

UNITED STATES NUCLEAR REGULATORY COMMISSION REGION III 2056 WESTINGS AVENUE, SUITE 400 NAPERVILLE, IL 60563-2657

May 7, 2025

Kelly Ferneau Executive VP and Chief Nuclear Officer Indiana Michigan Power Company Nuclear Generation Group One Cook Place Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR PLANT - INTEGRATED INSPECTION REPORT 05000315/2025001 AND 05000316/2025001

Dear Kelly Ferneau:

On March 31, 2025, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Donald C. Cook Nuclear Plant. On April 22, 2025, the NRC inspectors discussed the results of this inspection with S. Dailey, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

Two findings of very low safety significance (Green) are documented in this report. Two of these findings involved violations of NRC requirements. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at Donald C. Cook Nuclear Plant.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; and the NRC Resident Inspector at Donald C. Cook Nuclear Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <u>http://www.nrc.gov/reading-rm/adams.html</u> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

CHER -

Signed by Feliz-Adorno, Nestor on 05/07/25

Néstor J. Féliz Adorno, Chief Engineering and Reactor Projects Branch Division of Operating Reactor Safety

Docket Nos. 05000315 and 05000316 License Nos. DPR-58 and DPR-74

Enclosure: As stated

cc: Distribution via LISTSERV®

Letter to Kelly Ferneau from Néstor J. Féliz Adorno dated May 07, 2025.

SUBJECT: DONALD C. COOK NUCLEAR PLANT - INTEGRATED INSPECTION REPORT 05000315/2025001 AND 05000316/2025001

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U.S. NUCLEAR REGULATORY COMMISSION Inspection Report

Docket Numbers:	05000315 and 05000316
License Numbers:	DPR-58 and DPR-74
Report Numbers:	05000315/2025001 and 05000316/2025001
Enterprise Identifier:	I-2025-001-0080
Licensee:	Indiana Michigan Power Company
Facility:	Donald C. Cook Nuclear Plant
Location:	Bridgman, MI
Inspection Dates:	January 01, 2025 - March 31, 2025
Inspectors:	 A. Guieb, Project Engineer T. Hartman, Senior Project Engineer Z. Helgert, Resident Inspector A. Muneeruddin, Acting Senior Resident Inspector
Approved By:	Néstor J. Féliz Adorno, Chief Engineering and Reactor Projects Branch Division of Operating Reactor Safety

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Donald C. Cook Nuclear Plant, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information.

List of Findings and Violations

Failure to Correct Degraded Power Range Nuclear Instrumentation Potentiometers					
Cornerstone	Significance	Cross-Cutting	Report		
		Aspect	Section		
Initiating Events	Green	[P.2] -	71111.12		
-	NCV 05000315,05000316/2025001-01	Evaluation			
	Open/Closed				
A self-revealed find	ing of very low safety significance (Green)	and an associated	non-cited		
violation (NCV) of T	itle 10 of the Code of Federal Regulations	(10 CFR) Part 50,	Appendix B,		
Criterion XVI, "Corrective Actions" was identified for the licensee's failure to assure that					
conditions adverse to quality are promptly corrected. Specifically, the licensee failed to correct					
degraded ion current gain potentiometers for Unit 2 Power Range Nuclear Instrumentation					
Channel IV, 2-NRI-44. This resulted in multiple alarms in the control room, a partial trip signal,					
and automatic conti	rol rod movement.		-		

Inadequate Post-Maintenance Test Led to an Overpower Event					
Cornerstone	Significance	Cross-Cutting	Report		
		Aspect	Section		
Initiating Events	Green	[H.14] -	71153		
-	NCV 05000315/2025001-02	Conservative			
	Open/Closed	Bias			

A self-revealed finding of very low safety significance (Green) and associated non-cited violation (NCV) of the Donald C. Cook, Unit 1 Renewed Facility Operating License, Condition 2.C.(1), "Maximum Power Level," was identified for the failure to operate with reactor power not exceeding 3304 megawatts thermal. Specifically, an inadequate post-maintenance test for the Unit 1 Turbine Control Valve 2 (CV-2) linear voltage differential transformer (LVDT) resulted in an incorrectly manufactured LVDT being installed. The LVDT positioned CV-2 full open, causing a power transient.

Additional Tracking Items

Туре	Issue Number	Title	Report Section	Status
LER	05000316/2024-004-00	LER 2024-004-00 for Donald C Cook Nuclear Plant, Unit 2, 2AB Emergency Diesel Generator Inoperable for Longer Than Allowed by Technical Specifications	71153	Closed

LER	05000316/2024-004-01	LER 2024-004-01 for Donald C. Cook Nuclear Plant, Unit 2, 2AB Emergency Diesel Generator Inoperable for Longer Than Allowed by Technical Specifications	71153	Closed
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PLANT STATUS

Unit 1 began the inspection period at rated thermal power. On March 19, 2025, Unit 1 reduced power to approximately 63 percent and again on March 21, 2025, to approximately 45 percent of rated thermal power for main steam safety valve testing. The unit was shut down on March 22, 2025, for a planned refueling outage and remained offline for the rest of the inspection period.

Unit 2 began the inspection period at rated thermal power. On March 7, 2025, Unit 2 reduced power to approximately 90 percent of rated thermal power for main turbine valve testing. The unit returned to full rated thermal power early the next morning and remained at or near full rated thermal power for the rest of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed activities described in

IMC 2515, Appendix D, "Plant Status," observed risk-significant activities, and completed on-site portions of IPs. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Impending Severe Weather Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated the adequacy of the overall preparations to protect risk-significant systems from impending severe weather associated with multiple days of below zero temperatures on January 21, 2025.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (1 Sample)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

(1) 1AB emergency diesel generator (EDG) during 1CD EDG work window on January 28, 2025

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Fire Zones 15/16/18/19/79/80/84/85: AB/CD diesel generator room and turbine room (NE and SE portion), both units, elevation 587'-0" and 591'-0" on January 16, 2025
- (2) Fire Zones 44C/D/G/H: E/W residual heat exchanger room, both units, elevation 609'-0" on February 7, 2025
- (3) Fire Zones 40A/40B/41: 4kV AB/CD switchgear rooms and engineering safety system rooms, Unit 1, elevation 609'-6" on March 27, 2025
- (4) Fire Zones 42A/B/C/D: emergency power systems areas, Unit 1, elevation 609'-6" on March 27, 2025
- (5) Fire Zone 144: hot shutdown panel enclosure for Unit 1 on March 27, 2025

Fire Brigade Drill Performance Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated the onsite fire brigade training and performance during an unannounced fire drill on February 6, 2025.

71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

(1) The inspectors observed and evaluated licensed operator performance in the control room during reactor shutdown and plant cooldown for Unit 1 refueling outage on March 22, 2025.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

(1) The inspectors observed and evaluated just-in-time simulator training associated with refueling outage tasks on March 19, 2025.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

(1) Unit 2 N-44 Power Range Channel and its 10 CFR 50.65 a (1) consideration

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) Risk management during 2-QRV-251, Unit 2 chemical volume and control system (CVCS) charging pumps discharge flow control valve emergent work window on January 22, 2025
- (2) Configuration Risk Management Program during 1CD EDG maintenance work window on January 28, 2025
- (3) Risk management during 1E essential service water (ESW) pump maintenance work window on February 3, 2025
- (4) Risk management during Unit 1 lowered inventory operations for refueling outage U1C33 on March 28, 2025

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (3 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Action Request (AR) 2024-5037; West ESW Pump Disc Chk VIv Sticking on December 19, 2024
- (2) AR 2025-1405; 1-ERS-7401; Unit 1 Control Room Radiation Monitor, reading software fault on February 21, 2025
- (3) AR 2024-9257; Unit 1 AB EDG Jacket Water Leak on February 28, 2025

71111.18 - Plant Modifications

<u>Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02)</u> (<u>1 Sample</u>)

The inspectors evaluated the following temporary or permanent modifications:

(1) Replacement of chemical volume and CVCS cross tie isolation valves (1-CS-534, 1-CS-535, and 1-CS-536)

71111.20 - Refueling and Other Outage Activities

Refueling/Other Outage Sample (IP Section 03.01) (1 Partial)

 (1) (Partial) The inspectors evaluated refueling outage U1C33 activities from March 22, 2025, to March 31, 2025.

71111.24 - Testing and Maintenance of Equipment Important to Risk

The inspectors evaluated the following testing and maintenance activities to verify system operability and/or functionality:

Post-Maintenance Testing (PMT) (IP Section 03.01) (4 Samples)

- Unit 1 east motor-driven auxiliary feedwater pump discharge valves, 1-FMO-222 and 1-FMO-232, stroke test following external preventative maintenance on January 6, 2025
- (2) 2-QRV-251, CVCS charging pumps discharge flow control valve, post-maintenance testing following valve repack on February 12, 2025
- (3) 1CD EDG post-maintenance testing following planned work window on February 14, 2025
- (4) East diesel-driven fire pump post-maintenance testing following leak repairs on March 17, 2025

Surveillance Testing (IP Section 03.01) (2 Samples)

- (1) Unit 2 west centrifugal charging pump surveillance run on January 16, 2025
- (2) 1E component cooling water surveillance on March 5, 2025

Inservice Testing (IST) (IP Section 03.01) (1 Sample)

(1) Unit 2 west containment spray system operability and Group B pump test on January 31, 2025

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (2 Samples)

- (1) Unit 1 (January 1 through December 31, 2024)
- (2) Unit 2 (January 1 through December 31, 2024)

<u>IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02)</u> (2 Samples)

- (1) Unit 1 (January 1 through December 31, 2024)
- (2) Unit 2 (January 1 through December 31, 2024)

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (2 Samples)

- (1) Unit 1 (January 1 through December 31, 2024)
- (2) Unit 2 (January 1 through December 31, 2024)

MS05: Safety System Functional Failures (SSFFs) Sample (IP Section 02.04) (2 Samples)

- (1) Unit 1 (January 1 through December 31, 2024)
- (2) Unit 2 (January 1 through December 31, 2024)

71153 - Follow-up of Events and Notices of Enforcement Discretion

Event Follow-up (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated the unexpected opening of a turbine control valve and licensee's performance on November 21, 2024.

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

(1) LER 05000316/2024-004-00, 2AB Emergency Diesel Generator Inoperable for longer than allowed by Technical Specifications (ADAMS Accession No .<u>ML24316A006</u>) and LER 05000316/2024-004-01, 2AB Emergency Diesel Generator Inoperable for longer than allowed by Technical Specifications (ADAMS Accession No. <u>ML25086A101</u>). The inspection conclusions associated with these LERs are documented in Special Inspection Reactive Report 05000315/2024050 and 05000316/2024050 under the Inspection Results Section for the finding and violation titled, "Failure to Identify and Correct the Cause of May 2024 Failed 2 AB EDG Slow Speed Start Surveillance," (ADAMS Accession No. <u>ML25027A426</u>). These LERs are Closed.

Personnel Performance (IP Section 03.03) (1 Sample)

(1) The inspectors evaluated the unexpected opening of a power-operated relief valve on a main steam line and licensee's response on March 11, 2025.

INSPECTION RESULTS

Failure to Correct Degraded Power Range Nuclear Instrumentation Potentiometers						
Cornerstone	Significance	Cross-Cutting	Report			
		Aspect	Section			
Initiating Events	Green	[P.2] -	71111.12			
	NCV 05000315,05000316/2025001-01	Evaluation				
	Open/Closed					
A self-revealed finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, Appendix B, Criterion XVI, "Corrective Actions" was identified for the licensee's failure to assure that conditions adverse to quality are promptly corrected. Specifically, the licensee failed to correct degraded ion current gain potentiometers for Unit 2 Power Range Nuclear Instrumentation Channel IV, 2-NRI-44. This resulted in multiple alarms in the control room, a partial trip signal, and automatic control rod movement						
Description: On June 20, 2024, 2-NRI-44, spiked h momentary loss of	safety-related Unit 2 Power Range Nucle igh. The licensee's investigation determin continuity in the gain potentiometers in th	ar Instrumentation ed the direct cause e channel drawer c	Channel IV, to be a due to the			

buildup of hardened grease. The licensee consulted with the vendor, who verified that the multiple multi-turn potentiometers within the drawer are all susceptible to the degraded condition. Consequently, AR 2024-5163 identified that all the potentiometers in the instrument channel drawer were susceptible. However, the corrective action that was created specified

to wipe only the channel gain potentiometers. There was no discussion about how to address the condition in the other potentiometers, nor why they were not included. A preventative maintenance task was performed on July 3, 2024, under Work Order (WO) C10073010007 to wipe potentiometers for 2 NRI 44 by cycling them up and down several times to clean the contact area. The task stated "Adjust/wipe potentiometers on 2-NRI-44A-DWR & 2-NRI-44B-DWR as necessary per Operations direction." When the task was performed, only the channel fine gain potentiometer on the front of the channel drawer was wiped at that time.

On August 11, 2024, 2-NRI-44 spiked high again. This time it produced multiple alarms in the control room, generated a partial trip signal, and resulted in automatic control bank 'D' rod movement to reduce reactor power. The invalid signal indicated that power had exceeded 100 percent, causing control rods to insert. Rods were inserted from 224.5 to 219 steps before operator action placed rod control in manual. Operators placed 2-NRI-44 in trip and returned control bank 'D' rods to the original step demand at 224.5 steps. Placing the channel in trip changed the protection logic from a 2-out-of-4 logic to a 1-out-of-3, increasing the vulnerability to a reactor trip from any additional trip signal, whether valid or invalid.

Upon completion of the investigation of the failure of 2-NRI-44 on August 11, 2024, the licensee determined that the direct cause was an erratic signal caused by the failure of the ion current gain potentiometers. The licensee concluded that the corrective actions taken in response to the June 20, 2024, event were not sufficient, as the ion current gain potentiometers should also have been wiped. Additionally, the site categorized this event as a Maintenance Preventable Functional Failure due to the repeated occurrence of 2-NRI-44 spiking high as indication of a failure to correct the cause of the event.

Corrective Actions: The licensee took immediate corrective actions by replacing the failed potentiometers on August 11, 2024. Planned corrective actions going forward include clarifying which potentiometers need to be wiped and how often. Additionally, the licensee will consider evaluating the need for preventive maintenance activities to replace potentiometers on a frequency basis.

Corrective Action References: AR 2024-5163, "Unit 2 N44 Power Range Spike," and AR 2024-6194, "U2 N-44 Failed High"

Performance Assessment:

Performance Deficiency: The licensee's failure to correct degraded safety-related ion current gain potentiometers for 2-NRI-44, a condition adverse to quality, was contrary to 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," and was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to properly correct the degraded ion current gain potentiometers for 2-NRI-44 resulted in an invalid high signal, which caused unintended control rod insertion of 5.5 steps, altering core reactivity and plant stability.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined that this finding is of very low safety significance

(Green) using Exhibit 1, "Initiating Events," Section B, "Transient Initiators," because it neither caused a reactor trip nor resulted in the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

Cross-Cutting Aspect: P.2 - Evaluation: The organization thoroughly evaluates issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, although AR 2024-5163 identified that all the potentiometers associated with 2-NRI-44 were susceptible to the degraded condition that was determined to be the most likely cause of the spiking, the licensee did not evaluate their choice of wiping only the channel gain potentiometers. This resulted in the ion current gain potentiometers not being corrected.

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality, such as failures, malfunctions, and deficiencies are promptly corrected.

Contrary to the above, between June 20 and August 11, 2024, the licensee failed to promptly correct a condition adverse to quality. Specifically, after the licensee identified that all the potentiometers in the safety-related 2-NRI-44 channel drawer were susceptible to a buildup of hardened grease, the licensee's work order to wipe the potentiometers during maintenance on July 3, 2024, only addressed the degraded condition on the fine gain potentiometer. The licensee closed the work order with no future actions planned for the remaining potentiometers. Consequently, the degraded condition on the ion current gain potentiometers resulted in a power transient on August 11, 2024.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Inadequate Post-Maintenance Test Led to an Overpower Event					
Cornerstone	Significance	Cross-Cutting	Report		
		Aspect	Section		
Initiating Events	Green	[H.14] -	71153		
-	NCV 05000315/2025001-02	Conservative			
	Open/Closed	Bias			

A self-revealed finding of very low safety significance (Green) and associated non-cited violation (NCV) of the Donald C. Cook, Unit 1 Renewed Facility Operating License, Condition 2.C.(1), "Maximum Power Level," was identified for the failure to operate with reactor power not exceeding 3304 megawatts thermal. Specifically, an inadequate post-maintenance test for the Unit 1 Turbine Control Valve 2 (CV-2) linear voltage differential transformer (LVDT) resulted in an incorrectly manufactured LVDT being installed. The LVDT positioned CV-2 full open, causing a power transient.

On November 6, 2024, operators in the Unit 1 control room noted that the Servo Position Controller (SPC) for Turbine Control Valve 4 (CV-4) had automatically swapped from Train A to its redundant Train B following a turbine load change. A system engineer was contacted to investigate the cause and found a fault on the coils controlled by the Train A SPC.

The licensee conducted an extent of condition to determine if any other redundant SPCs on the remaining three control valves had failed. Operators were tasked with manually swapping between the SPCs on each control valve to observe if the system automatically swapped back to the previous SPC. In doing so, the redundant SPC would attempt to energize its coil and indicate a fault if unable to do so. Operations assumed any fault would cause the software to automatically select back to the known functional train.

On November 21, 2024, while performing this extent of condition testing at full power, operators in the Unit 1 control room selected the standby Train B SPC for CV-2. During this test, the valve began opening automatically, causing an increase in reactor power. Reactor power exceeded the licensed maximum thermal power limit defined in the Donald C. Cook Unit 1 Renewed Facility Operating License, Condition 2.C.(1), "Maximum Power Level," of 3304 megawatts thermal. Instantaneous reactor peaked at 102.78 percent as read by the plant computer. The reactor remained above 100 percent licensed power for approximately 7 minutes while operators followed their procedures to reduce power in a controlled manner.

Following the event, it was discovered that the LVDTs for both trains on CV-2 had been recently replaced on November 13, 2024, under Work Order (WO) C10078403, for unrelated reasons. The post-maintenance test (PMT), per WO C10078403 Step 5, "Post Maintenance Testing," directed maintenance personnel to "verify that LVDT 'B' reflects current plant conditions." Maintenance staff performed a channel check with the redundant Train A to ensure the two agreed. This revealed a 1.5-inch discrepancy in mounting location. A cross-functional team consisting of engineering, maintenance, and operations concluded that the difference in indication was a calibration issue and planned to correct it during the next outage, when full control valve testing would occur.

These actions were contrary to licensee procedure PMI-2294, "Post Maintenance Testing Program." Paragraph 4.2.2(a) requires, in part, that "planning shall consult with plant engineering as necessary to determine the correct PMT." The procedure states that PMTs are intended to confirm that "structures, systems, and/or components (SSCs) are capable of performing their intended functions when returned to service following maintenance/repair," and to ensure that "no new or related deficiencies have been created by the maintenance/repair activity."

Subsequent bench testing revealed that the Train B LVDT was wired backwards. The licensee had procured this non-safety-related LVDT from another licensee. It was determined that the vendor supplying these LVDTs had switched to a new manufacturer whose internal coil winding practices differed due to use in other industries. These LVDTs were inadvertently supplied to the nuclear industry.

On December 9, 2024, the NRC completed its evaluation of the November 21, 2024, event to determine whether a reactive inspection was warranted. The NRC concluded that a reactive inspection was not warranted. The evaluation can be accessed in ADAMS under Accession No. <u>ML24344A106</u>.

Corrective Actions: The licensee replaced the Train B LVDT with one that had previously undergone control valve testing, which verified its full range of indication. They placed a hold on all LVDTs in stock and plan to functionally test them. In response to the event, they performed a condition evaluation on fuel margins and conducted an equipment apparent cause evaluation of LVDT PMTs. Additionally, they revised the site PMT guidance procedure

to specify actions for online LVDT replacement, including observing the full usable range before placing the component in service.

Corrective Action References: ARs 2024-8641, 2024-8643, 2025-1283 Performance Assessment:

Performance Deficiency: The licensee's failure to determine the correct PMT for the Unit 1 Turbine Control Valve 2 (CV-2) LVDT was contrary to Revision 9 of procedure PMI-2294, "Post Maintenance Testing Program," Paragraph 4.2.2(a), and was a performance deficiency. Specifically, CV-2 had its Train B LVDT replaced online with an incorrectly manufactured one and the PMT did not confirm the LVDT was capable of performing its intended function when returned to service following the maintenance activity.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to determine the correct post-maintenance test following replacement of the Train B LVDT for CV-2 resulted in an unanticipated secondary side transient when swapping to that train and caused a power transient that exceeded the licensee's licensed maximum power level.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined this finding was of very low safety significance (Green), because they answered "No" to the Initiating Events screening question in Exhibit 1, Section B, "Transient Initiators."

Cross-Cutting Aspect: H.14 - Conservative Bias: Individuals use decision-making practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically, while working the PMT for the linear voltage differential transformer, it was identified that the as-left conditions were different from the other installed one. The adequacy of the PMT was rationalized even when information was incomplete, and conditions were unusual. Enforcement:

Violation: Donald C. Cook Unit 1 Renewed Facility Operating License, Condition 2.C.(1), "Maximum Power Level," states that "the licensee is authorized to operate the facility at steady state reactor core power levels not to exceed 3304 megawatts thermal."

Contrary to the above, on November 21, 2024, from 10:26 a.m. to 10:33 a.m. EST, the licensee failed to operate the facility (Unit 1) at steady state reactor core power levels not exceeding 3304 megawatts thermal. Specifically, due to an incorrectly wired LVTD in a control valve, reactor thermal power exceeded the licensed limit of 3304 megawatts thermal (100 percent licensed power), peaking at 102.78 percent as indicated by the plant computer.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

• On April 22, 2025, the inspectors presented the integrated inspection results to S. Dailey, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection	Туре	Designation	Description or Title	Revision or
71111 01	Corrective Action	AP 2025 0082	Cold Spot Robind I Room Near Unit 1 East EDV/ Collegy	Date 01/05/2025
71111.01	Documents	AR 2025-0005	Froozing Air Intrusion into the Auxiliary Building	01/03/2025
	Documents	AR 2025-0254	Screenbeuge Bell Un Deer Net Working Correctly	01/06/2025
		AR 2025-0405	L11 Fire in the W/FDV Cellery on a Heater Cable Connector	01/10/2025
	Dragadurag	AR 2020-0019	Diant Winterization and Do winterization	01/19/2025
	Procedures	12-IHP-3040-	Plant winterization and De-winterization	21
			Course We other	25
		12-OHP-4022-	Severe weather	25
		001-010		
		PMP-5055-SWM-	Severe Weather Guidelines	14
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/1111.04	Drawings	OP-1-5151A-51	Flow Diagram Emergency Diesel Generator "AB" Unit No. 1	51
		OP-1-5151B-65	Flow Diagram Emergency Diesel Generator "AB" Unit #1	65
	Procedures	1-OHP0-4021-	Operating DG1AB Subsystems	36
		032-008AB		
71111.05	Corrective Action	AR 2010-7176	Fire Door Will Not Close Due To Air Pressure	01/21/2011
	Documents	AR 2025-0195	Missed Required Actions of TRM	01/07/2025
		AR 2025-0309	1-DQR-CO2-RBX Light Bulb Base Failed	01/09/2025
		AR 2025-2016	PMP-2270-CCM-001 Violation / Missed Combustible Watch	03/17/2025
	Fire Plans	FIRE-PRE-	Fire Pre-Plans Volume 1	48
		PLANS-		
		VOLUME-1		
		FSA	D.C. Cook Nuclear Plant Fire Safety Analysis (FSA)	5
	Miscellaneous	125-060-A	Fire Drill No: 125-060-A "PZR Transformer Room"	02/06/2025
		TCP-2025-069	Transient Combustible Materials Permit - 4kV Transformer	03/11/2025
			Room 609' Turbine	
		TCP-2025-082	Transient Combustible Materials Permit - 4kV Room at	03/17/2025
			Penetration W3073	
	Procedures	12-FPP-4030-	Technical Requirements Manual Fire Door Inspection	31
		066-026		
71111.11Q	Miscellaneous	RQ-J-0205	U1C33 Shutdown JITT Plan	0
	Procedures	1-OHP-4021-001-	Power Reduction	69
		003		

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		004		
71111.12	Corrective Action	2024-5163	Unit 2 N44 Power Range Profile	06/20/2024
	Documents	2024-6194	U2 N-44 Failed High	08/11/2024
	Miscellaneous	VTD-WEST-1004	Westinghouse NSD Technical Bulletin for Multi-Turn	04/20/2020
			Potentiometers [Pub. # NSD-TB-20]	
	Procedures	PMP-2291-MM- 001	Minor/Tool Pouch Maintenance	21
	Work Orders	C1007301007	MTI, 2-NRI-44A/B-DWR, Adjust/Wipe Potentionmeters as Needed	11/29/2024
71111.13	Corrective Action	AR 2013-12888	Clarification on TS 3.8.1B	09/01/2013
	Documents	AR 2024-7669	2-QRV-251 Packing Leak	10/11/2024
		AR 2025-0575	2-QRV-251 Packing Leak	01/20/2025
	Corrective Action	AR 2025-0662	12-CS-628 is Leaking Past its Pipe Cap	01/23/2025
	Documents			
	Resulting from			
	Inspection			
	Drawings	OP-2-5129-59	Flow Diagram CVCS-Reactor Letdown and Charging	59
	L			
	Miscellaneous		U1C33 Refueling Outage Shutdown Safety Plan Report	03/06/2025
			Plan of the Day Meeting	02/03/2025
			Plan of the Day Meeting Package	03/27/2025
			Plan of the Day Meeting	01/28/2025
	Procedures	1-OHP-4030-114- 021	Event Initiated Surveillances	46
		1-OHP-4030-114-	Operations Weekly Surveillance Checks	38
			Cumplementel Dissel Congreter Testing	40
		12-0HP-4030- 033-001	Supplemental Diesel Generator Testing	40
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		PMP-2291-OLR-	On-Line Risk Management	59

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		PMP-4100-SDR- 002	Outage Risk Assessment and Management	24
71111.15	Calculations	MD-12-ESW-107- N	ESW Make-up Flow to EDG Jacket Water System	0
	Corrective Action	AR 2024-9257	U1 AB EDG JW Leak	12/19/2024
	Documents	AR 2025-1405	1-ERS-7401 Reading SOFTWARE FAULT	02/21/2025
	Miscellaneous	AEP:NRC:0398R	Application for Amends to Licenses DPR-58 & DPR-74, modifying "Control Room Emergency Ventilation Sys" & Associated Bases	06/29/1989
		AEP:NRC:0914E	Modification of Submittals Regarding Control Room Ventilation	12/29/1988
		Amendment No. 159	Docket No. 50-315, Donald C. Cook Nuclear Plant, Unit No. 1, Amendment to Facility Operating License	11/20/1991
	Operability Evaluations	AR 2024-9165-1	Operability Determination Supplement for AR 2024-9165; Additional Analysis Needed For Already Identified Condition	12/19/2024
	Procedures	1-OHP-4024-119	Annunciator #119 Response: Station Auxiliary AB	57
71111.18	Engineering Changes	EC-58218	Upgrade CVCS Crosstie Valves 1-CS-534, 1-CS-535, & 1- CS-536 To Reduce Crosstie Leakage	0
71111.20	Corrective Action Documents	AR 2025-2585	12-FTPL E08 Conveyor Drive Faults Experienced during Offload	03/31/2025
	Miscellaneous		U1C33 Refueling Outage Shutdown Safety Plan Report	03/06/2025
	Procedures	1-OHP-4022-002- 006	Loss of Refueling Water Level during Refueling Operations	10
		1-OHP-4022-016- 004	Loss of Component Cooling Water	26
		1-OHP-4022-017- 001	Loss of RHR Cooling	30
		1-OHP-4030-001- 002	Containment Inspection Tours	55
		1-OHP-4030-114- 010	Containment Isolation	22

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		PMP-4100-SDR- 002	Outage Risk Assessment and Management	24
71111.24	Corrective Action	AR 2021-7256	1-CCW-120 Failed to Fully Stroke During Surveillance	12/05/2023
	Documents	AR 2024-6455	Repack 2-QRV-251	08/22/2024
		AR 2024-7465	1CD EDG Engine Analysis Indications	10/08/2024
		AR 2024-7669	2-QRV-251 Packing Leak	10/11/2024
		AR 2024-8485	Loose Bolt on 1CD EDG Exhaust Support Bracket	11/14/2024
		AR 2025-0575	2-QRV-251 Packing Leak	01/20/2025
		AR 2025-1602	12-PP-145E Pump Casing Leak	03/01/2025
		AR 2025-1728	Battery Connection Resistance Checks Not Performed	03/06/2025
	Corrective Action	AR 2025-0773	NRC Review of Completed MOV External PMs	01/28/2025
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	Drawings	OP-1-5106A-68	Flow Diagram Aux-Feedwater Unit 1	68
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		OP-1-5135A-47	Flow Diagram CCW Safety Related Loads	07/15/2021
		OP-2-5129-72	Flow Diagram CVCS-Reactor Letdown & Charging Unit No 2	59
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		1-OHP-4030-116- 020E	East Component Cooling Water Loop Surveillance Test	34
		1-OHP-4030-132- 027CD	Attachment 1: DG1CD Slow Speed Start	79
		1-OHP-4030-156- 017E	Manual Full Stroke Exercise Test Of 1-FMO-222 and 1-FMO-232	22
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		066-121FD		
		2-OHP-4021-003-	Attachment 16: Shifting Charging Flow Control to and from	78
		001	Alternate Flow Path	
		2-OHP-4030-203-	West Centrifugal Charging Pump Operability Test	33
		052W		
		2-OHP-4030-209-	West Containment Spray System Test	51
		007W		
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		OHI-4016	Data Sheet 3: IST Valve Operability After Maintenance	63
		PMI-5071	Inservice Testing	8
		TDB-1-FIG-19-8	Safety Related Throttled Valves	45
	Work Orders	C10065562022	1-OME-150-CD, Component/Electrical/Air Gap Check	01/30/2025
		C10067119	East CCW Full-Stroke Exercise Tests: Manually Operated	03/12/2025
			Valves	
		C10073631001	1-FMO-232, PERFORM EXTERNAL PM	01/06/2025
		C10073632001	1-FMO-222 PERFORM EXTERNAL PREVENTIVE	01/06/2025
			MAINTENANCE	
		C10074782006	12-QP-92E, Replace Leaking Pipe Nipple	03/05/2025
		C10077028001	2-QRV-251; Repack Valve with 5718/5000 Packing	01/22/2025
		C10077028002	2-QRV-251; PMT Leak Inspection	01/23/2025
		C10077805	West Centrifugal Charging Pump Group A Test	01/20/2025
71151	Corrective Action	AR 2025-1317	Missed Safety System Functional Failure Report on U2	02/18/2025
	Documents		EDGs	
	Miscellaneous		Operational Narrative Logs	01/01/2024 -
				12/31/2024
		AEP-NRC-2025-	D.C. Cook Units 1 and 2 - 4Q2024 - PI Data Elements	03/19/2025
		18	Change Report (CR)	
	Procedures	PMP-7110-PIP-	Reactor Oversight Program Performance Indicators and	23
		001	Monthly Operating Report Datasheets (January 2024 thru	
			December 2024)	
71153	Corrective Action Documents	2024-5817-5	EACE for 2AB EDG Failed Surveillance (Freq Low).	01/22/2025
		2024-6894	Potential Past Operability Concern on 2AB	03/19/2025
		2024-7274	Ineffective Evaluation	03/06/2025

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		2024-8300	U1 MT CV-4 SPC Swapped from SPC-A to SPC-B after Load Change	01/23/2025
		2024-8641	SPC Failure while Swapping on CV2 in Unit 1	01/23/2025
		2024-8643	Hourly LEFM RX Power Over 100% during Transient	01/23/2025
		2025-1878	2-RU-15 SG4 PORV 2-MRV-243 CONTROLLER	03/19/2025
	Miscellaneous		Unit 2 Control Room Narrative Log	03/11/2025
		ECP 1-T2-07	Unit 1 Main Turbine TS3000 Digital Control System Basis of Design Document	13
	Procedures	1-OHP-5030-050- 001	Main Turbine and Feed Pump Turbine Valve Functional Checks	32
		2-OHP-4022-IFR- 001	Instrument Failure Response	13
		OHI-4000	Conduct of Operations: Standards	156
		PMI-2294	Post-Maintenance Testing Program	9
		PMP-2291-PMT- 001	Work management Post Maintenance Testing Matrices	57
	Work Orders	C10078403	(2024-8226) U1 MT CV 2 Positioner B Box Vibration	11/14/2024