



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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LISLE, IL 60532-4352

August 10, 2016

Mr. Joel Gebbie
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Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2—NRC
INTEGRATED INSPECTION REPORT 05000315/2016002; 05000316/2016002

Dear Mr. Gebbie:

On June 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Donald C. Cook Nuclear Power Plant, Units 1 and 2. On July 11, 2016, the NRC inspectors discussed the results of this inspection with Mr. Q.S. Lies, and other members of your staff. The enclosed report represents the results of this inspection.

Based on the results of this inspection, the NRC has identified three issues that were evaluated under the risk significance determination process as having very low safety significance (green). The NRC has also determined that three violations are associated with these issues. Because the licensee initiated condition reports to address these issues, these violations are being treated as Non-Cited Violations (NCVs), consistent with Section 2.3.2 of the Enforcement Policy. These NCVs are described in the subject inspection report. Further, inspectors documented a licensee-identified violation which was determined to be of very low safety significance in this report. The NRC is treating this violation as an NCV consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, 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: (1) the Regional Administrator, Region III; (2) the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and (3) the NRC Resident Inspector at the Donald C. Cook Nuclear Power Plant.

In addition, if you disagree with the cross-cutting aspect assigned to any finding 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 Regional Administrator, Region III, and the NRC Resident Inspector at the Donald C. Cook Nuclear Power Plant.

J. Gebbie

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In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records System (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

Docket Nos. 50-315; 50-316
License Nos. DPR-58; DPR-74

Enclosure:
IR 05000315/2016002; 05000316/2016002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 05000315; 05000316
License Nos: DPR-58; DPR-74

Report No: 05000315/2016002; 05000316/2016002

Licensee: Indiana Michigan Power Company

Facility: Donald C. Cook Nuclear Power Plant, Units 1 and 2

Location: Bridgman, MI

Dates: April 1 through June 30, 2016

Inspectors: J. Ellegood, Senior Resident Inspector
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Division of Reactor Projects

Enclosure

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SUMMARY

Inspection Report (IR) 05000315/2016002; 05000316/2016002, 04/01/2016 – 06/30/2016, Donald C. Cook Nuclear Power Plant, Units 1 & 2; Outage Activities

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three Green findings were identified by the inspectors. These findings involved Non-Cited Violations (NCVs) of the U.S. Nuclear Regulatory Commission (NRC) requirements. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated February 2014.

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance and associated NCV of Technical Specifications (TS) 5.4, "Procedures," was identified by the inspectors. The licensee constructed a scaffold storage rack adjacent to the Unit 1 Component Cooling Water (CCW) Surge Tank without a seismic evaluation. Specifically, contrary to 12-MHP-5021-SCF-00, "Scaffolding Procedure," the seismic adequacy of the rack was not evaluated prior to construction. The rack was built several weeks before the Unit 1 Spring 2016 refueling outage (RFO) and was assessed by inspectors during the outage as part of walkdown of the area. The licensee removed the scaffold storage rack and entered the issue into their Corrective Action Program (CAP).

The issue was greater than minor because it adversely affected the Protection Against External Factors attribute of the Mitigating Systems cornerstone, whose objective is to ensure the capability, reliability, and availability of systems that respond to initiating events to prevent undesirable effects such as core damage. Further, the inspectors determined examples 3.j and 3.k of IMC 0612 Appendix E, "Examples of Minor Issues," applied as there was reasonable doubt concerning the operability of the CCW system with the as-found condition of the scaffold. The finding screened as Green, or very low safety significance, utilizing IMC 0609, "Significance Determination Process." Specifically, a seismic evaluation later demonstrated that safety functions were maintained. The inspectors determined the finding had a cross cutting aspect of Work Management (H.5.). Specifically, the work management process for scaffold construction was not implemented with nuclear safety as an overriding priority. The process did not identify and manage risks associated with work in the field nor did it ensure coordination between different work groups and activities. (Section 1R20.1(1))

Cornerstone: Barrier Integrity

- Green. The inspectors identified a finding of very low safety significance with an associated NCV of TS 5.4, "Procedures," for the failure to implement all of the requirements of PMP-4100-SDR-001, "Plant Shutdown Safety and Risk Management," pertaining to the closure of containment airlocks in the event shutdown cooling is lost. Contrary to TS 5.4, the licensee failed to implement the procedure as demonstrated by

lack of closure requirement knowledge by containment closure attendants, failure to include isolation valves on ice lines, missing a shiftly check, and lack of required anti-contamination clothing. The licensee corrected the issues and entered them into the CAP.

The issue was greater than minor because it adversely affected the Human Performance attribute of the Barrier Integrity cornerstone, whose objective is to provide assurance that principal design barriers (e.g., containment) can protect the public from radionuclide releases. Additionally, the inspectors were informed by IMC 0612, "Power Reactor Inspection Reports," dated May 6, 2016, because the issue was programmatic in nature and could lead to more significant issues if left uncorrected. The finding screened as Green per IMC 0609 Appendix H, "Containment Integrity Significance Determination Process," because the inspectors determined despite the issues identified, containment closure could be achieved within the time-to-boil. The inspectors determined the finding had an associated cross-cutting aspect of H.1, "Resources," because leaders did not ensure personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety. (Section 1R20.1(2))

- Green. The inspectors identified a finding of very low safety significance (Green) and associated NCV of TS 5.4.1, "Procedures," for the licensee failing to maintain procedure 1-OHP-4021-002-001, reactor coolant system (RCS) fill and vent. When the licensee updated the procedure to Revision 42 they inadvertently omitted a step to shut valve 1-RC-144-L3, RCS half-loop gauge glass isolation valve. Closing this valve establishes two valve isolation between American Society of Mechanical Engineers (ASME) code class 1 piping and non-code class piping. The licensee closed the valve and updated the affected procedure in response to the inspector's inquiries.

The inspectors determined the issue was more than minor in accordance with IMC 0612 because, if left uncorrected the issue would have become more significant concern. Specifically, the licensee would have entered a higher operating mode without establishing the reactor coolant pressure boundary. The issue was not greater than green because actions taken by the licensee established the boundary prior to mode ascension. Therefore, the inspectors concluded the finding was of very low safety significance. The inspectors determined the issue included a cross cutting aspect of H.3, configuration management in the human performance area. For this issue, the licensee failed to update all applicable procedures following a change in methodology for filling coolant loops. (Section 1R20.1(3))

Other Findings

- Violations of very low safety or security significance or Severity Level IV that were identified by the licensee have been reviewed by the NRC. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. These violations and CAP tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the quarter in a refueling outage. On April 27, 2016, the licensee entered Mode 1, reaching 100 percent on May 2. Unit 1 remained at or near 100 percent for the rest of the inspection period.

Unit 2 began the operating cycle at or near 100 percent and remained there for the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness of Offsite and Alternate AC Power Systems

a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternate alternating current (AC) power systems during adverse weather were appropriate. The inspectors reviewed the licensee's procedures affecting these areas and the communications protocols between the transmission system operator (TSO) and the plant to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. Examples of aspects considered in the inspectors' review included:

- coordination between the TSO and the plant during off-normal or emergency events; and
- estimates of when the offsite power system would be returned to a normal state.

The inspectors also reviewed the material condition of the onsite transmission system including the switchyard. Specifically, the inspectors addressed the following:

- physical condition of major breakers and transformers via walk down;
- status of transformer cooling fans; and
- presence of material that could threaten switchgear.

Documents reviewed are listed in the Attachment to this report. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures.

This inspection constituted one readiness of offsite and alternate AC power systems sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Condition—Rough Lake Conditions

a. Inspection Scope

On May 5 and 6, 2016, rough lake conditions were predicted in the vicinity of the plant. During that time, operators observed some debris accumulating (some grass and a large log) on the north end of the screenhouse trash racks. Operators also noted a differential-level developing across the north end of the trash racks, indicative of debris accumulation. The inspectors monitored licensee activities associated with rough lake conditions and impacts on the screenhouse. The inspectors evaluated the licensee staff's preparations against the site's procedures and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also reviewed a sample of CAP items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one readiness for impending adverse weather condition sample as defined in IP 71111.01–05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- east Unit 2 residual heat removal (RHR) during west RHR work;
- Unit 1 north train battery and 'B' charger during 'A' charger work; and
- north Unit 2 safety injection pump during south safety injection pump work.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report (UFSAR), TS requirements, outstanding work orders (WOs), condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted three partial system walkdown samples as defined in IP 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Unit 1 upper containment, Fire Zone 68;
- Unit 1 essential service water (ESW) pump area, Fire Zone 29;
- Unit 1 4kV switchgear rooms, Fire Zone 40;
- Unit 1 AB emergency diesel generator (EDG) room, Fire Zone 15;
- Unit 1 CD EDG room, Fire Zone 16; and
- Unit 1 auxiliary feedwater (AFW) pump area, Fire Zone 17.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted six quarterly fire protection inspection samples as defined in IP 71111.05–05.

b. Findings

No findings were identified.

1R07 Annual Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors reviewed the licensee's inspection of the Unit 1 east CCW heat exchanger to verify that the licensee's program for monitoring tube condition validated the heat exchangers could remove assumed heat loads in the as-found condition. As part of the inspection, the inspectors observed portions of the as-found condition of the heat exchanger, reviewed photos of other portions of the as-found condition, and reviewed tube-testing results. The inspectors also reviewed deficiencies identified by the licensee during inspection activities. Documents reviewed for this inspection are listed in the Attachment to this document.

This annual heat sink performance inspection constituted one sample as defined in IP 71111.07-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Regualification (71111.11Q)

a. Inspection Scope

On May 25, 2016, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator regualification training. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator regualification program simulator sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation During Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On May 24, 2016, the inspectors observed initial performance of a solid state protection system surveillance. This was an activity that required heightened awareness and increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- correct use and implementation of procedures;
- control board (or equipment) manipulations; and
- oversight and direction from supervisors.

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant systems:

- AFW; and
- leakage into Unit 1 accumulator #3.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with Title 10 of the *Code of Federal Regulations* (CFR) 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and

- verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two quarterly maintenance effectiveness samples as defined in IP 71111.12–05.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- recovery of feedwater heater from cribbing failure;
- orange risk associated with bus 11C outage;
- emergent Unit 1, pressurizer level channel 2 failure;
- Unit 1 pressurizer doghouse potential steam leak, weeks of May 31 and June 6, 2016; and
- debris beginning to accumulate on Unit 1 north end of trash racks.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

Documents reviewed during this inspection are listed in the Attachment to this report. These maintenance risk assessments and emergent work control activities constituted five samples as defined in IP 71111.13–05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- extent of condition of other safety injection pumps following lube oil relief valve failure on Unit 1 south safety injection pump;
- unexpected re-opening of feeder breakers to Unit 1 4kV busses while restoring backfeed;
- gaps between missile blocks in Unit 1 containment; and
- Unit 2 CD field flash past operability determination evaluation.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted four samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modification(s):

- 1-TM-16-19-R0, removal of 1-HV-CUV-3 north ESW supply piping at containment penetration 1-CPN-85; and
- EC 000054948, alternate replacement of horizontal analog meter with a vertical analog meter on panel 1-FLX.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected system(s). The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability;

and that operation of the modifications did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one temporary modification sample and one permanent plant modification sample as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following post-maintenance (PM) activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Unit 1 AB EDG refueling outage (RFO) PM tests;
- Unit 1 CD EDG RFO PM tests;
- Unit 1 AFW flow control valve replacements;
- Unit 2 RHR Pump maintenance window;
- Unit 2 south safety injection pump following maintenance; and
- turbine driven AFW Unit 1 RFO work and restoration.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with PM tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted six PM testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The Unit 1 RFO commenced in the first quarter of 2016, and concluded on April 28, 2016. During the RFO, the inspectors monitored licensee controls over the outage activities listed below:

- licensee configuration management, including maintenance of defense-in-depth commensurate with the outage safety plan for key safety functions and compliance with the applicable TS when taking equipment out of service;
- implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing;
- installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- controls over the status and configuration of electrical systems to ensure that TS and outage safety plan requirements were met, and controls over switchyard activities;
- monitoring of decay heat removal processes, systems, and components;
- controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system;
- reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- controls over activities that could affect reactivity;
- licensee fatigue management, as required by 10 CFR 26, Subpart I;
- refueling activities, including fuel handling evolutions in containment and in the spent fuel pit;
- startup and ascension to full power operation, tracking of startup prerequisites, walkdown of containment to verify that debris had not been left which could block emergency core cooling system suction strainers, and reactor physics testing; and
- licensee identification and resolution of problems related to RFO activities.

Documents reviewed are listed in the Attachment to this report.

This inspection, coupled with activities documented in report 05000315/2016001; 05000316/2016001 constituted one RFO sample as defined in IP 71111.20-05.

b. Findings

- (1) Introduction. The inspectors identified a finding of very low safety significance (Green) with an associated NCV of TS 5.4, "Procedures," for the construction of a scaffold storage rack near the Unit 1 CCW Surge Tank without a seismic evaluation.

Description. While performing a walkdown during the Unit 1 RFO on the 650' elevation of the auxiliary building, the inspectors identified a scaffold storage rack built in adjacent to the Unit 1 CCW Surge Tank and its associated outlet isolation valves. At the time, Unit 1 was shut down and the CCW system was being used to support decay heat

removal. The rack extended several feet in all directions and was loaded with an assortment of scaffold building materials. There were no tags on the rack identifying any restrictions on loading or if it had been seismically analyzed. Per scaffolding procedure 12-MHP-5021-SCF-001, scaffold shall be seismically qualified when constructed adjacent to safety-related equipment, such as the CCW surge tank and its associated piping. The inspectors raised the concerns with licensee staff. Site engineering personnel reviewed the scaffolding and determined it did not appear to be seismically adequate. Site personnel also confirmed a seismic evaluation had not been done. The licensee dismantled the scaffold and removed the material from the area. Further investigation by the licensee concluded the scaffold had been built a few weeks before the outage while Unit 1 was online. Therefore, the licensee performed a past operability evaluation to determine if safety functions were maintained when CCW was required to be operable. The evaluation consisted of an engineering analysis that demonstrated there would not have been a threat to safety-related equipment during a seismic event. Upon review, the licensee identified a shortfall in the scaffold construction process, in that procedural direction to obtain engineering reviews for non-personnel scaffold (e.g. storage racks) did not exist.

Analysis. The failure to evaluate scaffold near safety-related equipment in accordance with procedure 12-MHP-5021-SCF-00, "Scaffolding Procedure," was a performance deficiency. The issue was greater than minor because it adversely affected the Protection Against External Factors attribute of the Mitigating Systems cornerstone, whose objective is to ensure the capability, reliability, and availability of systems that respond to initiating events to prevent undesirable effects such as core damage. Further, the inspectors determined examples 3.j and 3.k of IMC 0612 Appendix E, "Examples of Minor Issues," dated August 11, 2009, applied as there was reasonable doubt concerning the operability of the CCW system with the as-found condition of the scaffold. The finding screened as Green, or very low safety significance, utilizing IMC 0609, "Significance Determination Process," dated April 29, 2015, Appendices "A" (for at-power findings), and "G" (shutdown findings) since the condition existed during online and shutdown conditions. In both cases, since an evaluation demonstrated safety functions were maintained, the finding screened as green per the questions in the Mitigating Systems exhibits. The inspectors determined the finding had a cross cutting aspect of Work Management (H.5.). Specifically, the work management process for scaffold construction was not implemented with nuclear safety as an overriding priority, in that the process did not appropriately identify and manage risks associated with work in the field and there was a lack of coordination between different work groups and activities.

Enforcement. TS 5.4, "Procedures," requires, in part, that the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, be established, implemented, and maintained. Section 9 states that maintenance that can affect the performance of safety-related equipment shall be preplanned and performed in accordance with written procedures appropriate to the circumstances. Licensee procedure 12-MHP-5021-SCF-00 requires scaffold built adjacent to safety related equipment be seismically qualified. Contrary to this requirement, between February 8 and March 31, 2016, the licensee failed to implement this procedure as demonstrated by the scaffold adjacent to safety-related equipment without a seismic evaluation. The licensee removed the scaffold and entered the issue into their CAP as Action Request (AR)-2016-3683. This violation is being treated as an NCV, consistent with Section

2.3.2.a. of the Enforcement Policy. **(NCV 05000315/2016002-01, Unanalyzed Scaffold Near Safety-Related Equipment)**

- (2) Introduction. The inspectors identified a finding of very low safety significance (Green) with an associated NCV of TS 5.4, "Procedures," for a failure to implement certain aspects of the containment closure requirements described in PMP-4100-SDR-001, "Plant Shutdown Safety and Risk Management," during the Unit 1 Spring RFO.

Description. The inspectors conducted a walkdown of the Auxiliary Building 650' elevation Unit 1 containment airlock while it was open to support the RFO. At the time, the time-to-boil for the RCS was approximately 30 minutes. Per PMP-4100-SDR-001, personnel were required to be stationed in the vicinity of the open airlocks so they could close at least one of the airlock doors within the time-to-boil in the event core cooling was lost. The inspectors discussed containment closure requirements with an individual stationed to perform that duty and observed the items going through the airlock (various lines and a walking platform) that would have to be removed in the event closure was required. While the individual knew that the lines would have to be removed, they were unable to clearly articulate specifically how or in what particular order they would remove the lines. For instance, two lines had ice for the ice condenser flowing through them. The individual was unsure whether or how the flow would be secured prior to removing the lines. The person on duty is also supposed to be able to remove all of the material themselves prior to the time-to-boil. Another individual interviewed indicated they did not feel comfortable moving the walking platform by themselves and stated they would seek help first. The inspectors also questioned the configuration of the ice hoses as to whether they met procedural requirements regarding the ability to isolate the flow prior to disconnecting. The concerns were brought up to operations staff, who through their own interviews later that day confirmed some of the inspectors' concerns about the abilities of some of the closure attendants. Several days later, licensee performance assurance personnel discovered the ice hoses were not in compliance with the procedure in that they lacked the required isolation valves. Additionally, over the next several days site performance assurance personnel continued to find issues such as a missed shiftly check for materials in the airlock and the incorrect anti-contamination clothing stationed at the airlock for the attendants to use. Through further walkdowns and interviews with operations staff, despite the items identified above, the inspectors concluded the station would have been able to secure at least one airlock within the lowest time-to-boil experienced during the RFO.

Analysis. The failure to implement certain requirements of PMP-4100-SDR-001 was a performance deficiency. The issue was greater than minor because it adversely affected the Human Performance attribute of the Barrier Integrity cornerstone, whose objective is to provide assurance that principal design barriers (e.g., containment) can protect the public from radionuclide releases. Additionally, the inspectors were informed by IMC 0612, "Power Reactor Inspection Reports," dated May 6, 2016, because the issue was programmatic in nature and could lead to more significant issues if left uncorrected. The finding screened as Green, or very low safety significance, because the inspectors assessed the containment closure could be achieved within the time-to-boil. Specifically, the inspectors utilized IMC 0609 Appendix G, "Shutdown Operations Significance Determination Process," dated May 9, 2014, Exhibit 4 for the Barrier Integrity cornerstone. Since the finding affected the ability to close containment, Appendix G directed the use of IMC 0609 Appendix H, "Containment Integrity Significance Determination Process," dated May 6, 2004. In Appendix H, the finding

screened to Green based on Section 6.2, Step 2.2, since it was a Type 'B' finding and containment closure could be achieved. The inspectors' assessment was reviewed with a regional Senior Risk Analyst who concurred with the result. The inspectors determined the finding had an associated cross-cutting aspect of H.1, "Resources," because leaders did not ensure personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety.

Enforcement. TS 5.4, "Procedures," requires, in part, that the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, be established, implemented, and maintained. Regulatory Guide 1.33 discusses procedures for maintaining containment integrity. Procedure PMP-4100-SDR-001, "Plant Shutdown Safety and Risk Management," implements airlock closure requirements to establish containment integrity. Although required to implement t PMP-4200-SDR-001, at various times between March 28 and April 1, 2016, several compliance issues were identified including lack of knowledge of the specific closure actions, a missed shiftly check, missing anti-contamination clothing, and a lack of isolation valves on the ice lines. The licensee corrected the issues and initiated AR-2016-3631 to address the programmatic aspects. This violation is being treated as an NCV, consistent with Section 2.3.2.a. of the Enforcement Policy. **(NCV 05000315/2016002-02, Containment Closure Requirements During Unit 1 2016 Refueling Outage)**

- (3) Introduction. The inspectors identified a finding of very low safety significance (Green) and associated NCV of TS 5.4.1, "Procedures," for the licensee failing to maintain procedure 1-OHP-4021-002-001, RCS fill and vent. When the licensee updated the procedure to Revision 42 they inadvertently omitted a step to shut valve 1-RC-144-L3, RCS half-loop gauge glass isolation valve. Closing this valve establishes two valve isolation between ASME code class 1 piping and non-code class piping.

Description. During a walk down of Unit 1 containment, the inspectors noted a valve in the RCS that appeared to be open. The inspectors informed the on shift staff of the potentially open valve and operations staff determined the valve was open. The licensee assessed valve position, determined that in the current mode the valve should be closed and closed the valve in accordance with their procedures. The licensee informed the inspectors that the valve had been opened to place the RCS site glass in service and stated that this valve was not included in system restoration alignments. The inspectors reviewed the procedure in question and validated the licensee statements. The licensee informed the inspectors that after the previous refueling outage the licensee transitioned from RCS fill and vent using vacuum fill to RCS fill and vent with loop sweeps using reactor coolant pumps. As part of this transition, the licensee developed Revision 42 to the RCS fill and vent procedure, 1-OHP-4021-002-001. The licensee omitted instruction to close 1-RC-144-L3 prior to mode ascension.

Valve 1-RC-144-L3 forms part of the reactor coolant pressure boundary as defined by 10 CFR 50.2. It is the second of two valves that isolate the RCS from the half-loop gauge glass, which is vented to containment atmosphere during at power operations. Since an instruction to close 1-RC-144-L3 was not in place when the inspectors discovered the valve was open, the inspectors concluded that 1-RC-144-L3 would not have been shut prior to mode ascension. Neither the licensee nor the inspectors could

locate a procedural instruction that would have closed the valve. In the as found configuration only one valve would isolate the RCS from containment atmosphere.

In several discussions, licensee staff opined that valve line ups conducted prior to mode ascension would have identified the valve needed to be closed and closed the valve. However, the licensee did not attempt to validate that information until the inspectors prompted the licensee. The licensee confirmed that no valve line up existed to ensure that the valve would be closed prior to mode ascension. In addition, the licensee improperly classified the AR on this issue as a condition not adverse to quality.

Analysis. The failure to maintain written procedures for filling and venting the RCS was a performance deficiency. Specifically, the licensee inadvertently omitted direction to shut 1-RC-144-L3 in Revision 42 of 1-OHP-4021-002-001. The valve establishes two valve isolation between the RCS and non-code class piping. The inspectors screened the performance deficiency using IMC 0612, "Inspection Reports", Appendix B, and determined the performance deficiency was more than minor, and thus a finding, because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, the integrity of the RCS pressure boundary would have been degraded if the plant had been returned to power in this condition due to one of the two valves required to be shut being open. The inspectors applied IMC 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions," to this finding. For Loss of Coolant Accident (LOCA) Initiators, the inspectors answered 'No' to the questions, "After a reasonable assessment of degradation, could the finding result in exceeding the RCS leak rate for a small LOCA?" and 'No' to the question, "After a reasonable assessment of the degradation, could the finding likely affected other systems used to mitigate a LOCA resulting in a loss of their function (e.g., Interfacing system LOCA)?" and determined the finding to be of very low safety significance (Green). The inspectors determined the issue included a cross cutting aspect of H.3, configuration management in the human performance area. For this issue, the licensee failed to update all applicable procedures following a change in methodology for filling coolant loops.

Enforcement. TS Section 5.4.1 states, in part, that "written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978." NRC Regulatory Guide 1.33, Appendix A, Section 3 addresses Procedures for Startup, Operation, and Shutdown of Safety-Related Pressurize Water Reactor Systems, Section 3.a states, in part, Instructions for energizing, filling, venting, draining, startup, shutdown, and changing modes of operation should be prepared, as appropriate, for the RCS.

Contrary to the above, between April 7 and April 21, 2016, the licensee failed to maintain a written procedure covering instructions for filling and venting for the RCS. Specifically, the licensee revised 1-OHP-4021-002-001 such that they omitted direction to shut 1-RC-144-L3 to establish two valve isolation between the RCS and containment atmosphere.

This violation is being treated as an NCV, consistent with Section 2.3.2.a. of the Enforcement Policy. The violation was entered into the licensee's CAP as CR 2016-4985. Procedure 1-OHP-4021-002-001 has been revised to shut 1-RC-144-L3. **(NCV 05000315/2016002-03, Procedure Failed to Establish Two Valve Isolation Between the Reactor Coolant System and Containment Atmosphere)**

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- Unit 1, Train B loss of power/LOCA circuit testing (routine);
- Unit 1, lower ice condenser channel operational test (ice condenser); and
- Unit 1, automatic operation of AFW pumps (routine).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;

- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted two routine surveillance testing samples, and one ice condenser sample as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

.1 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors assessed whether changes to the station’s radiological profile due to operating protocols, primary chemistry changes, and plant modifications were adequately addressed in the licensee’s Radiation Protection Survey Program. The inspectors conducted walk-downs of various locations and reviewed surveys to evaluate radiological conditions.

These inspection activities constituted one sample as defined in IP 71124.01–05

b. Findings

No findings were identified.

.2 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors assessed whether workers were adequately informed of radiological hazards present through radiation work permits, alarming dosimeter set points, area postings, and labelling of containers.

These inspection activities constituted one sample as defined in IP 71124.01–05

b. Findings

No findings were identified.

.3 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors determined whether workers and materials were adequately assessed for radioactive contamination before leaving the radiologically controlled area(s). Additionally, the inspectors assessed whether sealed sources were adequately identified, stored, and did not leak.

These inspection activities constituted one sample as defined in IP 71124.01–05

b. Findings

No findings were identified.

.4 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors observed work in progress and reviewed processes to ensure adequate implementation of:

- Radiological controls;
- Radiation protection job coverage;
- Dosimeter selection and placement;
- Airborne radioactive materials monitoring and controls; and
- Controls for highly activated materials stored in the spent fuel pool.

These inspection activities constituted one sample as defined in IP 71124.01–05

b. Findings

No findings were identified.

.5 Radiation Worker Performance and Radiation Protection Technician Proficiency (02.07)

a. Inspection Scope

The inspectors observed radiation workers and radiation protection technicians to assess whether they were aware the radiological conditions in their workplace and whether their performance reflected the radiological hazards that were present.

These inspection activities constituted one sample as defined in IP 71124.01–05

b. Findings

No findings were identified.

2RS2 Occupational As-Low-As-Reasonably-Achievable Planning And Controls (71124.02)

.1 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors evaluated whether radiological work planning as-low-as-reasonably-achievable (ALARA) evaluations properly identified appropriate dose reduction techniques and that these techniques were integrated into work procedure and/or radiation work permits.

The inspectors assessed whether the results achieved were aligned with the intended work activities. The inspectors also evaluated whether lessons learned from post-job reviews were identified and recorded.

These inspection activities constituted one sample as defined in IP 71124.02–05

b. Findings

No findings were identified.

.2 Verification of Dose Estimates and Exposure Tracking Systems (02.03)

a. Inspection Scope

The inspectors reviewed the effectiveness of source term reductions activities and the methodologies for estimating collective exposures. The inspectors reviewed various ALARA work planning documents to evaluate the assumptions and bases for the collective radiation exposure estimates. The inspectors assessed whether the methods for adjusting or re-planning work for changes in work scope were based upon sound radiation protection and ALARA principles

These inspection activities constituted one sample as defined in IP 71124.02–05

b. Findings

No findings were identified.

.3 Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas to assess the ALARA philosophy as applied and whether the skill level displayed was sufficient with respect to the radiological hazards that were present. The inspectors interviewed individuals to assess their knowledge and awareness of planned and/or implemented radiological and ALARA work controls.

These inspection activities constituted one sample as defined in IP 71124.02–05

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (71124.07)

.1 Site Inspection (02.02)

a. Inspection Scope

The inspectors walked down select air sampling stations and dosimeter monitoring stations to determine whether they were located as described in the Offsite Dose Calculation Manual (ODCM) and to determine the equipment material condition.

The inspectors reviewed calibration and maintenance records for select air samplers, dosimeters, and composite water samplers to evaluate whether they demonstrated adequate operability of these components.

The inspectors assessed whether the licensee had initiated sampling of other appropriate media upon loss of a required sampling station.

The inspectors observed the collection and preparation of environmental samples from select environmental media to determine if environmental sampling was representative of the release pathways specified in the ODCM and if sampling techniques were in accordance with procedures.

The inspectors assessed whether the meteorological instruments were operable, calibrated, and maintained in accordance with guidance contained in the Final Safety Analysis Report, NRC Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants," and licensee procedures. The inspectors assessed whether the meteorological data readout and recording instruments were operable.

The inspectors evaluated whether missed and/or anomalous environmental samples were identified and reported in the Annual Environmental Monitoring Report. The inspectors selected events that involved a missed sample, inoperable sampler, lost dosimeter, or anomalous measurement to determine if the licensee had identified the cause and had implemented corrective actions. The inspectors reviewed the licensee's assessment of any positive sample results and reviewed any associated radioactive effluent release data that was the source of the released material.

The inspectors selected structures, systems, or components that involve or could reasonably involve a credible mechanism for licensed material to reach ground water, and assessed whether the licensee had implemented a sampling and monitoring program sufficient to detect leakage to groundwater.

The inspectors evaluated whether records important to decommissioning, as required by 10 CFR 50.75(g), were retained in a retrievable manner.

The inspectors reviewed any significant changes made by the licensee to the ODCM as the result of changes to the land census, long-term meteorological conditions, or modifications to the sampler stations since the last inspection. The inspectors reviewed technical justifications for any changed sampling locations to evaluate whether the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

The inspectors assessed whether the appropriate detection sensitivities with respect to the ODCM were used for counting samples. The inspectors reviewed the Quality Control Program for analytical analysis.

The inspectors reviewed the results of the licensee's Interlaboratory Comparison Program to evaluate the adequacy of environmental sample analyses performed by the licensee. The inspectors assessed whether the interlaboratory comparison test included the media/nuclide mix appropriate for the facility. The inspectors reviewed the licensee's determination of any bias to the data and the overall effect on the Radiological Environmental Monitoring Program (REMP).

These inspection activities constituted one sample as defined in IP 71124.07-05.

b. Findings

No findings were identified.

.2 Groundwater Protection Initiative Implementation (02.03)

a. Inspection Scope

The inspectors reviewed monitoring results of the groundwater protection initiative to evaluate whether the licensee had implemented the program as intended and to assess whether the licensee had identified and addressed anomalous results and missed samples.

The inspectors evaluated the licensee's implementation of the minimization of contamination and survey aspects of the groundwater protection initiative and the Decommissioning Planning Rule requirements in 10 CFR 20.1406 and 10 CFR 20.1501.

The inspectors reviewed leak and spill events and 10 CFR 50.75 (g) records and assessed whether the source of the leak or spill was identified and appropriately mitigated.

The inspectors assessed whether unmonitored leaks and spills were evaluated to determine the type and amount of radioactive material that was discharged. The inspectors assessed whether the licensee completed offsite notifications in accordance with procedure.

The inspectors reviewed evaluations of discharges from onsite contaminated surface water bodies and the potential for groundwater leakage from them. The inspectors assessed whether the licensee properly accounted for these discharges as part of the Effluent Release Reports.

The inspectors assessed whether on-site groundwater sample results and descriptions of any significant on-site leaks or spills into groundwater were documented in the Annual Radiological Environmental Operating Report or the Annual Radiological Effluent Release Report.

The inspectors determine if significant new effluent discharge points were updated in the ODCM and the assumptions for dose calculations were updated as needed.

These inspection activities constituted one sample as defined in IP 71124.07–05.

b. Findings

No findings were identified.

.3 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors assessed whether problems associated with the REMP were being identified by the licensee at an appropriate threshold and were properly addressed for resolution. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involved the REMP.

These inspection activities constituted one sample as defined in IP 71124.07–05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security

40A1 Performance Indicator Verification (71151)

.1 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS specific activity Performance Indicator for Donald C. Cook Nuclear Power Plant, Units 1 and 2, for the period from the first quarter 2015 through the fourth quarter 2015. The inspectors used Performance Indicator (PI) definitions and guidance contained in the Nuclear Energy Institute Document 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee’s RCS chemistry samples, technical specification requirements, issue reports, event reports and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee’s issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. In addition to record

reviews, the inspectors observed a chemistry technician obtain and analyze a RCS sample. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two RCS specific activity samples as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily condition report packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of October 2015 through March 2016, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the normal CAP in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

As part of the daily CAP screening efforts, the inspectors identified several examples of inadequate documentation of conditions adverse to quality in the CAP. While ARs were written for each of the issues identified, review of the documents revealed a lack of detail regarding the full scope of the condition and what the resolution was to the issue. In one example, the NRC questioned the position of a RCS pressure boundary valve in containment that was ultimately determined to be out of position (discussed in Section 1R20 of this report). The licensee documented the issue as a condition NOT adverse to quality and only mentioned that a procedure needed to be revised. The licensee had also performed an extent of condition because the valve had been omitted from a procedure where there were several more valves that also could have been affected by a recent revision. However, this was not documented in the AR. Further, the licensee explained to inspectors that other lineups could have caught the valve without a thorough review of the actual procedures. The inspectors did not locate any procedure that would ensure the valve in question was closed. The licensee subsequently confirmed that no procedure ensured closure of the valve.

Several other examples revolved around a failure to thoroughly document the resolution of issues. One example included a failed surveillance on a turbine-driven AFW pump that was thought to be caused by a faulty instrument. While this ended up being the case, it was not documented in the AR. The resolution to failed cable testing for a reactor coolant pump was also not documented. For the scaffold finding discussed in Section 1R20 of this report, the licensee identified a procedure change that was necessary but no description of the programmatic issue that existed nor how the conclusion was arrived at. A failure to thoroughly document issues could confound efforts to identify trends in the CAP which could lead to more significant issues.

The inspectors also identified a potential weakness in the process used to justify the use of non-safety-related parts in safety-related applications. When non-safety-related parts are used, an engineering review known as a Safety Classification Determination (SCD) is required to show that the parts will not affect any safety-related functions of the components. The inspectors reviewed several AR's where the SCD supporting the use of non-safety-related parts was either missing or inadequate. While the licensee did identify the issues (in many cases via the Performance Assurance department), the inspectors were concerned whether or not a trend had been identified by the licensee which could lead to a more programmatic review of the SCD process. In the examples reviewed by the inspectors, there were no instances of inoperable equipment once the proper evaluations were done. In some cases, the proper documentation was established before equipment was returned to service. Some examples included an out-of-date SCD for ESW strainer backwash valves that had not incorporated a change in safety function that had occurred, an SCD that was incorrect for Post-Accident Containment Hydrogen Monitoring System valves from approximately 2002–2010, lack of an SCD for drain valve gaskets on the replacement Containment Spray Heat Exchangers, and lack of an SCD for replacement Fuel Transfer Tube Flange gaskets. As a result of the inspectors' observations, the licensee initiated an AR to explore the potential for a trend in the SCD process and whether or not trend codes being utilized in the CAP for these types of issues were appropriate.

This review constituted one semi-annual trend inspection sample as defined in IP 71152–05.

b. Findings

No findings were identified.

.4 Follow-Up Sample for In-Depth Review: Review of Enforcement Discretion Non-Cited Violations Identified During the 2013 Cyber-Security Inspection 2013407 and Associated Corrective Action Documents

a. Inspection Scope

During the week of June 13, 2016, an inspector completed a problem identification and resolution inspection of the findings and/or violations given enforcement discretion in Inspection Report 2015403, "Inspection of Implementation of Interim Cyber Security Milestones 1–7," dated August 17, 2015, (ML15230A248). Because the results of this inspection include information that is withheld from public disclosure, additional information is included in IR 05000315/2016407; 05000316/2016407.

The inspection constituted one annual sample of the problem identification and resolution inspection as defined by IP 71152, "Problem Identification and Resolution."

b. Findings

One inspection finding is discussed in IR 05000315/2016407; 05000316/2016407.

40A6 Management Meetings

.1 Exit Meeting Summary

On July 11, 2016, the inspectors presented the inspection results to Mr. Q.S. Lies, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The inspection results for the areas of radiological hazard assessment and exposure controls; and occupational ALARA planning and controls with Mr. J. Gebbie, Chief Nuclear Officer, on April 1, 2015; and
- The inspection results for the areas of radiological environmental monitoring; and RCS specific activity performance indicator verification with Mr. Q.S. Lies, Site Vice President, on June 24, 2016.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

40A7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- The licensee identified an NCV of TS 5.4.1, procedures, for failing to establish a procedure for testing of containment equalization fans. Specifically, contrary to the requirements of TS 5.4.1 to establish procedures identified in regulatory guide 1.33, the licensee did not establish a procedure for surveillance testing of a section of the circuitry for the containment equalization fan. On May 15, 2016, while performing a walkdown for a planned project on the solid state protection system, the licensee identified that a portion of the circuit was not verified to ensure the integrity of the circuit path to actuate a containment isolation fan. After discovery, the licensee performed a test to verify circuit integrity for containment equalization fans on both units. The condition of an inadequate surveillance existed for many years. Since all fans passed the surveillance test, the licensee confirmed the failure to test had not masked an inoperable condition. The issue was more than minor because it impacted the mitigating system cornerstone objective of ensuring the reliability of systems that respond to plan events. Because the licensee demonstrated that the circuit was operable, the inspectors concluded it was not inoperable longer than permitted by technical specifications and determined that issue was of very low safety significance. The licensee entered this condition into the corrective action program as AR 2016-6136.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

K. Ferneau, Operations Manager
A. Garrett, Plant Engineering
J. Gebbie, Chief Nuclear Officer
S. Lies, Site Vice President
E. Merchant, Environmental ODCM Specialist
K. Richter, Environmental Supervisor, REMP Manager
J. Ross, Plant Manager
M. Scarpello, NRA Manager
S. Schneider, Senior License Holder
D. Wood, Radiation Protection Manager

U.S. Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2
N. Shah, Project Engineer
L. Kozak, Senior Risk Analyst
A. Dietrich, Project Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000315/2016002-01	NCV	Unanalyzed Scaffold Near Safety-Related Equipment (1R20)
05000315/2016002-02	NCV	Containment Closure Requirements during Unit 1 2016 Refueling Outage (1R20)
05000315/2016002-03	NCV	Procedure Failed to Establish Two Valve Isolation Between the Reactor Coolants System And Containment Atmosphere (1R20)

Closed

05000315/2016002-01	NCV	Unanalyzed Scaffold Near Safety-Related Equipment (1R20)
05000315/2016002-02	NCV	Containment Closure Requirements during Unit 1 2016 Refueling Outage (1R20)
05000315/2016002-03	NCV	Procedure Failed to Establish Two Valve Isolation Between the Reactor Coolants System And Containment Atmosphere (1R20)

Discussed

05000315/2016407; 05000316/2016407	N/A	Cyber-Security Inspection Report (4OA2)
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LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector reviewed the documents in their entirety, but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R01 Adverse Weather Protection

- 12-OHP-4022-057-001, Screen House Forebay Degraded Condition, Revision 9
- AR 2016-0911, Failed Breaker in Transformer 5 Cooling Control Circuit. January 25, 2016
- AR-2016-5676, Elevated D/P on Unit 1 North Trash Rack, May 5, 2016
- Unit 1 Operating Logs, May 4 - May 6, 2016

1R04 Equipment Alignment

- 1-OHP-4021-082-015, Operation of the N Train Battery System, Revision 12
- 2-OHP-4021-001-001, Plant Heatup from Cold Shutdown to Hot Standby, Revision 85
- 2-OHP-4021-008-002, Placing Emergency Core Cooling System in Standby Readiness, Revision 29
- 2-OHP-4021-008-002, Placing Emergency Core Cooling System in Standby Readiness, Revision 29
- 2-OHP-4021-009-001, Placing the Containment Spray System in Standby Readiness, Revision 26
- OP-1-12003-34, One Line Diagram Engineered Safety System, Revision 34
- OP-2-5142-52, Flow Diagram, Emergency Core Colling (SIS), September 15, 2014
- OP-2-5143-74, Emergency Core Cooling (RHR) Unit 2, March 11, 2016
- OP-2-5143-74, Flow Diagram, Emergency Core Cooling (RHR) Unit Number 2, March 11, 2016

1R05 Fire Protection

- AR 2016-4069, Fire Extinguishers not Inside Upper Containment, April 5, 2016
- AR 2016-4069, Tri-Nuk Energized and Power Connection Caught on Fire, March 28, 2016
- Fire Hazards Analysis, Revision 16
- Fire Pre-Plan, Volume 1, Revision 23
- FSA, Fire Safety Analysis, Revision 0
- NFPPM, NFPA Fire Protection Program Manual , Revision 1
- PMP-2270-FRP-001, Fire report for Upper Containment Fire, March 28, 2016

1R07 Annual Heat Sink Performance

- 12-EHP-8913-001-002, Heat Exchanger Inspection, Revision 10
- GL 89-13, Service Water System Problems Affecting Safety-Related Equipment, July 18, 1989
- MD-12-CCW-080-N, Minimum Wall Thickness of the Component Cooling Water (CCW) Heat Exchanger Heads, Revision 1
- MDS-607, Heat Exchanger Tube Plugging, Revision 21
- WO 55423239-25, Heat Exchanger Inspection Report, East Component Cooling Water Heat Exchanger, April 8, 2016

1R11 Licensed Operator Regualification Program

- 1-IHP-4030-111-001B, Train B Automatic Trip and Actuation Logic Operational Test and Reactor Trip Breaker Operational Test, Revision 9
- 1-OHP-4021-001-003, Power Reduction, Revision 58
- 1-OHP-4022-001-002, Loss of Load (Load Rejection), Revision 11
- 1-OHP-4022-IFR-001, Instrument Failure Response, Revision 9
- OHI-4000, Conduct of Operations-Standards, Revision 104
- RQ-S-4102-U1-T1 Simulator Exercise Guide, Revision 0

1R12 Maintenance Effectiveness

- 12-EHP-5035-MRP001 Maintenance Rule Program Administration, Revision 24
- 12-OHP-4023-E-3, Steam Generator Tube Rupture, Plant Specific Background Document, Revision 17
- 1-OHP-4023-E-3, Steam Generator Tube Rupture, Revision 20
- Accumulator #13 In-leakage (a)(1) Action Plan
- AR 2015-10359, U1 #3 Accumulator Level and Pressure Rising, August 8, 2015
- AR 2016-6580, #13 Accumulator is Showing Signs of in-leakage, May 27, 2016
- AR-2013-10860, Limit Switch on 2-FMO-221 Incorrectly Set, July 29, 2013
- AR-2013-16701, While Securing East MDAFP 2-PP-3E Following Fill of #22 Steam Generator, a Feedwater Flow Conservation Signal was Generated, October 30, 2013
- AR-2014-13233, Improper Assembly of 1-PP-4, RDAFP Governor Assembly, October 23, 2014
- AR-2014-13668, Turbine Driven Auxiliary Feedwater Pump Tripped, November 1, 2014
- AR-2014-13939, 2-FMO-212 was Leaking By its Closed Seat, November 4, 2014
- AR-2014-6315, Individual Noted that the Unit 1 Turbine Driven Auxiliary Feedwater Pump Turbine Oil Level Indication was Near the MAX Indication of the Oil Sight Glass, May 22, 2014
- AR-2015-4642, As Found was Out of Specification for Time Delay Relay 2-62-MFPXB, April 3, 2015
- AR-2015-5312, While Performing Section 4.11 of 12-EHP-4030-056-218 (TDAFP FMO Valve Intermediate Position High Flow Signal), Valve 2-FMO-211 Would Not Close, April 14, 2015
- AR-2015-5499, 2-FFS-257, East Motor Driven Auxiliary Feedwater Pump PP-3E Discharge Flow Switch, Has a 120 Drop per Minute Leak, April 17, 2015
- AR-2015-6893, While Sampling Unit 1 Motor Driven Auxiliary Feed Pump Inboard Bearing Oil, (per 12-THP-6020-CHM-302), the Sample Tubing Became Lodged Inside Bearing Housing, May 21, 2015
- DTG-MRE-001, Maintenance Rule Evaluation, Revision 3
- EACE 2015-10359-4 Accumulator #13 Level Increasing
- Maintenance Rule Scoping, Auxiliary Feedwater, Revision 6
- OP-2-5106A-56, Flow Diagram, Auxiliary Feedwater, April 3, 2015
- PMO-5035, Maintenance Rule Program, Revision 16
- PMP-5035-MRP-001, Maintenance Rule Program Administration, Revision 9
- Staff Assessment by the Office of Nuclear Reactor Regulation Related to the Aging Management Program for Reactor Vessel Internals, Indiana Michigan Power Company, Donald C. Cook Nuclear Plant, Units 1 and 2
- System Health Report, Unit 1, Auxiliary Feedwater, Quarter 4, 2015
- WO 55353893, 1-PP-3W, Oil Leak at Oil Bubbler Piping
- WO-55401748, 1-PP-3E, Potential Status Control Situation in the Room
- WO-55459889, Contingency Work Request Unit 1 Turbine Driven Auxiliary Feedwater Pump Turbine Casing Drain

1R13 Maintenance Risk Assessments and Emergent Work Control

- 1-11C1 Replace Phase A Load Side Stab and Clean Remaining Stabs Maintenance Project Summary
- 12-OHP-4022-057-001, Screen House Forebay Degraded Condition, Revision 9
- 1-IHP-4030-102-012, Pressurizer Pressure Transmitter Calibration, Revision 10
- AR 2016-3749, New Feedwater heater 6A Load Upset, March 30, 2016
- AR-2016-4571, PMP-4100-SDR-001 Requirements not Identified, April 13, 2016
- AR-2016-5920, 1-NLP-152 Pressurizer Level Channel #2 Failing High, May 10, 2016
- AR-2016-6808, Unit 1 Pressurizer Cycling Heaters are Operating Erratically, June 3, 2016
- Donald C. Cook Technical Specification Bases, Section 3.4.11, Pressurizer Power Operated Relief Valves, Revision 0
- Maintenance Project Summary, 1-11C1 Replace Phase A Load Side Stab and Clean Remaining Stabs
- MHI-5097, Medium Voltage Cable testing, Revision 6
- OP-1-12002-69, Main Auxiliary One-Line Diagram Bus C and D Engineered Safety System Train A
- Plant work schedule, week of May 2, 2016
- PMP-4100-SDR-001, Plant Shutdown Safety and Risk Management, Revision 40
- PMP-4100-SDR-002, Outage Risk Assessment and Management, Revision 6
- Rapid Event Response team Charter, April 4, 2016
- SOD-01700-001, Residual Heat Removal System, Revision 8
- Unit 1 Operating Logs, April 15 – April 22, 2016
- Unit 1 Part 1 Configuration Risk Assessment and Fire Risk Assessment, June 3, 2016
- WO 55460396-36, Tan Delta Cables Q10030, Q10031, Q10032 Between Train B and Loop Feed Enclosure and 34.5 KV Lower Bus (LCO)
- WO 55468683, 1-NPP-152-II, Minor Inactive Boric Acid Leak at Threaded Fitting
- WO 55468683-01, 1-NPP-152, Replace Fitting, Fill and Vent Transmitter

1R15 Operability Determinations and Functional Assessments

- 1-2-3186C-15, Units 1 & 2 Containment Building Missile Shield Plans & Sections Masonry, August 6, 2013
- 1-2-3186P-10, Units 1 & 2 Containment Building Missile Shield Miscellaneous Steel Frames & Details Masonry, August 6, 2013
- 12-3186U-11, Unit 1 & Unit 2 Containment Building Lift Beams for Removable Bulkheads Plans, Sections, and Details Bulkhead Adjustment & Seal Modifications, July 25, 2012
- 12-EHP-5030-OIL-001, Oil Analysis Program, Revision 11
- 1-3186R-5, Unit 1 Containment Building Removable Bulkhead Plan, Sections & Details Sheet 1 of 2, July 25, 2012
- 1-3186S-3, Unit 1 Containment Building Removable Bulkhead Sections & Details Sheet 2 of 2, April 27, 1992
- AR 2016-4478, Procedure Enhancement Restoring Normal Feed to RCP Buses
- AR 2016-4482, Failure of 1-62-T11B, April 12, 2016
- AR 2016-4514, 1-T11D12 Bus Tie 1D to T11D, April 12, 2016
- AR-2015-10035, Unit 2 North Safety Injection Pump Needs an Oil Change, August 3, 2015
- AR-2016-1616, Emergency Diesel Generator 2CD Slow to 120v Indicated in CR During Fast Speed Start, February 9, 2016
- AR-2016-3432, Unit 1 South Safety Injection Pump, March 25, 2016
- AR-2016-4887, Procedure Enhancement to Re-energizing Safeguard Buses, April 19, 2016
- AR-2016-5063, Horizontal Block Seal Plate Have Stripped Bolt Holes, April 22, 2016

- AR-2016-5098, Vertical Bulk Heads & Seal Plate Bolting Issues, April 23, 2016
- GT 2016-4514, 1T11D12 Bus Tie 1D to T11D – Delete Per Initiator Request, April 12, 2016
- NUREG-1760, Aging Assessment of Safety-Related Fuses Used in Low- and Medium-Voltage Applications in Nuclear Power Plants
- OP-1-98050-28, Reserve Bus Tran. and Auxiliary Buses Low Voltage Protection Elementary Diagram, March 29, 2010
- Various Oil Sample Results, 2008 – 2016, Safety Injection Pumps, March 26, 2016
- VTD-PACP-0007, Pacific Pumps (Division of Ingersoll Dresser) Operation and Maintenance Manual for the Safety Injection Pumps, Revision 4

1R18 Plant Modifications

- EC 0000054948, Alternate Replacement of Horizontal Analog Meter with a Vertical Analog Meter on Panel 1-FLX, Revision 0
- 1-TM-16-19-R0, Removal of 1-HV-CUV-3 NESW Supply Piping at Containment Penetration 1-CPN-85, Revision 0
- AR-2016-4779, Discrepancy Between Installed Components & Verified BOM, April 18, 2016
- AR-2016-4821, 1-DCR-303 Calculation in EC-54930, April 18, 2016

1R19 Post-Maintenance Testing

- “Past Operability Assignment, AR-2014-13939, AFW Flow Control Valve Leakby”
- 12-EHP-4030-056-218, Automatic Operation of Auxiliary Feedwater Pumps, Revision 11
- 12-IHP-5021-EMP-001, Limitorque SMB-000 Valve Operator Maintenance, Revision 15
- 12-IHP-6030-IMP-074, Turbine Driven Auxiliary Feedpump Electronic Overspeed Indication and Trip Calibration, Revision 8
- 12-MHP-5021-032-041, Emergency Diesel Engine Bendix Fuel Injection Pump Removal and Installation, Revision 11
- 12-MHP-5021-056-011, Auxiliary Feed Pump Turbine Governor Maintenance, Revision 9
- 1-OHP-4023-E-3, Steam Generator Tube Rupture, Revision 20
- 1-OHP-4030-132-027AB, AB Diesel Generator Operability Test (Train B), Revision 37
- 1-OHP-4030-132-027CD, CD Diesel Generator Operability Test, Revision 36
- 1-OHP-4030-132-217B, DG1AB Load Sequencing & ESF Testing, Revision 42
- 1-OHP-4030-156-017E, East Motor Driven Auxiliary Feedwater System Test, Revision 11
- 1-OHP-4030-156-017T, Turbine Driven Auxiliary Feedwater System Test, Revision 20
- 2-OHP-4030-208-051S, South Safety Injection Pump System Test, Revision 12
- 2-OHP-4030-217-050W, West Residual Heat Removal Train Operability Test Modes 1-4
- AQR-2016-3576, 1-FMO-222 As Found Conditions, March 28, 2016
- AR-2016-3684, During Pre-Use Inspections of New Parts for WOT’s 55452873-01 and 55459660-01, the Seat Cage and Valve Plug Assembly Could Not Achieve a Satisfactory Blue Check, March 29, 2016
- AR-2016-3750, 1-FMO-232 Diagnostic Anomalies, March 30, 2016
- AR-2016-3754, During Pre-Use Inspections of New Parts for WOT’s 55452873-01 and 55459660-01, the Seat Cage and Valve Plug Assembly Could Not Achieve a Satisfactory Blue Check, WOER Initiated to Engineering, No Plant Impact. WOER Approved to Use As Is, March 30, 3016AR-2016-3298, Incomplete Assembly Received From Stores, As Found Inspection Showed Missing Plug Stem PIN, March 16, 2016
- AR-2016-3756, Isometric Drawing 1-FW-26 Needs to be Revised, March 30, 2016
- AR-2016-3907, 1-101-T11A11 Will Not Close to Energize A Bus from DG1AB, April 2, 2016
- AR-2016-3919, Unit 1 AB EDG Fuel Injection Pumps Not Performing as Expected, April 2, 2016

- AR-2016-3946, DG1AB Will Not Stay Running During a Fast Speed Start, April 3, 2016
- AR-2016-4095, 1-DG-253A Leaks by, April 5, 2016
- AR-2016-4170, DG1AB Frequency Oscillating, April 2, 2016
- AR-2016-4768, CD EDG Shut Down due to Over Heating of Starting Air Piping on Front Bank, April 17, 2016
- AR-2016-4831, CD EDG Tripped During Trips Disabled Test, April 18, 2016
- AR-2016-5265, 1-OHP-4030-156-017R Attachment 3 Failed, April 26, 2016
- AR-2016-5268, Enhance Procedure 12-MHP-5021-056-011, April 26, 2016
- AR-2016-5297, CPF-0134, Gauge, Malfunction, As Found Data Out of Tolerance, April 26, 2016
- AR-2016-5299, 1-OHP-4030-156-017T, Att 2 Failed Due to Out of Calculation Gauge, April 26, 2016
- AR-2016-5300, Procedure Performed When Not Required, April 26, 2016
- AR-2016-6950, Tubing Fitting Found Bad, June 7, 2016
- EC-0000053253, 2-HE-35S, Replace the Obsolete American Standard Model 501-2 HCF Oil Cooler on the Unit 2 South Safety Injection Pump, Revision 2
- OP-1-5206A-61, Flow Diagram Aux-Feedwater, Unit 1, October 3, 2014
- OP-1-98032-51, Diesel Generator 1AB Excitation & Regulation and Miscellaneous Elementary Diagram, May 5, 2014
- OP-1-98034-35, Diesel Generator 1AB Control Elementary Diagram, March 10, 2010
- OP-1-98043-56, 4kV Diesel Generator 1AB A.C.B. Elementary Diagram, March 14, 2012
- WO 55263776-01, Perform Procedures: 12-IHP-6030-RLY-001 and 12-IHP-6030-RLY-002
- WO 55369842-03, Section XI Repair/Replacement Plan
- WO 55369842-18, VT-2 Exam for HX Replacement
- WO 55454352-08, Disassemble, Remove, Reinstall Governor for Turbine Repairs
- WO 55484366-01, 1-PP-50W, Repair Weld Leak at Flange on Equalizing Valve
- WO-55308492-01, 2-IMO-322-ACT, Perform External Post-Maintenance Test
- WO-55369847-02, 2-HE-32W, West Residual Heat Removal Pump PP-35W Mechanical Seal Heat Exchanger, February 26, 2016
- WO-55369847-04, 2-HE-32W, Perform Post-Maintenance Leak Inspection, February 25, 2014
- WO-55369847-08, NQQS-2-HE-32W, VT-2 Inspection for Head Replacement, May 17, 2016
- WO-55452873, 1-FMO-222 Slight Valve Leakby
- WO-55459660, 1-FMO-232, Perform Internal Valve Inspection
- WO-55459660-14, OPS: 1-FMO-232, PMT (Leak Inspection)
- WO-55466056-01, 2-PP-35W-MTR, Change Oil in Motor, March 7, 2016
- WO-55466113-01, 2-CMO-429- Perform Preventive Maintenance, March 7, 2016
- WO-55466113-02, 2-CMO-429, Stroke for Post-Maintenance Testing/Operability, May 16, 2016
- WO-55466115-01, 2-IMO-322-ACT: Grease Valve Steam GL 89-10/External Post-Maintenance, February 8, 2016
- WO-55466227-01, Calibrate Protective Relays for Breaker 2-T21A4, March 7, 2016
- WO-55466227-01, MTI, 2-5-T21A4, Pick Up/Drop Out Testing on HFA Relay, March 8, 2016,
- WO-55466228-01, 2-K-Aus-CMO-429 Pick Up/Drop Out Testing on Relay, March 8, 2016
- WO-55478880-02, 2-RU-17, Support Ops 208-053B AT#6 W RHR Heat Exchanger 2-IRV-320 Stroke, March 10, 2016
- WO-55480210-01, 2-T21A4, Remove/Install Breaker and Clean Cubicle for PM, March 22, 2016
- WO-55484366-05, 1-PP-50W, Perform VT-2 Inspection, March 30, 2016
- WOER- 20014828, Evaluate the Pre-Service Results of Blue Check Between the New Valve Plug and Cage Seat

1R20 Outage Activities

- 12-EHP-4030-002-356, Low Power Physics Tests with Dynamic Rod Worth Measurement, Revision 13
- 12-EHP-4050-FHP-301, Core Reload, DC Cook Cycle 27 Core
- 12-EHP-4050-FHP-301, Fuel Handling Movement Sequence, D.C. Cook 1 Cycle 26-27 Core Unload
- 12-MHP-5021-SCF-001, Scaffolding Procedure, Revision 25
- 12-OHP-4050-FHP-005, Core Unload/Reload and Incore Shuffle, Revision 25
- 12-OHP-4050-FHP-009, Refueling Tool and Equipment Operation, Revision 8
- 12-OHP-4050-FHP-023, Reactor Vessel Head Removal with Fuel in the Vessel, Revision 12
- 12-QHP-5070-NDE-002, Visual VT-2 Examinations, Revision 7
- 1-OHP-4021-001-001, Plant Heatup from Cold Shutdown to Hot Standby, Revision 73
- 1-OHP-4021-001-002, Reactor Startup, Revision 58
- 1-OHP-4021-002-001, Filling and Venting the Reactor Coolant System, Revision 42
- 1-OHP-4021-002-005, RCS Draining, Revision 54
- 1-OHP-4021-081-001, Operation of Main and Auxiliary Transformer Cooling, Revision 41
- 1-OHP-4021-082-001, 4kV Buses Power Source Transfer and De-energizing and Re-energizing a Safeguards Bus, Revision 45
- 1-OHP-4030-127-041, Refueling Integrity, Revision 31
- AR 2016-3806, Cable 1004PR for PP-45-4 failed TAN Delta Testing, March 31, 2016
- AR 2016-4985, Revise 1-OHP-4021-002-001, April 21, 2016
- AR-2016-3631, Closure Criteria for Containment Airlock, March 29, 2016
- AR-2016-3683, Scaffold Storage Rack in Auxiliary Building at Elevation 650', March 29, 2016
- AR-2016-3711, Follow-up Interviews with Containment Closure Attendants, March 30, 2016
- AR-2016-3719, Containment Closure Attendant Dress Code, March 30, 2016
- AR-2016-3802, Containment Airlock Walkdowns, March 31, 2016
- AR-2016-3816, U1 Upper Airlock 6" Ice Hoses Do Not Meet PMP-4100-SDR-001, March 31, 2016
- AR-2016-3848, Fuel Handling Delay Due to PMP-4100-SDR-001 Compliance Issue, April 1, 2016
- AR-2016-4406, EPC: 'A' Train H1083: Splice New Cables in MH1PA (RO1), April 10, 2016
- AR-2016-4462, EP Cable Splices Made Contrary to Manufacturer's Instruction, April 11, 2016
- AR-2016-5284, Dry Boric Acid Bound at Bottom of Unit 1, Loop 2, April 26, 2016
- AR-2016-5354, Small Intermittent Reactivity Anomaly During U1C27 Startup, April 28, 2016
- AR-2016-5433, Procedure Step Was Missed at Power Hold Plateau, April 29, 2016
- ASME Code Case N-729-1, Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial-Penetration Welds, Section XI, Division 1, March 28, 2006PMP-5020-MHP-001, Lifting and Rigging Program, Lift Plan Briefing Checklist, Reactor Vessel Head, Revision 39
- DIT-B-03681-00, Reactor Coolant System (RCS) Restoration from Drained Below the Hot Legs, February 5, 2016
- DIT-S-06309-01, Unit 1 Cycle 27 Beginning of Cycle Time to Boil Information, April 8, 2016
- FO-16-C-138, Performance Assurance Field Observation, Interviews with Containment Closure Attendants U1C27, March 30, 2016
- IPTE, Low Power Physics Testing, March 20, 2016
- OP-1-12001-85, Main Auxiliary One-Line Diagram Bus "A" & "B" Engineered Safety System (Train "B"), August 18, 2015
- OP-1-12010-25, MCC Auxiliary One-Line 600v Bus 11A, 11B Engineered Safety System (Train "B"), October 9, 2014

- OP-1-12013-21, MCC Auxiliary One-Line 600v Buss 11A, 11B Engineered Safety System (Train "B"), October 22, 2014
- OP-1-12015-38, Distribution Panel Auxiliary One-Line 600v Bus 11A, 11B Engineered Safety System (Train "B"), October 14, 2014
- OP-1-5113-99, Flow Diagram Essential Service Water, March 29, 2006
- OP-1-5114A-28, Flow Diagram Non-Essential Service Water, June 12, 2013
- Op-1-5128-30, Flow Diagram Reactor Coolant Unit 1, Revision 30
- OP-1-5135-42, Flow Diagram CCW Pumps and CCW Heat Exchangers, December 18, 2013
- OP-1-5135A-46, Flow Diagram CCW Safety-related Loads, October 26, 2015
- PMP-2060-WHL-001, Work Hour Limitation and Fatigue Management, Revision 7
- PMP-4100-SDR-001, Plant Shutdown Safety and Risk Management, Revision 39
- PMP-4100-SDR-002, Outage Risk Assessment and Management, Revision 6
- PMP-5030-001-001, Boric Acid Evaluation Checklist, AR-2016-3336: 1-PP-45-1, Reactor Coolant Pump #1, Revision 19
- R-600AC-600B-0528, 4Kv – 600v Switchgear Area, April 4, 2016
- R-CCW-CCWE-0289, 1-CMO-411, CCW Pumps Suction Crosstie Train 'A' Shutoff Valve, April 8, 2016
- R-CW-CIRC-0014, 1-PP-7E, East Essential Service Water Pump, April 4, 2016
- SOD-08200-001, Balance of Plant Electrical System, Revision 13
- SOD-8201-001, Engineered Safety Systems Electrical, Revision 4

1R22 Surveillance Testing

- 12-EHP-4030-056-218, Automatic Operation of Auxiliary Feedwater Pumps, Revision 11
- 1-OHP-4030-132-217B, DG1AB Load Sequencing & ESF Testing, Revision 42
- 5545403-02, Ice Condenser Lower Inlet Door Surveillance, April 8, 2016
- AR-201603563, 1-IMO-221 Failed Its TRT Requirement for Start to Open Time, March 28, 2016
- EDG Load Sequence Train B Section 6A, "PPC Report," March 26, 2016
- EDG Load Sequence Train B Section 7, "PPC Report," March 24, 2016
- ESF Time Res. Tr. B SI, "PPC Report," March 24, 2016

2RS1 Radiological Hazard Assessment and Exposure Controls

- 12-THP-6010-RPP-006, Radiation Work Permit Processing, Revision 36
- 12-THP-6010-RPP-014, Total Effective Dose Equivalent Evaluation, Revision 11
- 12-THP-6010-RPP-407, Special Radiological Evolutions, Revision 32
- AR-2016-0250, Elevated Tritium (H3) Level Present in Unit-2 Containment, January 6, 2016
- AR-2016-1982, Scaffolds for Transfer Canal Work was found Contaminated, Workers were Checked for Contamination after the Discovery, February 18, 2016
- AR-2016-2456, Worker was Contaminated after Handling "Clean" Tool from MTI Hot-shop, March 1, 2016
- AR-2016-2863, Contaminated Tool Marked as Belonging to the Hot Tool Crib was Discovered Outside the Restricted Area, March 11, 2016
- AR-2016-3710, RP Department Staff Received a Level-2 Particle Contamination while Pulling Trash at Unit-1 CCP Room, March 30, 2016
- AR-2016-3769, A Level Two Personnel Contamination on Clothing during Building Scaffolds at Unit-1 Containment, March 30, 2016
- PMP-1610-ALA-001, ALARA Program Review of Plant Work Activities, Revision 30
- PMP-6010-RPP-003, High, Locked High, and Very High Radiation Area Access, Revision 26
- PMP-6010-RPP-006, Radiation Work Permit Program, Revision 22

- RWP-061101, U1C27-Refuel Preparation Activities and Disassembly with Related Tasks, Revision 0
- RWP-161101, U1C27-Refuel Preparation Activities and Disassembly, Revision 0
- RWP-161142, U1C27-Containment Install, Modify and Remove Scaffold, Revision 0
- RWP-161145, U1C27-Valve Maintenance and Repair with related Tasks, Revision 0
- RWP-161160, U1C27-Instrument Room Seal Table Activities and the Related Tasks, Revision 0
- RWP-161187, U1C27-Under Vessel Reactor Vessel Inspections, Revision 1

2RS2 Occupational ALARA Planning and Controls

- ALARA/RWP-061101, U1C27-Refuel Preparation Activities and Disassembly with Related Tasks, Revision 0
- ALARA/RWP-161101, U1C27-Refuel Preparation Activities and Disassembly, Revision 0
- ALARA/RWP-161142, U1C27-Containment Install, Modify and Remove Scaffold, Revision 0
- ALARA/RWP-161145, U1C27-Valve Maintenance and Repair with related Tasks, Revision 0
- ALARA/RWP-161187, U1C27-Under Vessel Reactor Vessel Inspections, Revision 1
- PMP-6010-ALA-001, ALARA Program – Review of Plant Work Activities, Revision 30

2RS7 Radiological Environmental Monitoring Program

- 10 CFR 50.75(g) Requirements for D.C. Cook Nuclear Plant
- 12-IHP-4030-036-001; Meteorological Instrumentation Primary and Backup Tower Channel Calibration; October 13, 2015
- 12-IHP-4030-036-001; Meteorological Instrumentation Primary and Backup Tower Channel Calibration Repair and Replace; February 20, 2016
- AR-2015-12765; REMP Fish Samples Contains Trace amount of Cs-137; September 30, 2015
- AR-2015-12891; Unavailable Surface Water Samples for four Days in April; October 2, 2015
- AR-2015-12957; Temporary Loss of Power to Air Monitoring Station ONS-2; September 27, 2015
- AR-2015-13626; Incorrect analysis of Composite Air Particulate Samples; October 20, 2015
- AR-2015-13626; Incorrect Analysis of Composite Air Particulate Samples; October 20, 2015
- AR-2015-13630; Beta activity Seen in the Drinking Water Sample; October 20, 2015
- AR-2015-1861; Discrepancies in the ODCM were noted; February 9, 2015
- AR-2016-1319; Loss of Power at ONS-1 air Sampler; February 3, 2016
- AR-2016-4475; Non-REMP Fish Samples with Traces of Cs-137; April 11, 2016
- AR-2016-7289; Air station Located in south Bend Lost of Power; June 17, 2016
- D.C. Cook Nuclear Plant Annual Radiological Environmental Operating Report 2015
- D.C. Cook Nuclear Plant Unit-1 and 2 2015 Annual Radioactive Effluent Release Report
- GEL Laboratories LLC, 2015 Annual Quality Assurance Report for the Radiological Environmental Monitoring Program (REMP) Mixed Analyte Performance Evaluation Program (MAPEP)
- PMP-6010-OSD-001; D.C. Cook Nuclear Plant Off-Site Dose Calculation Manual; Revision 25

4OA1 Performance Indicator Verification

- 12-THP-6020-CHM-101; Reactor Coolant System; Revision 41
- 1THP-6020-CHM-121; Unit-1 Reactor Coolant System Sampling; Revision 12
- PMP-7110-PIP-001; Reactor Coolant System Specific Activity reporting period from the First Quarter 2015 through the Fourth Quarter of 2015
- PMP-7110-PIP-001; Reactor Oversight Program Performance Indicators and Monthly Operating Report Data; Revision 15

4OA2 Identification and Resolution of Problems

- AR-2015-16339, SCD-04-0796-00, Repair Kit for ESW Actuators, December 21, 2015
- AR-2016-0448, SCD-00-0220-01 Misclassified the Safety Function of ECR Acts, January 12, 2016
- AR-2016-0997, Discrepant Condition Evaluation 2015-16339 Not Supported, January 26, 2016
- AR-2016-3571, Commercial Grade Dedication Plan Not Updated, March 28, 2016
- AR-2016-3577, Safety Classification Determination Not Identified EC-52915, March 28, 2016
- AR-2016-4089, Unit 1 East Essential Service Water Failed to Start, April 5, 2016
- AR-2016-6773, Parts Un-Reviewed by Engineering Were Installed, June 2, 2016
- AR-2016-6798, Parts Un-Reviewed by Engineering Were Installed, June 2, 2016
- AR-2016-6972, Deficiencies with EC-53994, Abandon CVCS Piping/Components, June 8, 2016
- AR-2016-6991, IEE PE-25540 Did Not Discuss Tube Dimensions, June 8, 2016
- DC Cook 2015 Fourth Quarter Trend Report
- DC Cook 2016 First Quarter Trend Report
- Nuclear Safety Review Board Package, June 2, 2016
- OP-1-5113-101, Flow Diagram Essential Service Water, May 27, 2016
- OP-1-5144-54, Flow Diagram Containment Spray Unit No. 1, May 24, 2016
- OP-2-5113-87, Flow Diagram Essential Service Water, April 3, 2015
- OP-2-5144-60, Flow Diagram Containment Spray Unit No. 2, October 30, 2013
- PE- Evaluation-00025038, Containment Spray (CTS) Flange Connection Gaskets
- PE- Evaluation-00025039, Containment Spray (CTS) Flange Connection Gaskets
- PE- Evaluation-00025040, Containment Spray (CTS) Flange Connection Gaskets

4OA7 Licensee-Identified Violations

- AR 2016-6136, Unit 1/Unit 2 SSPS Wiring testing Scheme Error, May 16, 2016
- DWG OP-1-98367, Solid State Protection and Safeguard System Safeguard Actuation Signal, Revision 20

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ALARA	As-Low-As-Is-Reasonably-Achievable
AR	Action Request
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCW	Component Cooling Water
CFR	Code of Federal Regulations
EDG	Emergency Diesel Generator
ESW	Essential Service Water
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
LOCA	Loss of Coolant Accident
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records System
PI	Performance Indicator
PM	Post-Maintenance
RCS	Reactor Coolant System
REMP	Radiological Environmental Monitoring Program
RFO	Refueling Outage
RHR	Residual Heat Removal
SCD	Safety Classification Determination
SSC	System, Structure, and Component
TS	Technical Specification
TSO	Transmission System Operator
UFSAR	Updated Final Safety Analysis Report
WO	Work Order

J. Gebbie

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Sincerely,

/RA/

Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

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