John Lewis
Manager
Regulatory Assurance
504-739-6028

10 CFR 50.73

W3F1-2022-0016

March 18, 2022

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

Subject: Licensee Event Report 50-382/2022-001-00, Non-Compliance with Technical Specifications Due to Incorrect Conversion Factors in Three Gaseous Radiation Monitors

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

Entergy Operations, Inc. (Entergy) submits the enclosed Licensee Event Report (LER) 50-382/2022-001-00 for Waterford Steam Electric Station, Unit 3 (WF3). This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as any operation or condition that was prohibited by the plant's technical specifications. The LER describes a non-compliance with Technical Specification 3.3.3.1 due to incorrect engineering conversion factors used in three gaseous radiation monitors.

This letter contains no new commitments.

Should you have any questions concerning this issue, please contact John D. Lewis, Manager, Regulatory Assurance, at 504-739-6028.

Respectfully,

John D Lewis

Digitally signed by John D Lewis
Date: 2022.03.18 16:51:49 -05'00'

John D. Lewis

JDL/jkb

Enclosure: Licensee Event Report 50-382/2022-001-00

cc: NRC Region IV Regional Administrator
NRC Senior Resident Inspector – Waterford Steam Electric Station, Unit 3
NRC Project Manager – Waterford Steam Electric Station, Unit 3
Louisiana Department of Environmental Quality

Enclosure to

W3F1-2022-0016

Licensee Event Report 50-382/2022-001-00

NRC FORM 366
(08-2020)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)

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APPROVED BY OMB: NO. 3150-0104 **EXPIRES: 08/31/2023**

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, Library, and Information Collection Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; e-mail: oira_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name	2. Docket Number	3. Page
Waterford Steam Electric Station, Unit 3	05000 - 0382	1 OF 3

4. Title

Non-Compliance with Technical Specifications Due to Incorrect Conversion Factors in Three Gaseous Radiation Monitors

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
									N/A	N/A
01	18	2022	2022	- 001 -	00	03	18	2022	Facility Name N/A	Docket Number N/A

9. Operating Mode	10. Power Level
1	100

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(4)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(1)(i)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(i)
☐ 20.2203(a)(2)(iii)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.77(a)(2)(ii)
☐ 20.2203(a)(2)(iv)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.2203(a)(2)(v)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	

☐ **Other** (Specify here, in Abstract, or in NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include Area Code)
John D. Lewis / Manager, Regulatory Assurance	(504) 739-6028

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable To IRIS	Cause	System	Component	Manufacturer	Reportable To IRIS
D	IL	MON	G063	Y	N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☒ No	☐ **Yes** (If yes, complete 15. Expected Submission Date)		N/A	N/A	N/A

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

On January 18, 2022, at 1018 Central Time, while operating in Mode 1, at 100% power, Waterford 3 Steam Electric Station Unit 3 (WF3) discovered that the engineering conversion factors used in three gaseous radiation monitors were incorrect. This resulted in the Condenser Wide Range Gas Monitor (WRGM) (PRMIRE0002), Plant Stack WRGM (PRMIRE0110), and Fuel Handling Building WRGM (PRMIRE3032) being inoperable. WF3 Technical Specification (TS) 3.3.3.1, Action b, and TS Table 3.3-6 require the minimum number of Effluent Accident Monitor channels to be operable in Modes 1, 2, 3, and 4. TS 3.3.3.1, Action b, and TS Table 3.3-6, Action 27, required that the radiation monitors be restored to operable status within 72 hours, or initiate the preplanned alternate method of monitoring the appropriate parameter(s), and if the monitor is not restored to operable status within 72 hours after the failure, a special report is required to be submitted in accordance with TS 6.9.2 within 14 days after the failure. The WRGMs exceeded the allowed outage time required by TS Table 3.3-6, Action 27.

The engineering conversion factors were not revised when the original detectors were replaced, which caused incorrect count-rates to be used in the detector calibrations. The correct engineering factors were determined, and the radiation monitors were recalibrated using the corrected engineering factors.

This condition is being reported pursuant to 10 CFR 50.73(a)(2)(i)(B) – any operation or condition that was prohibited by the plant's technical specifications.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Waterford Steam Electric Station, Unit 3	05000-0382	2022	001	00

NARRATIVE

PLANT STATUS

On January 18, 2022, at 1018 Central Time, Waterford Steam Electric Station, Unit 3 (WF3) was operating at 100% power in Mode 1. There were no other structures, systems, or components that were inoperable at the time that contributed to the event.

EVENT DESCRIPTION

On January 18, 2022, during an engineering review, it was discovered that the engineering conversion factors used in three gaseous radiation monitors [IL] were incorrect. This resulted in the Plant Stack [VL] Wide Range Gas Monitor (WRGM) (PRMIRE0110), the Fuel Handling Building (FHB) [ND] WRGM (PRMIRE3032), and the Condenser [SG] WRGM (PRMIRE0002) being inoperable. Waterford Technical Specification (TS) 3.3.3.1 requires the minimum number of Effluent Accident Monitor channels shown in TS Table 3.3-6 to be operable in Modes 1, 2, 3, and 4. TS 3.3.3.1, Action b, and TS Table 3.3-6, Action 27, require that, with the number of operable channels less that required by the minimum channels operable requirement, either restore the inoperable channel(s) to operable status within 72 hours, or initiate the preplanned alternate method of monitoring the appropriate parameter(s), and if the monitor is not restored to operable status within 72 hours after the failure, a special report is required to be submitted in accordance with TS 6.9.2 within 14 days after the failure outlining the actions taken, the cause of the inoperability and the plans and schedule for restoring the system to operable status.

The engineering conversion factors used in the three WRGMs were not revised when the original detectors for these monitors were replaced (PRMIRE0110 high range in 2005; PRMIRE3032 mid-range in 2008; PRMIRE0002 mid and high range in 2011). In addition, the incorrect count-rate was used to calibrate the PRMIRE0110 high range detector since 2005; the PRMIRE3032 mid-range detector since 2008; and the PRMIRE0002 mid-range and high-range detectors since 2011. This caused these radiation monitors to be inoperable during the period following their respective detector replacements until the correct conversion factors were applied and the detectors were calibrated on February 4, 2022. This period exceeds the allowed outage time required by Action 27 of TS Table 3.3-6.

Special Report SR-2022-001 (ML22032A066) was issued on February 1, 2022, and Special Report SR-2022-002 (ML22039A278) was issued on February 8, 2022, after discovery, as required by Action 27 of TS Table 3.3-6.

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the Offsite Dose Calculation Manual (ODCM) to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20.

The Condenser WRGM monitors condenser vacuum pump [P] discharge continuously to detect steam generator tube leakage and to quantify release rate.

The Plant Stack WRGM monitors air being released from the plant stack to measure the radiation being released to the environment during both normal and accident conditions.

The FHB WRGM monitors air which is released from the FHB emergency exhausts during accident conditions.

This event is being reported under 10 CFR 50.73(a)(2)(i)(B) which requires submittal of a Licensee Event Report within 60 days after the discovery for any operation or condition that was prohibited by the plant's technical specifications.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Waterford Steam Electric Station, Unit 3	05000-0382	2022	001	00

SAFETY ASSESSMENT

The actual consequences were that the condenser WRGM mid and high-range detectors, the plant stack WRGM high range detector, and FHB WRGM mid-range detector were incorrectly calibrated, resulting in these channels being incapable of performing their TS 3.3.3.1 functions. There were no other actual consequences to general safety of the public, nuclear safety, industrial safety, and radiological safety for this event.

The potential consequence to general safety of the public, nuclear safety, industrial safety, and radiological safety of this event if the other radiation detectors monitoring similar release points (plant stack Particulate Iodine Gas [PIG] A and B; FHB PIG A and B; steam generator steam line Nitrogen-16 [N-16] detectors) were removed is the inability to enter applicable emergency action levels when those criteria are met. The safety significance of an inability to enter an emergency action level and take appropriate action vary depending on the emergency action level severity. The safety significance of this event is determined to be low. The basis for this determination is that multiple, alternative monitoring methods exist to monitor the site release points enabling WF3 to accurately classify radiological events.

EVENT CAUSE(S)

The engineering conversion factor for WRGM mid/high range detector types is specific to each detector. Review of historical documents confirmed that the mid and high range engineering conversion factors associated with the original detectors were still being used for the channels listed above after detector replacements. These values were not revised when the original detectors were replaced (PRMIRE0110 high range - 2005; PRMIRE3032 mid-range – 2008; PRMIRE0002 mid and high range in 2011) due to a lack of procedural guidance. The Radiation Monitoring Systems (RMS) users' group was unaware of this requirement until the vendor stressed this requirement in 2009.

An adjustment factor must be applied to the calibration count-rate when a WRGM mid/high range detector is replaced. This guidance did not exist in 2005 and 2008. Procedural guidance did exist in 2011, however the form used to perform this calculation is missing a field for the very last step. Review of work records revealed that maintenance personnel noticed this deficiency in 2013 during PRMIRE3032 high range detector replacement and added a calibration count-rate adjustment factor field to that work package, which was used to calibrate PRMIRE3032. This is why the PRMIRE3032 high range is considered calibrated and capable of achieving its alarm set-point.

CORRECTIVE ACTIONS

The correct engineering factors were determined, and the radiation monitors were recalibrated using the corrected engineering factors. Waterford plans to implement the following additional corrective actions.

- Revise the MI-005-906 (Radiation Monitoring System Desk Guide) to have sufficient guidance to correctly perform a cadmium telluride solid state radiation detector (RD-72) replacement and sensitivity adjustment instruction
- Revise procedures to include steps to refer to MI-005-906 for calibration instructions when the replacement of a RD-72 radiation detector is required

PREVIOUS SIMILAR EVENTS
None