UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

November 7, 2019

Mr. Joel P. Gebbie
Senior VP and Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000315/2019003 AND 05000316/2019003

Dear Mr. Gebbie:

On September 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Donald C. Cook Nuclear Plant, Units 1 and 2. On October 15, 2019, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or significance or severity of the violation 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 D.C. Cook.

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 D.C. Cook.

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

Sincerely,

/RA/

Eric R. Duncan, Chief
Branch 4
Division of Reactor Projects

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

Enclosure:
As stated

cc: Distribution via LISTSERV®

Letter to Joel Gebbie from Eric Duncan dated November 7, 2019.

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000315/2019003 AND 05000316/2019003

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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:	05000315/2019003 and 05000316/2019003
Enterprise Identifier:	I-2019-003-0068
Licensee:	Indiana Michigan Power Company
Facility:	Donald C. Cook Nuclear Plant, Units 1 and 2
Location:	Bridgman, MI
Inspection Dates:	July 01, 2019 to September 30, 2019
Inspectors:	J. Ellegood, Senior Resident Inspector N. Feliz-Adorno, Senior Reactor Inspector T. Go, Health Physicist P. Laflamme, Senior Resident Inspector J. Mancuso, Resident Inspector R. Ng, Project Engineer J. Rutkowski, Project Engineer M. Ziolkowski, Senior Physical Security Inspector
Approved By:	Eric R. Duncan, Chief Branch 4 Division of Reactor Projects

Enclosure

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, Units 1 and 2 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

Main Steam Stop Valve Dump Valve Inoperable for Longer than its Technical Specification Allowed Outage Time			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000315/2019003-01 Open/Closed	[H.14] - Conservative Bias	71152
The inspectors identified a finding of very low safety significance (i.e., Green) and an associated Non-Cited Violation (NCV) of Technical Specification (TS) 3.7.2, "Steam Generator Stop Valves (SGVSs)," when licensee personnel failed to have four Unit 1 SGSVs and associated actuator trains operable while in Mode 1 and subsequently failed to restore the affected SGSV actuator train and SGSV to an operable status or place Unit 1 in Mode 2 within the time limits specified by the associated TS Limiting Condition for Operation (LCO). In addition, a NCV of TS 3.0.4, "LCO Applicability," was identified because the licensee entered a Mode of applicability without the SGSV actuator train and associated SGSV being operable as required. Specifically, the licensee failed to identify that Unit 1 #2 SGVS Train B Dump Valve MRV-222 was inoperable during a post-maintenance test (PMT) conducted on May 6, 2019; and subsequently entered Mode 1 contrary to TS 3.0.4 and operated for 21 days, contrary to TS 3.7.2.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
URI	05000315,05000316/2018003-02	Site Specific Shielding and Barriers for HI-TRAC Transfer Cask Require NRC Approval Prior to Use	60855.1	Closed

PLANT STATUS

Unit 1 began the inspection period at rated thermal power. On September 29, 2019, the licensee reduced power to about 55 percent to repair a leak on a feedwater pump casing. Unit 1 remained at or near 55 percent power for the remainder of the inspection period.

Unit 2 operated at or near rated thermal power until July 21, 2019, when the licensee shut down the unit in response to a degradation of Non-Essential Service Water (NESW) flow. On July 25, 2019, the licensee restarted Unit 2. Unit 2 reached rated thermal power on July 26, 2019, and remained at or near rated thermal power until September 9, 2019, when Unit 2 began coast down operations prior to a scheduled refueling outage. On September 29, 2019, the licensee reduced power to about 50 percent to perform Main Steam Safety Valve testing. Following this testing, Unit 2 remained at or near 50 percent power for the remainder 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 plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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

External Flooding Sample (IP Section 03.04) (1 Sample)

(1) The inspectors evaluated the licensee's readiness to cope with external flooding for the following area:
- Screen House

71111.04Q - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (5 Samples)

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

(1) Unit 1 Emergency Diesel Generator (EDG) AB and Associated Support Systems on July 8, 2019
(2) Unit 2 Residual Heat Removal (RHR) on July 23, 2019
(3) Unit 2 Turbine Driven Auxiliary Feedwater (TDAFW) Pump on August 8, 2019

(4) Unit 1 West Motor Driven Auxiliary Feedwater (MDAFW) Pump on August 14, 2019
(5) Unit 2 CD EDG on August 21, 2019

71111.04S - Equipment Alignment

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated system configurations during a complete walkdown of the Unit 1 Qualified Offsite Power Lines on September 23, 2019

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

(1) U2 CD EDG on July 7, 2019
(2) U2 AB EDG on July 7, 2019
(3) Auxiliary Building 573' Elevation on July 11, 2019
(4) U2 4 Kilovolt (kV) Switchgear Rooms AB and CD on July 11, 2019

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 02.02a.) (1 Sample)

The inspectors evaluated internal flooding mitigation protection in the:

(1) Auxiliary Building, Elevations 573' and 587'

71111.07A - Heat Sink Performance

Annual Review (IP Section 02.01) (1 Sample)

The inspectors evaluated readiness and performance of:

(1) Unit 2 Non-Essential Service Water (NESW)

71111.11Q - Licensed Operator Requalification 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 a plant shutdown for a maintenance outage on July 21, 2019

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

(1) The inspectors observed and evaluated licensed operator requalification training in the Unit 2 Simulator on September 12, 2019

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (3 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

(1) Unit 1 Auxiliary Feedwater (AFW)
(2) Unit 1 Main Feedwater
(3) Supplemental Emergency Diesel Generators (EDGs)

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (2 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

(1) Elevated Risk due to unplanned Unit 1 AB EDG inoperability on June 17, 2019
(2) Elevated Risk associated with the loss of Unit 2 NESW from July 21 through July 24, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) AR 2015-5237, Asymmetric Natural Circulation Cooldown with Low Decay Heat
(2) AR 2019-6882, Ice Condenser After Exceeding Notification Limit
(3) AR 2019-7053, PZR [Pressurizer] Insurge/Outsurge
(4) AR 2019-7919, Low Differential Pressure Across Fuel Handling Area Ventilation System Charcoal Bed
(5) Step Change in Differential Pressure (D/P) Across Auxiliary Fuel Handling Area Exhaust Filter

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the following post maintenance tests:

(1) Mechanism-Operated Contact Switch Adjustment for Unit 1 AB EDG to 4kV Bus Supply Breaker; Work Order (WO) 55535235
(2) Unit 2 NESW Strainers following Cleaning, July 21 through 23, 2019
(3) Unit 2 East RHR Pump following Valve Work; WO 55359920
(4) Unit 1 CD EDG, on August 29, 2019, following planned maintenance
(5) Unit 1 TDAFW System on September 3, 2019, following planned maintenance
(6) Unit 1 East Component Cooling Water (CCW) Check Valve Flow Test following RCP #3 Lower Bearing CCW Throttle Valve Adjustment on September 13, 2019

71111.20 - Refueling and Other Outage Activities

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

(1) The inspectors evaluated a Unit 2 maintenance outage from July 21 through July 25, 2019, which resulted from accumulated debris in the NESW strainers

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance test:

Surveillance Tests (other) (IP Section 03.01) (1 Sample)

(1) Unit 2 New Fuel Receipt Inspections; WO 55518169 and WO 55518412

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

(1) Emergency Preparedness Drill on July 16, 2019

Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

The inspectors evaluated:

(1) Licensed Operator Requalification Training (LORT) with Drill Exercise Performance (DEP) on September 10, 2019

RADIATION SAFETY

71124.08 - Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

Radioactive Material Storage (IP Section 02.01) (1 Sample)

The inspectors evaluated radioactive material storage.

(1) The inspectors toured the following areas:
- Radioactive Waste Drumming Room located in the Auxiliary Building 587'
- Radioactive Waste Condensate Tanks South/North 587'
- South Boric-Acid Evaporator Room 587’
- Radioactive Material Building and Contaminated Equipment Storage Area (CESA) Building where Dry Active Waste (DAW) Containers were Stored
- Mausoleum Storage Area and CESA Contains Contaminated Equipment Stored in Sea-Lands

The inspectors performed a container check (e.g., swelling, leakage and deformation) on the following containers:
- DAW Container No. 321; Air Compressors; dated February 19, 2013

- DAW Container No. 314; Stinger Whip Welding Equipment; dated July 27, 2017
- DAW Container No. 230; Spent Fuel Pool Tools and Spares; dated February 1, 2012
- DAW Container No. 323; Camera Cables; dated February 1, 2013
- DAW Container No. 102; Thimble Plugs Tools for Seal-Table; dated May 6, 2019
- DAW Container No. 324; Power Packs and Electrical Transformers; dated March 14, 2016
- DAW Container No. 226; Specimen Tools/Bolts for CRD Tools; dated April 28, 2019
- DAW Container No. 237; CRDM [Control Rod Drive Mechanism] Equipment

Radioactive Waste System Walkdown (IP Section 02.02) (1 Sample)

The inspectors evaluated the following radioactive waste processing systems during plant walkdowns:

(1) Liquid or Solid Radioactive Waste Processing Systems

- Radioactove Waste Drumming Room located in the Auxiliary Building 587' Resin Transfer/Sluicing System into a Liner/Cask
- Energy Solution Liquid System; Radioactive Waste Water Demineralizer System
- Spent Resin Storage Tank Resin Transfer System
- DAW Trash Loading Located in the Auxiliary Building

Radioactive Waste Resin and/or Sludge Discharges Processes

- Energy Solution's Liquid System; Radioactive Waste Water Demineralizer System
- Spent Resin Storage Tank Resin Transfer System

Waste Characterization and Classification (IP Section 02.03) (1 Sample)

The inspectors evaluated the radioactive waste characterization and classification for the following waste streams:

(1) Shipping Cask Containing Spent Resin to Bear Creek, TN; Low Specific Activity (LSA-II)
Contaminated Equipment RAM [Radioactive Material] Shipment to Energy Solution Services as Surface Contaminated Objects (SCO-II)
Sample Shipment of 8 Samples to be Analyzed to GEL Laboratory as a Limited Quantity Material

Shipment Preparation (IP Section 02.04) (1 Sample)

The inspectors evaluated the following radioactive material shipment preparation processes:

(1) DCC18-053; UN3321, RAM LSA-II; Fissile Excepted; 7, RQ-1; Spent Resin Mixed Bed Ion Exchange Media to Bear Creek, TN; dated July 12, 2018
DCC18-074; UN3321, RAM LSA-II; Fissile Excepted; 7, RQ-1; Spent Resin Mixed

Bed Ion Exchange Media to Bear Creek, TN; dated December 5, 2018
DCC19-053; UN2913, RAM SCO-II; Fissile Excepted; 7, RQ-1; Contaminated Equipment Contained in a Metal Box to Energy Solution Services, Memphis, TN; dated June 11, 2019

Shipping Records (IP Section 02.05) (1 Sample)

The inspectors evaluated the following non-excepted package shipment records:

(1) DCC18-059; UN3321, RAM LSA-II; Fissile Excepted; 7, RQ-1; Spent Resin Mixed Bed Ion Exchange Media to Bear Creek, TN in a Type-A Cask; dated June 11, 2019
DCC18-023; UN2910, RAM; Excepted Package; 7, Limited Quantity Material to GEL Labs; Containing Samples for 10CFR61 Analysis; dated March 18,
DCC18-019; UN2910, RAM; Excepted Package; 7, Limited Quantity Material of Valves to Spartanburg, SC for Recertification; dated March 11, 2019

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (2 Samples)

(1) PMP-7110-PIP-001; Reactor Oversight Program Performance Indicators (PIs) and Monthly Operating Report Data for Reactor Coolant Specific Activity; Unit 1; from January 1, 2018 through December 31, 2018
(2) PMP-7110-PIP-001; Reactor Oversight Program PIs and Monthly Operating Report Data for Reactor Coolant Specific Activity; Unit 2; from January 1, 2018 through December 31, 2018

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

(1) The inspectors reviewed licensee Nuclear Oversight reports, Nuclear Safety Review Board (NSRB) reports, and System Health summaries to identify potential adverse trends in documented issues that were not entered into the licensee's corrective action program. The inspectors also assessed NRC findings to identify trends.

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples 1 Partial)

The inspectors reviewed the licensee's implementation of the corrective action program related to the following issues:

(1) (Partial)
Missing Lateral Support Shim for Reactor Coolant Pump (RCP)-11
(2) Through-Wall Leak on Unit 1 RCP Seal Injection Lines
(3) Unit 1 Steam Generator Stop Valve Dump Valve Failed Surveillance

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

60855.1 - Operation of an Independent Spent Fuel Storage Installation at Operating Plants

Operation of an Independent Spent Fuel Storage Installation at Operating Plants (1 Partial)

(1) (Partial)
The inspectors closed Unresolved Item 05000315/2018003-002; 05000316/2018003-02, "Site Specific Shielding and Barriers for HI-TRAC Transfer Cask Require NRC Approval Prior to Use." The details of this review are documented in the inspection results below. No findings or violations were identified.

INSPECTION RESULTS

Unresolved Item (Closed)	Site Specific Shielding and Barriers for HI-TRAC Transfer Cask Require NRC Approval Prior to Use URI 05000315,05000316/2018003-02	60855.1

Description:

During the 2018 loading campaign, the licensee loaded spent fuel into Holtec Multi-Purpose Canister (MPC) 32 with Holtec International Transfer Cask (HI-TRAC) 125D. The site was using Holtec International Storage Module (HI-STORM) 100 CoC [Certificate of Compliance] No. 1014, Amendment No. 9, Revision 1 (9R1). During the campaign, the licensee used additional shielding for As Low As Is Reasonably Achievable (ALARA) purposes. The additional shielding was in contact with the upper portions of the HI-TRAC and surrounding, but not in contact, with the HI-TRAC, which could hinder airflow or radiation heat transfer from the HI-TRAC. The licensee identified that the use of the shielding was not bounded by the conditions described in the cask Final Safety Analysis Report (FSAR) and subsequently requested Holtec to perform a site-specific thermal analysis to include the shielding. The site-specific thermal analysis contained inputs that were different than the design basis calculation inputs contained in the FSAR.

The licensee performed a 10 CFR 72.48 screening and evaluation, which concluded that the activity could be implemented without prior NRC approval. Subsequently, the 10 CFR 72.212 report was revised to allow the use of temporary shielding, and the licensee administratively imposed lower building temperatures limits and nuclear fuel assembly heat load limits from those specified in CoC No. 1014, Amendment No. 9R1, as determined in the site-specific thermal analysis. The licensee identified that the use of temporary shielding had the potential to result in CoC No. 1014, Amendment No. 9R1, Appendix B, Design Features, Section 3.9, and Approved Contents, Section 2.4, being non-conservative. Specifically, with the shielding in use, more restrictive requirements than those established in CoC No. 1014, Amendment No. 9R1 were necessary to ensure alignment with the FSAR safety analyses for peak cladding temperature (PCT) limits.

This issue was reviewed by the inspectors and technical specialists in the Division of Spent Fuel Management to determine compliance with Section 3.9 of CoC No. 1014, Amendment No. 9R1, Appendix B; potential non-conservatism of Section 3.9 of CoC No. 1014, Amendment No. 9R1, Appendix B; and compliance with 10 CFR 72.48(c)(1)(ii)(B).

Regarding whether the licensee was compliant with CoC No. 1014, Amendment No. 9R1; Appendix B, Section 3.9, "Design Features," stated the following:

"Short term operations involving the HI-TRAC transfer cask can be carried out if the reference ambient temperature (three-day average around the cask) is below the Threshold Temperature of 110 degrees F [Fahrenheit] ambient temperature, applicable during HI-TRAC transfer operations inside the 10 CFR Part 50 or 10 CFR Part 52 structural boundary and 90 degrees F outside of it. The determination of the Threshold Temperature compliance shall be made based on the best available thermal data for the site. If the reference ambient temperature exceeds the corresponding Threshold Temperature, then a site-specific analysis shall be performed using the actual heat load and reference ambient temperature equal to the three-day average to ensure that the steady state peak fuel cladding temperature will remain below the 400°C [degrees Celcius] limit." While the above implied that a site-specific analysis was not necessary when the reference ambient temperature was below the corresponding threshold temperature, it did not preclude a site-specific analysis. Therefore, the licensee performed a site-specific analysis with the use of additional shielding and the administrative limits implemented by the licensee, which were bounded by the limits of Section 3.9 of Holtec CoC No. 1014, Amendment No. 9R1, Appendix B. Therefore, the licensee was compliant with Section 3.9 of Holtec CoC No. 1014, Amendment No. 9R1, Appendix B. Regarding whether Section 3.9, "Design Features," of CoC No. 1014, Amendment No. 9R1, Appendix B, was non-conservative, based on a review of Holtec Report No. HI-2177676, "Thermal Evaluation of Shielding on HI-TRAC," which analyzed the transfer cask with temporary shielding in place, the inspectors determined that the use of the temporary shielding rendered the Design Features Section 3.9 and Approved Contents Section 2.4 of CoC No. 1014, Amendment No. 9R1, Appendix B as non-conservative. However, by performing a site-specific thermal analysis and imposing temperature and fuel loading restrictions, the licensee remained compliant with the requirements of CoC No. 1014, Amendment No. 9R1. Regarding whether the licensee was compliant with 10 CFR 72.48(c)(1)(ii)(B), CNP 72.48 No. 7248-2018-0139-02, "Thermal Evaluation of Shielding Package Around the HI-TRAC at D.C. Cook," provided the 10 CFR 72.48 screening of the proposed activity. The licensee answered "No" to 10 CFR 72.48 Screening Question E., "Does the proposed activity require a change to the ISFSI [Independent Spent Fuel Storage Installation] Technical Specifications or the CoC?" The licensee provided the explanation, "Calculation package (HI-2177676) provided technical results to demonstrate compliance with CoC No. 1014, Amendment 9, Revision 1." Based on the determination that the licensee was compliant with Section 3.9 of CoC No. 1014, Amendment No. 9R1, Appendix B, the inspectors did not find any indication that the licensee was not in compliance with 10 CFR 72.48. Since the licensee was compliant with CoC No. 1014, Amendment No. 9R1, Appendix B and 10 CFR 72.48, the inspectors consider this Unresolved Item closed.
Corrective Action References: AR 2018-4056, AR 2018-6342, and AR 2018-6642

Main Steam Stop Valve Dump Valve Inoperable for Longer than its Technical Specification Allowed Outage Time			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000315/2019003-01 Open/Closed	[H.14] - Conservative Bias	71152

The inspectors identified a finding of very low safety significance (i.e., Green) and an associated Non-Cited Violation (NCV) of Technical Specification (TS) 3.7.2, "Steam Generator Stop Valves (SGVSs)," when licensee personnel failed to have four Unit 1 SGSVs and associated actuator trains operable while in Mode 1 and subsequently failed to restore the affected SGSV actuator train and SGSV to an operable status or place Unit 1 in Mode 2 within the time limits specified by the associated TS Limiting Condition for Operation (LCO). In addition, a NCV of TS 3.0.4, "LCO Applicability," was identified because the licensee entered a Mode of applicability without the SGSV actuator train and associated SGSV being operable as required. Specifically, the licensee failed to identify that Unit 1 #2 SGVS Train B Dump Valve MRV-222 was inoperable during a post-maintenance test (PMT) conducted on May 6, 2019; and subsequently entered Mode 1 contrary to TS 3.0.4 and operated for 21 days, contrary to TS 3.7.2.

Description:

During Unit 1 Refueling Outage 29, and while in Mode 2, the licensee adjusted the packing on #2 SGSV Train B Dump Valve 1-MRV-222. This valve was part of the actuation system used to operate the #2 SGSV. On May 6, 2019, following the packing adjustment and prior to a Mode change, the licensee performed portions of the Unit 1 #2 SGSV Train B Dump Valve surveillance test as a post maintenance test. On the first attempt, the valve failed to stroke within the required maximum stroke time of 2 seconds. At that time, the licensee believed that the #2 SGSV Train B Dump Valve operated in a humid environment. To replicate this environment, the licensee wetted the #2 SGSV Train B Dump Valve packing and stem. The valve subsequently passed the surveillance test, the licensee declared the Unit 1 #2 SGSV Train B Dump Valve operable, and on May 9, 2019, transitioned Unit 1 from Mode 2 to Mode 1.

During the next scheduled Unit 1 #2 SGSV Train B Dump Valve surveillance test on May 29, 2019, the valve again failed to stroke within the 2 second stroke time limit. The licensee performed additional investigation and identified that the valve packing had hardened and required replacement. The licensee also identified that the environment that was assumed to exist during the previous troubleshooting effort had been incorrect and that, in fact, the #2 SGSV Train B Dump Valve operated in a non-humid (dry) environment, and therefore the packing was not wet during operation. The packing was replaced, and following a successful PMT the Unit 1 #2 SGSV Train B Dump Valve was returned to service.

During inspection activities to assess the licensee's corrective actions, the inspectors identified that the licensee failed to identify that the Unit 1 #2 SGSV Train B Dump Valve and associated #2 SGSV was inoperable from the time Unit 1 entered Mode 1 on May 9, 2019, until the issue was corrected on May 30, 2019. Additionally, the licensee failed to assess the impact of this issue on operability. Following discussions with licensee staff, AR 2019-8511, "Past ODE [Operability Determination Evaluation] Possibly Missed," was generated and an operability assessment was performed. This assessment was completed on September 24,

2019, and concluded that the Unit 1 #2 SGSV Train B Dump Valve and associated #2 SGSV was inoperable beginning with the transition to Mode 1 on May 9, 2019, until the valve packing was replaced on May 30, 2019.

Corrective Actions: The licensee performed a past operability assessment under AR 2019-8511. The deficient condition was corrected previously under AR 2019-5615 on May 30, 2019.

Corrective Action References: AR 2019-5615

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's failure to identify that the Unit 1 #2 SGSV Train B Dump Valve was inoperable during a PMT was a performance deficiency. Specifically, the PMT performed by the licensee created more favorable conditions for valve operation than what existed in the actual operating environment. As a result, the licensee failed to identify that the Unit 1 #2 SGSV Train B Dump Valve and associated #2 SGSV was inoperable.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the finding resulted in one train of SGSV actuators being inoperable, causing a delay in the opening of the #2 SGSV and rendering the #2 SGSV also inoperable.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors answered "Yes" to Question A.2 in Exhibit 2 because the Unit 1 #2 SGSV Train B Dump Valve was inoperable for 21 days, which was greater than the TS 3.7.2 Allowed Outage Time of 7 days. Therefore, a Detailed Risk Evaluation (DRE) was performed using Inspection Manual Chapter (IMC) 0609, Appendix A. The inspectors performed a bounding analysis by failing the Unit 1 #2 SGSV Train B Dump Valve for 21 days and determined the delta core damage frequency (CDF) was 4.7E-9. As a result, the finding was determined to be of very low safety significance (i.e., Green).

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, when troubleshooting the Unit 1 #2 SGSV Train B Dump Valve after its failure on May 6, 2019, the licensee failed to validate the assumptions about the environment in which the valve operated. This caused the licensee to perform an inadequate PMT and ultimately fail to restore the valve to an operable status.

Enforcement:

Violation: Technical Specification 3.7.2, "Steam Generator Stop Valves (SGSVs)," required that in Mode 1 all four SGSVs and their associated actuator trains be operable. Technical Specification 3.7.2.A required that with one SGSV actuator train inoperable, that the SGSV actuator train be restored to an operable status within 7 days. Technical Specification 3.7.2.E required that if the required action and completion time of Technical Specification 3.7.2.A is not met, to declare each affected SGSV inoperable. Technical Specification 3.7.2.F, "Steam

Generator Stop Valves (SGSVs)," required that with one SGSV inoperable in Mode 1 that the SGSV be restored to an operable status within 8 hours. Technical Specification 3.7.2.G required that if the required action and associated completion time of Technical Specification 3.7.2.F is not met the Unit be placed in Mode 2 within 6 hours.

Technical Specification 3.0.4 required that when a Limiting Condition for Operation is not met, that entry into a Mode applicable to a technical specification shall only be made when, a) the associated actions to be entered permit continued operation in the Mode in the applicability for an unlimited period of time, or b) after the performance of a risk assessment and the establishment of risk management actions, or c) when an allowance is stated in the individual value, parameter, or other specification.

Contrary to the above, on May 9, 2019, with Unit 1 in Mode 1 and with the #2 SGSV Train B Dump Valve, which was a part of the #2 SGSV actuator train, inoperable, the licensee failed to restore the inoperable #2 SGSV actuator train to an operable status within 7 days and failed to declare the associated #2 SGSV inoperable. Also, on May 9, 2019, with Unit 1 in Mode 1 and with the #2 SGSV inoperable, the licensee failed to restore the #2 SGSV to an operable status within 8 hours as required by Technical Specification 3.7.2.F, and failed to place Unit 1 in Mode 2 within 6 hours as required by Technical Specification 3.7.2.G. In addition, prior to entering Mode 1 from Mode 2 on May 9, 2019, with an inoperable SGSV and associated Limiting Condition for Operation 3.7.2.G that did not permit continued operation for an unlimited period of time and did not provide an allowance as stated in an individual value, parameter, or other specification, the licensee failed to perform a risk assessment and establish risk management actions as required by Technical Specification 3.0.4.

Enforcement Action: This violation is being treated as an 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 October 15, 2019, the inspectors presented the integrated inspection results to Mr. J. Gebbie, Senior VP and Chief Nuclear Officer, and other members of the licensee staff.
- On August 8, 2019, the inspectors presented the Radioactive Material Processing/Transportation and RCS Specific Activity Performance Indicator inspection results to Mr. S. Lies, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04Q	Corrective Action Documents	2018-0075	U1 CD EDG Tripped Due to Air System Issues	01/02/2018
		2018-0242	DG1CD Tripped on Overspeed During a Start	01/08/2018
		2018-6841	Unit 1 CD EDG Not Synchronizing to T11D Bus	07/02/2018
		2018-6917	Potential Commonality in Recent Repeat Events	07/05/2018
		2018-9194	Unit 2 PAC Trip	09/27/2018
	Drawings	1-OP-5151D-72	Flow Diagram Emergency Diesel Generator “CD” Unit 1	
		OP-1-5113A-9	Flow Diagram Essential Service Water	
		OP-1-5143-80	Flow Diagram Emergency Core Cooling (RHR) Unit No. 1	
		OP-1-5148C-30	Flow Diagram Diesel Generator Area & Electric Switchgear Room Heating & Ventilation System Unit 1	
		OP-1-5151A-50	Flow Diagram Emergency Diesel Generator “AB” Unit 1	
		OP-1-5151C-58	Flow Diagram Emergency Diesel Generator “CD” Unit 1	
		OP-1-98013-42	Diesel Generator 1AB and Auxiliaries Elementary Diagram	
		OP-1-98014-40	Diesel Generator 1CD and Auxiliaries Elementary Diagram	
		OP-1-98016-41	Diesel Generator 1AB Miscellaneous Auxiliaries Elementary Diagram	
		OP-1-98017-46	Diesel Generator 1CD Miscellaneous Auxiliaries Elementary Diagram	
		OP-2-5143-75	Flow Diagram Emergency Core Cooling (RHR) Unit No. 2	
		OP-5151B-61	Flow Diagram Emergency Diesel Generator “AB” Unit #1	
	Procedures	1-OHP-4012-032-008CD	Operating DG1CD Subsystems	37
		1-OHP-4021-008-002	Placing Emergency Core Cooling System in Standby Readiness	36
		1-OHP-4021-017-001	Operation of the Residual Heat Removal System	31
		1-OHP-4021-032-008AB	Operation DG1AB Subsystems	32
		1-OHP-4021-032-008B	Operating DG1AB Subsystems	30
		1-OHP-4030-156-017E	East Motor Driven Auxiliary Feedwater System Test	14

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		2-OHP-4021-008-02	Placing Emergency Core Cooling System in Standby Readiness	36
		2-OHP-4021-032-008CD	Operating DG2CD Subsystems - DG2CD Starting Air System Valves	32
		2-OHP-4021-07-001	Operation of the Residual Heat Removal System	27
		2-OHP-4030-256-017T	Turbine Driven Auxiliary Feedwater System Test	31
	Work Orders	55501397	MTRI, 2-PPS-1, Calibrate/Replace as Necessary	
71111.05Q	Drawings	12-5972	Fire Hazards Analysis Plan Below Basement Units 1 and 2	5
		12-5974	Fire Hazard Analysis Mezzanine Floor El. 609' Units 1 & 2	12
	Fire Plans		Fire Pre-Plans Volume 1	33
		Fire Zone 18	2 CD Diesel Generator Room, Unit 2 Elevation 587'	33
		Fire Zone 40A	4 kV AB Switchgear Room, Unit 1 Elevation 609'-0"	33
		Fire Zone 47A	4kV AB Switchgear Room, Unit 2 Elevation 609'-0"	33
71111.06	Calculations	MD-12-Flood-008-N	Flooding Due to Groundwater Level Increase, Cook Nuclear Plant Flood Hazard Re-Evaluation	1
		PRA-Flood-002	Internal Flooding Impact on Plant Power Distribution	1
		PRA-Flood-004	Internal Flooding - Qualitative Screening Analysis	2
		PRA-Flood-008	Flood Sources and Associated Flood Mechanisms	2
		PRA-Flood-008 Appendix F	Rupture Flow Rates of Flood Sources	2
		SD-061206-001	Flooding Evaluation Report for D.C. Cook Nuclear Power Plant	3
	Corrective Action Documents	GT-2015-5625-23	Inspection Frequency for Interim Flood Measures	08/12/2015
	Drawings	OP-1-5123A	Station Drainage - Auxiliary Building, Unit 1	21
		OP-12-5123	Station Drainage Auxiliary Building	14
	Procedures	1-OHP-4022	ESW System/Rupture	11
		12-EHP-4075-TCA-001	Operator Time Critical Actions	16
		12-OHP-4027-FSG-1501	Flooding Response Deployment	1

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.07A	Drawings	OP-1-5114-152	Flow Diagram Non-Essential Service Water Unit No. 1	
		OP-2-5114-93	Flow Diagram Non-Essential Service Water Unit No. 2	
	Procedures	1-OHP-4022	NESW System Loss/Rupture	14
		2-OHP-4021-028-018	Operation of the Containment Chilled Water System, Figure 1, System Drawings	44
71111.11Q	Miscellaneous	RQ-C-4431	Secondary Side Break & Pressurized Thermal Shock Analysis	1
		SOER 87-3	Pipe Failures in High Energy Systems Due to Erosion Corrosion	04/02/1987
71111.12	Corrective Action Documents	2019-5615-1	1-MRV-222 Failed Surveillance	05/29/2019
	Miscellaneous		Two-year Unavailability Report for the Supplemental Diesel Generator (SDG) System; SSC 12-SDG	09/25/2019
71111.15	Calculations	DC-D-01-CS-4	Piping and Pipe Support Analysis of CS and RC System for EBASCO Walkdown Package Nos. CS-11 and RC-09	02
	Corrective Action Documents	2018-6093	Increasing Unit 1 CCW Out-Leakage	06/06/2018
		2018-6615	Unidentified HELB Break Locations	06/26/2018
		2018-7570-01	Operability Determination Evaluation (Unit 1 East CCW Heat Exchanger Leak)	07/27/2018
		2019-5237	Asymmetrical Natural Circulation Cooldown Issue with Low Decay Heat	05/14/2019
		2019-5666	Revise Procedure to Support TRM Update	05/30/2019
		2019-7053	Pressurizer Insurge/Outsurge	
		AR 2019-6882	U2 Ice Bed Temps Above eSOMS Notification Limits	07/15/2019
		AR 2019-7919	12-HV-AFX Charcoal D/P Outside of ESOMS Limits	08/19/2019
	Drawings	1-CS-780-L1-2	Containment	3
		OP-1-5129	CVCS-Reactor Letdown & Charging	68
		OP-12-5148-63	Flow Diagram Auxiliary Building Ventilation Units 1 & 2	63
	Engineering Changes	0000055754	Install Mechanical Jumper to Connect the Essential Service Water System to the Component Cooling Water System in Either Unit to Provide a Source of Makeup Water to the CCW System	01
	Miscellaneous		FHA Exhaust Fan Charcoal Differential Pressure	08/23/2019
		Temporary	Design, Install Mechanical Jumper to Connect the Essential	03

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Modification 12-TM-15-49	Service Water System to the Component Cooling Water System in Either Unit to Provide a Source of Makeup Water to the CCW System	
		UFSAR Section 14.2.5	Rupture of a Steam Pipe	28
		WCAP-14717	Evaluation of the Effects of Insurge/Outsurge Out-of-Limit Transients on the Integrity of the Pressurizer Program MUHP-5063 Summary Report	
	Procedures	12-OHP-4021-016-003	Component Cooling Water System Operation	48
		12-OHP-5030-016-001	Supply ESW to CCW for Makeup Using Temporary Modification	4
	Work Orders	55504921-01	12-HV-AFX, Auxiliary Building Ventilation Fuel Handling Area Exhaust Filter Unit, Replace Charcoal Bed	08/23/2017
		55504921-02	12-HV-AFX, Auxiliary Building Ventilation Fuel Handling Area Exhaust Filter Unit, Perform Test After Charcoal Replacement	08/28/2017
71111.18	Procedures	OHI-4016	Conduct of Operations: Guidelines	56
71111.19	Corrective Action Documents	2019-8353	Failed PMT 55533608-05, U1 CD Diesel has a Slight Leak on the 1-R Jacket Water Outlet	08/30/2019
		AR-2019-8528	Unit 1 East CCW Pump Surveillance was Aborted Due to #3 RCP CCW Flows	09/06/2019
	Engineering Evaluations	DIT-B-03787-01	Restoration of Component Cooling Water Flow to Unit 1 Reactor Coolant Pump #3 Motor Bearing Cooler	09/10/2019
	Miscellaneous	Clearance Order 2241552	2-IMO-312 Actuator	
	Procedures	1-OHP-4030-116-020E	East Component Cooling Water Loop Surveillance Test	09/13/2019
		1-OHP-4030-132-027CD	CD Diesel Generator Operability Test (Train A), DG1CD Fast Speed Start	57
		2-OHP-4030-208-053A	ECCS Valve Operability Test - Train A	35
	Shipping Records	55518412-11	MTRS, (R2P) U2 Load New Fuel into SFP	
	Work Orders	55359920-10	OPS: 2-IMO-312, Stroke for PMT Operability	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		55518169-01	MTRS, (R2P) U2 Unload New 17x17 Fuel	
		55535360-14	MTM, 2-OME-35N Open NESW PP Strainer and Check for Debris	97/21/2019
		55535386-05	2-OME-35S MTM: 2-OME-35S; Open NESW Strainer and Check for Debris	07/22/2019
		WO Task: 55523374 01	1-FMO-231/Perform “A-Found” Diagnostic	01
71111.20	Miscellaneous		Forced Outage Critical Path	07/22/2019
	Procedures	PMP-2291-OLR-001	Technical Specification 3.0.4.b Risk Assessment Review and Approval Form for Transitioning Modes with an Intermediate Range Nuclear Instrument Inoperable	46
71114.06	Miscellaneous		2019 DC Cook DR1 Drill Manual	07/30/2019
		2019 DC Cook EMPE Manual	DC Cook EMPE Drill	07/16/2019
		DR2 Drill Scenario Manual	Dress Rehearsal 2 (Team 3)	August 13, 2019
		EP-S-19DR2	2019 Dress Rehearsal #2	1
	Procedures	RMT-2080-TSC-001	Activation and Operation of the TSC	27
		RMT-2080-TSC-CHK-001	Site Emergency Director List	1
		RMT-2080-TSC-CHK-009	PET-Operations Checklist	0
71124.08	Calculations	PMP-2030-REC-001	2016 10CFR61 Scaling Factor Report	11/08/2017
		PMP-2030-REC-001	2017 10CFR61 Scaling Factor Report	10/29/2018
	Engineering Evaluations	Technical 3002 8-120A Cask	Cask Handling Procedure for USDOT Spec 7A, Type-A Transportation Cask	05/14/2018
	Self-Assessments	GT-2018-1675	Self Assessment of the Radwaste Program at DC Cook that Covers Radwaste Processing, Handling and Transportation	08/30/2018
	Shipping Records	DCC18-043	Compactible Trash to Energy Solution Bear Creek Facility for Processing	05/10/2018
		DCC18-044	A Box of Contaminated Equipment to Framatome, Inc.	05/16/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		DCC18-059	Mixed Bed Ion Exchange Spent Resin for Processing to Energy Solution Bear Creek, Oak Ridge,TN	07/24/2018
		DCC18-074	Mixed Bed Resin PRC-1M; Class -B Shipment; UN3321; LSA-II; RQ; Contained in a Shipping Cask Model 8-120B; to Energy Solution for processing	11/30/2018
		DCC19-033	UN2910 Excepted Package Limited Quantity of Steel Drum for Part 61 Anlysis	04/15/2019
		DCC19-038	Shipment of 2 Sea-Vans Containing Contaminated Equipment to Westinghouse	04/25/2019
		DCC19-041	Compacted Contaminated Trash to Unitech Services, TN	05/01/2019
		DCC19-053	1 Sea-van on a Flatbed Trailer Containing a Shipment Consigned as UN2913, SCOII Fissile Excepted	06/11/2019
71151	Calculations	PMP-7110-PIP-001	Reactor Oversight Program Performance Indicators and Monthly Operating Report Data for Reactor Coolant Specific Activity; Unit 1 and 2	01/01/2018 - 12/31/2018
71152	Corrective Action Documents	2019-2963	Investigate Reactor Coolant Pump Seal Injection Line Under Suspicious Boric Acid Deposit	03/22/2019
		2019-4341	Failure to Verify Procedure Directed Terminal Points	04/24/2019
		2019-4734	Labeling in Unit 1 Lube Oil Tank Room Junction Box	05/03/2019
		2019-4895	1-MRV-222 Failed Post Maintenance Test Timing	05/06/2019
		2019-5615	1-MRV-222 Failed Surveillance	05/29/2019
		2019-8511	Past Operability Determination Possible Missed	09/05/2019
	Miscellaneous		Outage Control Center Shift Package	09/30/2019
			Indiana Michigan Power 2019 Second Quarter Trend Report	
		AEP-19-005	Donald C. Cook Nuclear Plant Safety Review Board Meeting	03/04/2019
		NOS-19-002	Nuclear Oversight Quarterly Report for October - December 2018	01/21/2019
		NOS-19-006	Nuclear Oversight Quarterly Report for January - March 2019	04/23/2019
		UCR 2215	UFSAR Change Request, Data Sheet 1 of PMP-2350-SAR-001, UFSAR Update Process	0
	Procedures	1-IHP-6040-171-001	Verification of Turbine Support Systems Interlocks	4