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**John P. Jarrell III**  
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Waterford 3

10 CFR 50.73

W3F1-2018-0032

June 7, 2018

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Subject: Licensee Event Report (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  
Waterford Steam Electric Station, Unit 3 (Waterford 3)  
License No. NPF-38  
Docket No. 50-382

Dear Sir or Madam:

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

There are no regulatory commitments contained in this correspondence.

Should you have questions regarding this report, please contact John P. Jarrell, Regulatory Assurance Manager, at (504) 739-6685.

Sincerely,

A handwritten signature in black ink, appearing to read "John Jarrell".

John Jarrell  
Regulatory Assurance Manager

JPJ/MMZ

Attachment: LER 2018-002-00

cc: Mr. Kriss Kennedy, Regional Administrator  
U.S. NRC, Region IV  
RidsRgn4MailCenter@nrc.gov

U.S. NRC Project Manager for Waterford 3  
April.Pulvirenti@nrc.gov

U.S. NRC Senior Resident Inspector for Waterford 3  
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**Attachment**  
**to**  
**W3F1-2018-0032**  
**Licensee Event Report 2018-002-00**  
**(4 pages)**



**LICENSEE EVENT REPORT (LER)**

(See Page 2 for required number of digits/characters for each block)

(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, 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.

<b>1. FACILITY NAME</b> Waterford Steam Electric Station, Unit 3	<b>2. DOCKET NUMBER</b> 05000382	<b>3. PAGE</b> 1 OF 5
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**4. TITLE**  
Unplanned Loss of a Train of Control Room Outside Air Intake Radiation Monitors Results in a Condition Prohibited by Technical Specifications

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
4	10	2018	2018	002	00	6	7	2018	FACILITY NAME	DOCKET NUMBER

<b>9. OPERATING MODE</b> 6 or Defueled	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>			
<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)	
<b>10. POWER LEVEL</b> 0	<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 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 checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(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 John Jarrell - Manager, Regulatory Assurance	TELEPHONE NUMBER (Include Area Code) (504) 739-6685
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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

<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	DAY	YEAR

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

From 2015 to 2018 there have been four instances where a train of Control Room Emergency Air Filtration was inoperable due to a failure to meet a Technical Specification (TS) Surveillance Requirement (SR). In each instance, operators failed to take the required actions of TS 3.7.6.1, "Control Room Emergency Air Filtration System," while a train of Control Room Outside Air Intake (CROAI) Radiation Monitors was inoperable. Plant personnel failed to recognize that SR 4.7.6.1.d.2 was no longer met during a CROAI radiation monitor train outage. This resulted in four instances of failure to meet the actions of TS 3.7.6.1 resulting in four instances of a condition prohibited by Technical Specifications.

The cause of this condition is that plant personnel were unaware that SR 4.7.6.1.d.2 was no longer met when a train of CROAI Radiation Monitors were inoperable. A contributing cause is that guidance was lacking in the application and intent of SR 4.0.1. Plant operators believed that the only applicable TS to the CROAI Radiation Monitors was TS 3.3.3.1, "Radiation Monitoring Instrumentation," which Waterford 3 was in compliance with at the time of these instances. Corrective actions for this condition include changes to Operations department procedures to provide operators clear guidance on SR 4.0.1.



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

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Waterford Steam Electric Station, Unit 3	05000382	2018	- 002 -	00

**NARRATIVE**

**EVENT DESCRIPTION**

**A. Plant Status**

During all four instances where a train of Control Room Emergency Filtration was inoperable due to a loss of a train of Control Room Outside Air Intake Radiation Monitors, Waterford 3 was either in Mode 6 or Defueled at 0% reactor power. There were no other structures, systems or components out of service that contributed to this event.

**B. Event Chronology**

On April 10, 2018, when performing an extent of condition review as corrective action for LER 2018-001-00, it was discovered that SR 4.0.1 had not been applied to TS 3.7.6.1 during four instances that would have required entering TS 3.7.6.1 actions. SR 4.0.1 states that failure to meet the Surveillance Requirements of a Limiting Condition of Operability (LCO), even if the failure is experienced between performances of the surveillance, shall be a failure to meet the LCO. SR 4.7.6.1.d.2 requires verification that on a high radiation signal, the Control Room Emergency Air Filtration System Train automatically switches into a recirculation mode of operation. Per SR 4.0.1, an inoperable train of CROAI Radiation Monitors would result in failure to meet SR 4.7.6.1.d.2 requiring that the corresponding train of Control Room Emergency Air Filtration be declared inoperable. TS 3.7.6.1 actions a. should have been entered during the train outages and TS 3.7.6.1 action e. should have been entered in Modes 5 or 6, or during load movements with or over irradiated fuel assemblies. TS 3.7.6.1 action a. states that with one Control Room Emergency Air Filtration train inoperable, restore the inoperable train to operable status within 7 days. TS 3.7.6.1 action e. states that with one Control Room Emergency Air Filtration train inoperable in modes 5 or 6, or during load movements with or over irradiated fuel assemblies, immediately suspend operations involving load movements with or over irradiated fuel assemblies and core alterations. TS 3.7.6.1 action d. would also need to be entered if the 7 day Allowed Outage Time (AOT) of TS 3.7.6.1 action a. is exceeded during modes 5 or 6 or during load movements with or over irradiated fuel assemblies.

On November 2, 2015, at 1119 CST, both B CROAI radiation monitors were declared inoperable. Waterford 3 was in compliance with TS LCO 3.3.3.1 that requires only 1 monitor per intake. The B CROAI radiation monitors were returned to service on November 12, 2015 at 0300 CST. The allowed outage time (AOT) for TS 3.7.6.1 action a. was exceeded by 2 days 3 hours and 41 minutes and TS 3.7.6.1 actions e. and d. were not complied with because core alterations and fuel movement were in progress during the B CROAI radiation monitor outage.

On November 17, 2015, at 1644 CST, a train A CROAI radiation monitor was declared inoperable. The redundant train A CROAI radiation monitor was already inoperable. Waterford 3 was in compliance with TS LCO 3.3.3.1 that requires only 1 monitor per intake. On November 23, 2015 at 0510 CST, both A CROAI radiation monitors were returned to service. The A CROAI radiation monitor outage did not exceed the AOT of 7 days, but TS 3.7.6.1 action e. was not complied with because core reload commenced on November 19, 2015.

On April 23, 2017, at 0750 CST, both train A CROAI radiation monitors were declared inoperable. Waterford 3 was in compliance with TS LCO 3.3.3.1 that requires only 1 monitor per intake. On May 1, 2017 at 1200 CST, the A train radiation monitors were returned to service. The allowed outage time for TS 3.7.6.1 action a. was exceeded by 1 day 4 hours and 10 minutes and TS 3.7.6.1 actions e. and d. were not complied with because fuel movement was in progress during the radiation monitor outage.



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On May 4, 2017, at 0123 CST, both train B CROAI radiation monitors were declared inoperable. Waterford 3 was in compliance with TS LCO 3.3.3.1 that requires only 1 monitor per intake. On May 10, 2017 at 1513 CST, the B CROAI radiation monitors were returned to service. The B CROAI radiation monitor outage did not exceed the AOT of 7 days, but TS 3.7.6.1 action e. was not complied with because fuel movement in the Fuel Handling Building commenced on May 8, 2017.

These conditions are reportable pursuant to 10 CFR 50.73(a)(2)(i)(B), Operation or Condition Prohibited by Technical Specifications.

**C. Event Causes**

The cause of this event was personnel failed to realize that TS 3.7.6.1 actions need to be applied for the condition where a train of Control Room Outside Air Intake Radiation Monitors is inoperable. TS 3.3.3.1 action b. requires that the Control Room Emergency Ventilation System be placed in recirculation mode of operation within 1 hour. Plant personnel believed that they were complying with the appropriate actions per TS 3.3.3.1, but failed to recognize that SR 4.7.6.1.d.2 should also have been complied with resulting in a condition prohibited by Technical Specifications. Guidance should have been incorporated into the plant procedure that exists to assist with applying TS actions.

Plant personnel failed to realize that the plant condition required applying SR 4.0.1 because SR 4.7.6.1.d.2 could not be met with the inoperable instrumentation. SR 4.0.1 requires that SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the Surveillance. SR 4.7.6.1.d.2 requires that the Control Room Emergency Air Filtration System shall be operable by verifying that on a high radiation signal, the system automatically switches to the recirculation mode of operation. Because in each instance one train of CROAI radiation monitors were inoperable, this surveillance requirement could not be met, and that train of the control room emergency air filtration system should have been declared inoperable and requiring compliance with the actions of TS 3.7.6.1.

**CORRECTIVE ACTIONS**

Add clarification to Operations department procedures to add guidance to comply with TS 3.7.6.1 actions if the Control Room Outside Air Intake Radiation Monitoring System operability requirements are not met.  
(Complete)

**SAFETY EVALUATION**

The objective of the Control Room Outdoor Air Intake Radiation Monitors during postulated accidents is to provide the capability to alarm and initiate a high radiation signal in the event of a radioactive release. A single train is comprised of two radiation monitors with one at the north and one at the south outside air intakes. On a high radiation detection signal, the Control Room Emergency Air Filtration System operates in recirculation mode.

In these events, a single train of radiation monitors were inoperable with a second train still operable, therefore there was no loss of safety function. There were no actual consequences to general safety of the public, nuclear safety, industrial safety or radiological safety for these events.



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#### PREVIOUS OCCURRENCES

This condition was identified during an extent of condition review in response to LER 2018-001 to determine if there were other instances of misapplication of SR 4.0.1 leading to a reportable condition. LER 2018-003 was also reported as a result of the extent of condition. There were no other previously reported events similar to this event at Waterford 3.

LER 2018-001-00: Failure to Enter Limiting Condition of Operation Action Statement due to Lack of Procedure Guidance Results in a Condition Prohibited by Technical Specifications

LER 2018-003-00: Unplanned Loss of Both Trains of Broad Range Gas Monitors Results in a Condition that Could Have Prevented Fulfillment of a Safety Function