Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043
Tel 269 764 2000

Barbara E. Dotson
Regulatory Assurance Manager

PNP 2021-028

August 13, 2021 10 CFR 50.73

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

SUBJECT: LER 2021-001-00 Atmospheric Steam Dump Valves Inoperable Due to Relay Failure

Palisades Nuclear Plant
Docket 50-255
Renewed Facility Operating License No. DPR-20

Entergy Nuclear Operations, Inc., submits the enclosed Licensee Event Report (LER), 2021-001-00, for the Palisades Nuclear Plant. The event is reportable in accordance with 10 CFR 50.73(a)(2)(v)(D) as an event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident. The LER describes the loss of function of all four atmospheric steam dump valves.

This letter contains no new commitments and no revisions to existing commitments.

Should you have any questions concerning this report, please contact Barbara Dotson, Regulatory Assurance Manager, at (269) 764-2265.

Respectfully,

Barbara E. Dotson

BED/mrp

Attachment: LER 2021-001-00, Atmospheric Steam Dump Valves Inoperable Due to Relay Failure

cc: NRC Region III Regional Administrator
NRC Senior Resident Inspector - Palisades
NRC Project Manager - Palisades

Attachment

LER 2021-001-00

Atmospheric Steam Dump Valves Inoperable Due to Relay Failure

3 Pages Follow

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)

(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/)

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

1. Facility Name	2. Docket Number	3. Page
Palisades Nuclear Plant	05000 255	1 OF 3

4. Title

Atmospheric Steam Dump Valves Inoperable Due to Relay Failure

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	Docket Number
06	16	2021	2021	- 001 -	00	08	13	2021	N/A	05000
									Facility Name: N/A	Docket Number: 05000

9. Operating Mode	10. Power Level
Mode 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 NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Barbara Dotson, Regulatory Assurance Manager	269-764-2265

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
E	SB	RLY	G080	Y		E	SB	FU	B569	Y

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☑ No	☐ Yes (If yes, complete 15. Expected Submission Date)				

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

At the Palisades Nuclear Plant, on June 16, 2021, at 1550 EDT, with the plant in Mode 1, at 100% power, operations identified an acrid odor in the control room. Investigation revealed that the steam dump control relay had failed, rendering all four atmospheric steam dump valves (ASDVs) inoperable.

The relay was replaced and the ASDVs were returned to service. The plant remained stable in Mode 1 at 100% power throughout the event. The safety significance of this event was minimal. This event is reportable in accordance with 10 CFR 50.73(a)(2)(v)(D) as an event or condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

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/)

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Palisades Nuclear Plant	05000- 00255	2021	- 001	- 00

NARRATIVE

EVENT DESCRIPTION

At the Palisades Nuclear Plant, on June 16, 2021, at 1550 EDT, with the plant in Mode 1, at 100% power, operators identified an acrid odor in the control room, suggesting that an electrical component may have failed. Investigation revealed that the steam dump control relay [RLY] had failed, rendering all four atmospheric steam dump valves (ASDVs) [PCV] inoperable, and causing an entry into a 24-hour shutdown action statement limiting condition for operation 3.7.4.

The main steam dump and bypass system [SB] consists of four automatically actuated ASDVs which exhaust to atmosphere, and a turbine [TRB] bypass valve [V] which exhausts to the main condenser [COND]. The total capacities of the ASDVs and turbine bypass valves are 30% and 4.5%, respectively, of steam flow with reactor [RCT] at full power. The capacity of the ASDVs is adequate to prevent lifting of the main steam safety valves [RV] following a turbine and reactor trip. The turbine bypass to the main condenser provides for removal of reactor decay heat following reactor shutdown. Although the steam dump system is arranged for automatic operation, the ASDVs may be manually controlled from either control room or engineered safeguards control panels. The ASDVs have a back-up nitrogen supply to allow steam generator [SG] pressure control during station blackout.

Troubleshooting the circuit identified that the Bussmann fuse FUZ/IM13-1 [FU], model number FNM-5, was found opened due to the steam dump control relay (SDCR) coil [CL] failure. The opening of the fuse resulted in loss of power to the IM13 scheme, which disabled the automatic fast-open function, as well as the manual operation, of the ASDVs. Upon further examination, the SDCR was found to have signs of overheating. The cause of the SDCR coil failure is overheating due to the age of the relay coil being beyond the vendor recommended life for a normally energized relay. The subject relay was not classified properly in 2005 when all safety systems and component classifications were validated. The duty cycle of the relay was set at "low duty cycle" when it should have been "high duty cycle" due to the normally energized state of the relay. The relay is manufactured by General Electric and is model HFA 12HFA51A49H.

The fuse and relay were replaced and the ASDVs were returned to service. The elapsed time from the discovery of the failure until the ASDVs were returned to service was approximately 12 hours. There were no structures, systems, or components that were inoperable at the start of the event that contributed to the event.

CAUSE OF THE EVENT

Fuse IM13-1 opened, which disabled the automatic fast-open function, as well as the manual operation, of the ASDVs. The fuse opened because the SDCR relay failed due to an internal failure of the electrical coil. The cause of the relay coil failure is overheating due to the age of the relay coil being beyond the vendor recommended life. The relay coil was beyond the vendor recommended life because the duty cycle of the relay was set at "low duty cycle" when it should have been "high duty cycle" due to the normally energized state of the relay.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Palisades Nuclear Plant	05000- 255	2021	- 001	- 00

NARRATIVE

ASSESSMENT OF SAFETY CONSEQUENCES

The actual consequence of the failure of the SDCR, which was a short-circuit in the relay coil, was overcurrent in the IM13 circuit and opening of fuse FUZ/IM13-1. This resulted in loss of power to the IM13 scheme, which disables the automatic fast-open function of the ASDVs and disables manual operation of the ASDVs. There were no other actual consequences to the general safety of the public, nuclear safety, industrial safety, or radiological safety for this event as the plant remained in steady-state full power operation.

CORRECTIVE ACTIONS

The fuse and relay were replaced. The preventive maintenance optimization code is being revised to show the relay as high duty cycle as it is continuously energized. This action will appropriately prioritize maintenance for the relay and prevent recurrence of this failure.

PREVIOUS SIMILAR EVENTS

None.