with the word "for" written in smaller letters below it.

Paul Wood

PW/jkb

Enclosure: Waterford 3 Licensee Event Report 2019-006-00


cc: NRC Region IV Regional Administrator  
NRC Senior Resident Inspector – Waterford Steam Electric Station, Unit 3  
NRR Project Manager

**ENCLOSURE**

**W3F1-2019-0055**

**Entergy Operations, Inc.**

**Waterford 3 Licensee Event Report 2019-006-00**

NRC FORM 366 (04-2018)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB: NO. 3150-0104		EXPIRES: 03/31/2020								
		<b>LICENSEE EVENT REPORT (LER)</b> (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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to <a href="mailto:Infocollects.Resource@nrc.gov">Infocollects.Resource@nrc.gov</a> , 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 Waterford Steam Electric Station, Unit 3		2. DOCKET NUMBER 05000382		3. PAGE 1 OF 3										
4. TITLE Unplanned Loss of Both Trains of Broad Range Gas Monitors Results in a Condition that Could Have Prevented Fulfillment of a Safety Function														
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	25	2019	2019	006	00	08	23	2019	FACILITY NAME		DOCKET NUMBER			
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)											
1			<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input type="checkbox"/> 50.73(a)(2)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(viii)(A)		
			<input type="checkbox"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(B)			<input type="checkbox"/> 50.73(a)(2)(viii)(B)		
			<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(4)			<input type="checkbox"/> 50.73(a)(2)(iii)			<input type="checkbox"/> 50.73(a)(2)(ix)(A)		
			<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 50.36(c)(1)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(iv)(A)			<input type="checkbox"/> 50.73(a)(2)(x)		
10. POWER LEVEL  100			<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 50.36(c)(1)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(A)			<input type="checkbox"/> 73.71(a)(4)		
			<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(B)			<input type="checkbox"/> 73.71(a)(5)		
			<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.46(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(v)(C)			<input type="checkbox"/> 73.77(a)(1)		
			<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)(D)			<input type="checkbox"/> 73.77(a)(2)(i)		
			<input type="checkbox"/> 20.2203(a)(2)(vi)			<input type="checkbox"/> 50.73(a)(2)(i)(B)			<input type="checkbox"/> 50.73(a)(2)(vii)			<input type="checkbox"/> 73.77(a)(5)(ii)		
						<input type="checkbox"/> 50.73(a)(2)(i)(C)			<input type="checkbox"/> OTHER			Specify in Abstract below or in NRC Form 366A		
12. LICENSEE CONTACT FOR THIS LER														
LICENSEE CONTACT Paul Wood - Manager, Regulatory Assurance								TELEPHONE NUMBER (Include Area Code) (504) 464-3786						
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT														
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO ICES	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX					
B	VI	45	T994 Telosense	Y										
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			
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)														
<p>On June 25, 2019, at 0428, Waterford 3 declared both Broad Range Gas Monitor (BRGM) channels inoperable and the control room emergency air filtration system was manually placed in isolate mode at 0441 to comply with the 1-hr action requirement of Technical Specification (TS) 3.3.3.7.3, "Broad Range Gas Detection." With both BRGM channels declared inoperable, TS 3.7.6.1, "Control Room Emergency Air Filtration," was not met. For the 13 minutes prior to the control room being manually isolated, the Control Room Envelope Boundary was inoperable, resulting in an event or condition that could have prevented fulfillment of a safety function.</p> <p>The root cause of the event was that the Broad Range Gas Monitoring System is not designed to automatically isolate the Control Room Envelope for conditions resulting in a Toxic Gas Monitor Trouble Alarm. Actions were completed to restore both trains of BRGMs to operable status and issue a Standing Instruction to preventively isolate Control Room ventilation during BRGM or Chlorine Monitor outages. Planned actions are to complete a design modification that would isolate the control room emergency filtration system upon the receipt of a toxic gas monitoring trouble alarm.</p>														

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

(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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.

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Waterford Steam Electric Station, Unit 3	05000382	2019	- 006	- 00

**NARRATIVE****EVENT DESCRIPTION****A. Plant Status**

During the time that both A and B Broad Range Gas Monitors (BRGMs) were inoperable, Waterford 3 was in Mode 1 operating at 100% reactor power. No structures, systems or components were out of service that contributed to this event.

**B. System Description**

The Broad Range Gas Detection system provides the capability to detect and protect the main control room personnel from toxic gases. The Toxic Chemical Detection system is one of the main control room habitability systems. Habitability systems are provided to assure that the operators can remain in the main control room and take effective actions to operate Waterford 3 safely under normal conditions and maintain a safe condition post-accident.

**C. Event Chronology**

On June 24, 2019, at 0942, BRGM B was declared inoperable for scheduled maintenance. Per TS 3.3.3.7.3, "Broad Range Gas Detection," the system is allowed to be in this condition for 7 days.

On June 25, 2019, at 0428, Toxic Gas Monitor Trouble Channel 1 (BRGM A), annunciator went into alarm. BRGM B was already inoperable and out-of-service for maintenance. The Waterford 3 shift operating crew declared the control room envelope inoperable in accordance with Technical Specification 3.7.6.1 due to both BRGMs being inoperable.

On June 25, 2019, at 0441, the control room ventilation was placed in isolate mode per the actions of TS 3.7.6.1. This resulted in restoring the safety function of the control room envelope after 13 minutes.

On June 25, 2019, at 2015, BRGM A was declared operable after corrective maintenance was completed and TS 3.7.6.1 actions were exited. Waterford 3 remained in the TS 3.3.3.7.3 action due to BRGM B being inoperable for scheduled maintenance.

On June 28, 2019, at 0755, BRGM B was returned to service.

**D. Event Causes**

The Root Cause of this condition is the Broad Range Gas Monitoring System is not designed to automatically isolate the Control Room Envelope for conditions resulting in a Toxic Gas Monitor Trouble Alarm. A Toxic Gas Trouble Alarm affecting only one BRGM while the other BRGM is operable is not a loss of toxic gas detection capability.

**E. CORRECTIVE ACTIONS****A. Completed Corrective Actions:**

- 1) Placed control room ventilation system in isolate mode to restore the safety function of the control room envelope.
- 2) Repaired Broad Range Gas Analyzer A and restored to operable status.
- 3) Completed scheduled maintenance on Broad Range Gas Analyzer B and restored to operable status.
- 4) Issued Standing Instruction to isolate control room ventilation during BRGM and Chlorine Monitor outages.

**B. Planned corrective actions include:**

- 1) As a preventive measure, implement interim procedure changes to require Control Room operators to manually isolate the Control Room ventilation prior to removal of a single train of Broad Range Gas Monitoring or a single train of Chlorine Monitoring from service due to maintenance or equipment failure. Isolation of Control Room ventilation during BRGM or Chlorine Monitor outages is only required until a design modification is completed.
- 2) Implement a design modification to automatically isolate the Control Room ventilation upon receipt of a Toxic Gas Monitor Trouble Alarm.

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**NARRATIVE****F. SAFETY EVALUATION**

The objective of the Chemical Detection System during postulated accidents is to provide the capability to alarm and initiate a toxic gas detection signal in the event of a toxic gas event. For each train, the toxic gas detection signal is generated by either the chlorine detection monitor or the BRGM. BRGM A and B generate the signal for detection of a broad range of gases including ammonia. On detection of toxic gas, the toxic gas detection signal initiates control room isolation.

In this event, both BRGMs were inoperable, therefore causing a loss of safety function until the control room was isolated per TS 3.3.3.7.3. There are no other available systems or components that perform the same function as the Broad Range Gas Monitoring System. There were no toxic gas releases in the vicinity of Waterford 3 during the 13 minutes that both BRGM were inoperable. Therefore, no actual consequences to general safety of the public, nuclear safety, industrial safety or radiological safety were experienced during this event.

**G. PREVIOUS OCCURRENCES**

A review of Waterford 3 condition reports for previous similar events over the past 3 years was performed.

LER 2018-002-00: Unplanned Loss of a Train of Control Room Outside Air Intake Radiation Monitors Results in a Condition Prohibited by Technical Specifications. This condition was identified during an extent of condition review in response to LER 2018-001, "Failure to Enter Limiting Condition of Operation Action Statement due to Lack of Procedure Guidance Results in a Condition Prohibited by Technical Specifications," to determine if there were other instances of misapplication of Surveillance Requirement 4.0.1 leading to a reportable condition.

On May 18, 2016, both BRGMs were declared inoperable and the Control Room required manual isolation in accordance with TS 3.3.3.7.3. The event was not reported in an Emergency Notification or a Licensee Event Report. CR-WF3-2019-6317 was generated to document the missed report.