



Perry Nuclear Power Plant
Rod Penfield
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December 19, 2024
L-24-255

10 CFR 50.73(a)(2)(v)(D)

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

SUBJECT:
Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
Licensee Event Report Submittal

Enclosed is Licensee Event Report (LER) 2024-004, "Division 3 Diesel Generator Inoperable due to Low Output Voltage Resulting in Loss of Safety Function." There are no regulatory commitments contained in this submittal.

If there are any questions or if additional information is required, please contact Mr. Robert Oesterle, Manager – Regulatory Compliance, at (419) 321-7462.

Sincerely,

A handwritten signature in black ink, appearing to read "Rod L. Penfield". The signature is fluid and cursive, with a large loop at the end.

Rod L. Penfield

Enclosure:
LER 2024-004

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III Regional Administrator

Enclosure
L-24-255

Licensee Event Report 2024-004



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 FOIA, Library, and Information Collections Branch (T-6 A10M), U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by email to Infocollections.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. 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 Perry Nuclear Power Plant	<input checked="" type="checkbox"/> 050	2. Docket Number 00440	3. Page 1 OF 3
	<input type="checkbox"/> 052		

4. Title:
Division 3 Diesel Generator Inoperable due to Low Output Voltage Resulting in Loss of 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
10	29	2024	2024	004	00	12	19	2024	Facility Name	<input type="checkbox"/> 050 <input type="checkbox"/> 052

9. Operating Mode: 1 10. Power Level: 100

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

<input type="checkbox"/> 10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 10 CFR Part 50	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 73.1200(a)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 73.1200(b)
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	<input type="checkbox"/> 73.1200(c)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 73.1200(d)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 10 CFR Part 21	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 10 CFR Part 73	<input type="checkbox"/> 73.1200(e)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.77(a)(1)	<input type="checkbox"/> 73.1200(f)
<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(2)(i)	<input type="checkbox"/> 73.1200(g)
<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(ii)	<input type="checkbox"/> 73.1200(h)
<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)		

OTHER (Specify here, in abstract, or in NRC Form 366A).

12. Licensee Contact for this LER

Licensee Contact George Dujanovic, Staff Nuclear Engineering Specialist, Regulatory Compliance	Phone Number (Include area code) (440) 280-5200
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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

14. Supplemental Report Expected: No Yes (If yes, complete 15. Expected Submission Date)

15. Expected Submission Date: Month: 02, Day: 28, Year: 2025

16. Abstract (Limit to 1326 spaces, i.e., approximately 13 single-spaced typewritten lines)

On October 29, 2024, at 1152, with the reactor in Mode 1 and 100 percent rated thermal power, Operations declared the Division 3 diesel generator (DG) Inoperable per Technical Specification (TS) 3.8.1, due to output voltage dropping below the TS acceptance value during a monthly surveillance run. Subsequent troubleshooting found potentiometers on the voltage regulator were oxidized, requiring exercise, which remediated the output voltage issue. Satisfactory testing of the DG, following the troubleshooting, resulted in a proper and steady output voltage, and the Division 3 DG was declared Operable on October 31, 2024, at 0030.

Corrective action included exercising potentiometers R1, R3, and R4 on the output voltage regulator to remove oxidation.

This event was reported on October 29, 2024, as a loss of safety function, due to the loss of the Division 3 DG, under 10 CFR 50.72(b)(3)(v)(D), for accident mitigation. A causal evaluation of the voltage regulator degradation is currently in progress and a supplement to this Licensee Event Report, with additional information, will be submitted upon completion.



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

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1. FACILITY NAME Perry Nuclear Power Plant	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER 00440	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR 2024	SEQUENTIAL NUMBER - 004	REV NO. - 00

NARRATIVE

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

BACKGROUND:

The High Pressure Core Spray (HPCS) [BG] system power source, the Division 3 DG [DG], is self-contained, except for access to the preferred source of offsite power through the onsite AC power distribution system and the system actuation signal source. The system is operable as an isolated system independent of electrical connection to any other system by using the Division 3 DG.

HPCS provides and maintains an adequate coolant inventory inside the reactor vessel to limit fuel cladding temperatures in the event of breaks in the reactor coolant pressure boundary. The system is initiated by either high pressure in the drywell or low water level in the reactor vessel [RCT]. It operates independently of all other systems over the entire range of pressure differences from greater than normal operating pressure to zero. The HPCS cooling decreases vessel pressure to enable the low-pressure cooling systems to function. The HPCS system pump [P] motor [MO] is powered by a diesel generator if auxiliary power is not available; the system may also be used as a backup for the Reactor Core Isolation Cooling (RCIC) [BN] system.

DESCRIPTION OF EVENT:

On October 29, 2024, at 1152, with the reactor in Mode 1 and 100 percent rated thermal power, during a preventative maintenance run of the Division 3 DG, it was noticed that the generator output voltage had dropped below the Technical Specification (TS) acceptance value of 3994 volts (3900 volts, adjusted for instrument inaccuracy). The Division 3 DG was declared Inoperable, but available, and TS 3.8.1, AC Sources – Operating, Condition B, one required DG inoperable, was entered.

During troubleshooting, it was discovered that an oxidation layer had built up on the R1 potentiometer in the output voltage regulator [RG]. Exercising the potentiometer throughout its range caused the oxidation layer to be removed, thereby eliminating the high resistance point and allowing the voltage regulator to function normally. A post-maintenance run of the Division 3 DG was performed resulting in a normal and steady output voltage. On October 31, 2024, at 0030, the Division 3 DG was declared Operable and TS 3.8.1 was met.

Due to the Inoperability of the Division 3 DG, it was determined to be an event or condition that could have prevented fulfillment of a safety function under 10 CFR 50.72(b)(3)(v)(D) for mitigating the consequences of an accident during a loss of offsite power/loss of coolant accident (LOOP/LOCA).

The NRC was notified at 1732, on October 29, 2024, and this was documented on Event Notification 57406.

No other failures of the Division 3 DG or the voltage regulator could be found during the previous three-year timeframe. Although outside of the three-year timeframe, a previous similar event was identified and is discussed later in this report.

CAUSE OF EVENT:

The evaluation to determine the cause remains under investigation. A supplement to this LER will be submitted upon determination of the cause.



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			YEAR	SEQUENTIAL NUMBER	REV NO.
Perry Nuclear Power Plant		00440	2024	- 004	- 00

NARRATIVE

CORRECTIVE ACTIONS:

Completed Actions:

Division 3 DG voltage regulator potentiometers R1, R3, and R4 were exercised, and the DG was started and ran with no voltage fluctuations noted.

Scheduled Actions:

Any scheduled corrective actions will be provided in a supplement to this LER upon completion of the causal investigation.

EVENT ANALYSIS:

A probabilistic risk assessment (PRA) evaluation was performed for the October 29, 2024, Division 3 DG voltage instability event. The DG remained available, due to the momentary voltage drop below the TS acceptance value of 3994 volts (3900 volts, adjusted for instrument inaccuracy), and therefore there is no risk impact to the PRA. The risk of this event is therefore considered to be of very low safety significance in accordance with the Regulatory Guidance. Site auxiliary power was available during the Inoperability period and RCIC remained Operable.

PREVIOUS SIMILAR EVENT:

A previous similar event occurred on June 1, 2021. Division 3 DG output voltage fluctuated below the technical specification limit during a preventative maintenance run of the Division 3 DG. The voltage regulator was replaced. Laboratory testing found an instability in the linearity of the resistance of potentiometer R3 when turned. Research found that this is a known failure mode with the SR8A line of voltage regulators causing voltage instabilities.