UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE RD. SUITE 210
LISLE, IL 60532-4352

November 12, 2015

Mr. Larry Weber
Senior Vice President and
Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

SUBJECT: D. C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000315/2015003;
05000316/2015003; AND 07200072/2015001

Dear Mr. Weber:

On September 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Donald C. Cook Nuclear Power Plant, Units 1 and 2. The enclosed report documents the results of this inspection, which were discussed on October 1, 2015, with Mr. J. Gebbie, and other members of your staff.

Based on the results of this inspection, two NRC-identified and one self-revealed finding of very low safety significance were identified. The NRC-identified findings involved violations of NRC requirements. One of these violations was determined to be SL-IV under the traditional enforcement process. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy. Additionally, two licensee-identified findings with associated NCVs are documented in Section 4OA7 of this report.

If you contest the subject or severity of any NCV, 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 a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission–Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532–4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; and the Resident Inspector Office 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.

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; 72-072
License Nos. DPR–58; DPR–74

Enclosure:
IR 05000315/2015003; 05000316/2015003; 07200072/2015001
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	05000315; 05000316; 72–072
License Nos:	DPR–58; DPR–74
Report No:	05000315/2015003; 05000316/2015003; 07200072/2015001
Licensee:	Indiana Michigan Power Company
Facility:	Donald C. Cook Nuclear Power Plant, Units 1 and 2
Location:	Bridgman, MI
Dates:	July 1 through September 30, 2015
Inspectors:	J. Ellegood, Senior Resident Inspector T. Taylor, Resident Inspector R. Edwards, Senior Health Physicist R. Elliott, Reactor Engineer M. Garza, Emergency Preparedness Inspector M. Learn, Reactor Engineer J. Lennartz, Project Engineer J. Mancuso, Reactor Engineer
Approved by:	Kenneth Riemer, Chief Branch 2 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000315/2015003, 05000316/2015003; 07200072/2015001; 07/01/2015 – 09/30/2015; Donald C. Cook Nuclear Power Plant, Units 1 & 2; Fire Protection; Plant Modifications; Emergency Action Level and Emergency Plan Changes; Licensee Identified Violations

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors, and another Green finding was self-revealed. Two of the findings were considered non-cited violations (NCVs) of the U.S. Nuclear Regulatory Commission (NRC) regulations. 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 June 2, 2011. 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 July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG–1649, "Reactor Oversight Process" Revision 5, dated February 2014.

Cornerstone: Initiating Events

Green. A finding of very low safety significance (Green) was self-revealed on April 23, 2015, when two condenser steam dump valves failed open during startup following the Unit 2 refueling outage. In response to the failure, the licensee manually tripped the Unit 2 reactor. Contrary to the requirements of PMP–5040–MOD–007, "Engineering Modifications," the design of the new valves that were installed was not compatible with the steam dump system. This finding does not involve enforcement action because no violation of a regulatory requirement was identified. The licensee replaced three steam dump valves on Unit 2 with a new design during the spring refueling outage. Shortly following reactor startup, two of the new valves failed open after being placed in service. The resulting temperature transient required operators to manually trip the reactor to comply with Technical Specification (TS) requirements for minimum temperature while critical. Design work and planning to perform the modifications failed to meet timeliness milestones prior to the outage. Contrary to the modification procedure for these circumstances, the change was not considered 'fast-track,' therefore, additional risk assessments and management oversight were not provided. As a result, the operational impact of the new design was not fully realized. The steam dump system can be subject to significant amounts of condensate. The new valves trapped some of the condensate. This, along with a different plug design, caused a backpressure of sufficient force to cause the valves to fail open when steam was admitted. The licensee stabilized the plant following the trip, replaced two valves with the old design, isolated the other via a temporary modification, and returned the unit to service. The issue was also entered into the Corrective Action Program (CAP) as Action Request (AR) 2015–5825.

The issue was more than minor because it adversely affected the Design Control attribute of the Initiating Events Cornerstone, whose objective is to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inadequate design caused the new valves to fail open, which resulted in a manual reactor trip. Utilizing IMC 0609, Appendix A,

"The Significance Determination Process (SDP) for Findings At-Power," effective July 1, 2012, the inspectors determined the finding was Green, or very low safety significance, by answering 'no' to the "Transient Initiators" question in Exhibit 1. Specifically, while the transient caused a plant trip, all mitigation equipment remained available to respond to the trip. The inspectors determined the finding had an associated cross-cutting aspect in the Human Performance area, namely, H.8, "Procedure Adherence." The licensee failed to follow the requirements of the modification procedure, which would have prompted a more thorough review of the modification. (Section 1R18)

Cornerstone: Mitigating Systems

Green. The inspectors identified a finding and associated NCV of Facility Operating Licenses DPR-58 condition 2.C(4) and DPR 74 Condition 2. C(3)(o), "Fire Protection Program." Specifically, the licensee failed to identify and subsequently critique the failure of the Fire Brigade and Operations to de-energize a battery charger during a fire drill. On August 20, the inspectors observed an unannounced fire drill. In the scenario, the licensee simulated a fire in a nonsafety-related battery charger in the turbine building. The licensee fire brigade and on shift operations personnel responded. During the drill, the licensee failed to simulate securing direct current (DC) power to the battery charger and subsequently failed to critique this issue. The inspectors discussed the DC power issue with the licensee and the licensee agreed that the drill should have evaluated the DC power supply and the fire brigade should have simulated removing the DC power source. The licensee has briefed site personnel on de-energizing equipment with multiple power sources and entered the condition into the corrective action program.

The licensee's failure to demonstrate effective firefighting techniques and subsequent failure to critique the error was a performance deficiency of Green significance. The performance deficiency was more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as green using IMC 0609 Appendix M with insight from Appendix F. The finding included a cross-cutting aspect of training, H.9, in the human performance area. (Section 1R05)

Cornerstone: Emergency Preparedness

Severity Level IV. The inspectors identified a finding of very-low safety significance with an associated Severity Level IV (SL-IV) NCV of Title 10, *Code of Federal Regulations* (CFR) 50.54(q)(3) and 10 CFR 50.54(q)(4) related to a staffing change in the licensee's Emergency Plan that reduced the effectiveness of the Plan, which was made without prior NRC approval. Specifically, in March 2004, the licensee made changes to wording in the Donald C. Cook Emergency Plan that allowed two Radiation Protection (RP) Technician positions to be augmented by staff that were not qualified RP Technicians. This issue was placed in the licensee's CAP and was corrected by revising the Emergency Plan to the approved augmented staffing minimum.

The finding was of more than minor significance because it was associated with the Emergency Preparedness Cornerstone attribute of Procedure Quality, and affected the cornerstone objective of ensuring the licensee is capable of implementing adequate

measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, a failure to evaluate changes to the Emergency Plan as required by 10 CFR 50.54(q)(3) resulted in unacceptable changes made to the plan that decreased its effectiveness without prior NRC approval as required by 10 CFR 50.54(q)(4) and reduced the licensee's capability to perform an emergency planning function in the event of a radiological emergency. The finding was of very low safety significance because it was a failure to comply that did not result in a loss of the planning standard function. In accordance with Section 6.6.d of the NRC Enforcement Policy, this violation was categorized as SL-IV because it involved the licensee's ability to meet or implement a regulatory requirement not related to assessment or notification such that the effectiveness of the Emergency Plan decreases. The inspectors concluded that because the performance deficiency involved a change to the licensee's Emergency Plan in March 2004, this issue would not be reflective of current licensee performance and no cross-cutting aspect was identified. (Section 1EP4.b.1)

Violations of very low safety or security significance or SL-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 started the inspection period in a forced outage to address a failure of the 1AB emergency diesel generator (EDG) during post-maintenance testing. The EDG was repaired and restored to operable status, and the Unit returned to 100 percent power on July 30, 2015.

Unit 2 remained at or near 100 percent power for the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness for Impending Adverse Weather Condition—Geomagnetic Storm

a. Inspection Scope

Since a geomagnetic storm occurred with potential to adversely impact electrical systems and electronics, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On September 11, 2015, the inspectors walked down the emergency diesel systems and control room because the geomagnetic storm could cause a loss of off-site power. The inspectors evaluated the licensee staff's restoration of a diesel to an operable condition in response to notification of the geomagnetic storm. 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 Corrective Action Program (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 Inspection Procedure (IP) 71111.01–05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Unit 1 west containment spray;
- Unit 1 east residual heat removal (RHR) system during west train work; and

- Unit 2 turbine-driven and west motor-driven auxiliary feedwater (AFW) during work on east motor-driven train.

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), technical specification (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)

.1 Routine Resident Inspector Tours (71111.05Q)

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:

- Fire Zone 42D, Unit 1 AB battery room;
- Fire Zone 55, Unit 1 switchgear cable vault;
- Fire Zone 36, spent fuel pool heat exchanger room; and
- Fire Zones 65A and 65B, Unit 2 safety injection pump rooms.

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.

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

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On August 20, 2015, the inspectors observed a fire brigade activation for a simulated fire in a Unit 2 balance of plant battery charger. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were:

- proper wearing of turnout gear and self-contained breathing apparatus;
- proper use and layout of fire hoses;
- employment of appropriate firefighting techniques;
- sufficient firefighting equipment brought to the scene;
- effectiveness of fire brigade leader communications, command, and control;
- search for victims and propagation of the fire into other plant areas;
- smoke removal operations;
- utilization of pre-planned strategies;
- adherence to the pre-planned drill scenario; and
- drill objectives.

Documents reviewed are listed in the Attachment to this report.

These activities constituted one annual fire protection inspection sample as defined in IP 71111.05–05.

b. Findings

Introduction: The inspectors identified a finding and associated non-cited violation (NCV) of Facility Operating Licenses DPR-58 condition 2.C(4) and DPR 74 Condition 2.C(3)(o), "Fire Protection Program." Specifically, the licensee failed to identify and subsequently critique the failure of the Fire Brigade and Operations to de-energize a battery charger during a fire drill.

Description: On August 20, the inspectors observed an unannounced fire drill. In the scenario, the licensee simulated a fire in a nonsafety-related battery charger in the

turbine building. The licensee fire brigade and on shift operations personnel responded. During the drill, the work control center Senior Reactor Operator coordinated actions with the brigade leader and removed the main alternating current (AC) power source to the charger. The configuration of the charger includes connection to a large station battery; therefore isolation of the AC end left substantial power to the charger. Shortly after removal of the AC power, fire brigade members simulated application of fire suppressant on the fire; then drill controllers informed the fire brigade that the fire had stopped. The licensee then terminated the drill. Following the drill, drill controllers and participants held a critique to evaluate the performance of the drill. Although the licensee identified several issues to improve the fire brigade, the licensee did not identify the failure to de-energize the DC portion of the battery charger. The inspectors discussed the DC power issue with the licensee and the licensee agreed that the drill should have evaluated the DC power supply and the fire brigade should have simulated removing the DC power source.

Analysis: The licensee's failure to demonstrate effective firefighting techniques coupled with the subsequent failure to critique the error was a performance deficiency that warranted a significance determination. The performance deficiency was more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In particular, removal of electrical power to extinguish an electrical fire is a fundamental firefighting strategy and integral to a systematic approach to fire mitigation. Using Inspection Manual Chapter (IMC) 0609, Appendix A, issued June 19, 2012, "The SDP for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the finding required review under Appendix M. Specifically, using Example 2 D., "Fire Brigade," the inspectors concluded that the failure to isolate all power sources to the battery charger could significantly affect the ability of the fire brigade to respond to a fire. Since none of the other questions were germane to the finding, none of the boxes were checked and the inspectors used IMC 0609 Appendix M. To provide structure to the analysis under Appendix M, the inspectors reviewed Appendix F. Appendix F, Section 1.4.6 covers manual firefighting. Question 'C' addresses a fire finding associated with a fire drill deficiency which could have delayed suppression of a fire by more than five minutes. Since the deficiency could have, the inspectors proceeded to Step 1.3. Question 1.3.1 A considered the ability to the reach and maintain safe shutdown. The scenario did not impact a safe shutdown strategy, and therefore screened as green. The performance deficiency had a cross-cutting aspect of training (H.9) in the human performance area. Specifically, the licensee personnel did not ensure training addressed multiple power sources to electrical components.

Enforcement: Facility Operating Licenses DPR-58 condition 2.C(4) and DPR 74 Condition 2. C(3)(o), "Fire Protection Program," require, in part, that the licensee implement and maintain in effect all provisions of the approved fire protection program that comply with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.48(a) and 10 CFR 50.48(c) as specified in the licensee amendment request dated July 1, 2011 and supplemented by various letters. 10 CFR 50.48(c) incorporates, by reference, National Fire Protection Association (NFPA) 805, 2001. NFPA 805 3.4.3(c)(2) states, in part, that "Industrial fire brigade drills shall be developed to test and challenge industrial fire brigade response….These drills shall evaluate the industrial fire brigade's ability to react, respond and demonstrate proper fire protection techniques to control and extinguish the

fire…." Contrary to this requirement, on August 20, 2015, the licensee failed to evaluate the industrial fire brigade's ability to demonstrate proper firefighting techniques in that the licensee did not recognize the fire brigade failed to de-energize all electrical power to a simulated battery charger. Licensee training for fire suppression techniques stipulates that the best approach to combat electrical fires is to wait until power is disconnected. Discretion on the part of the fire brigade is permitted for cases where immediate action is required or power cannot be disconnected. Contrary to this requirement, the licensee did not evaluate the brigade's and other organizations' failure to remove power as part of the scenario. When the inspectors discussed this issue with the licensee, the licensee agreed that they had not considered the impact of the battery on firefighting techniques. Because this violation was of very low safety significance (Green) and was entered into the CAP as AR 2015–12796, Fire Drill Performance deficiency, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000315/2015003–01; Failure to Evaluate Fire Brigade Fire Fighting Techniques)**

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area(s) to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Essential service water system (ESW) pipe tunnel.

This inspection began in the second quarter and portion of the sample was completed during the second quarter. Inspection effort in this quarter focused on requirements for the water tight doors and coupled with second quarter inspection activities constitute a complete sample. This inspection constituted one internal flooding sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

.2 Underground Vaults

a. Inspection Scope

The inspectors selected underground bunkers/manholes subject to flooding that contained cables whose failure could disable risk-significant equipment. The inspectors determined that the cables were not submerged, that splices were intact, and that appropriate cable support structures were in place. In those areas where dewatering devices were used, such as a sump pump, the device was operable and level alarm circuits were set appropriately to ensure that the cables would not be submerged. In those areas without dewatering devices, the inspectors verified that drainage of the area was available, or that the cables were qualified for submergence conditions. The inspectors also reviewed the licensee's corrective action documents with respect to past submerged cable issues identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following underground bunkers/manholes subject to flooding:

- Manhole 1PA (4kV alternate offsite power supply to Unit 1); and
- Manhole 2CD (alternate offsite power breaker indication cables).

Specific documents reviewed during this inspection are listed in the Attachment to this report. This inspection constituted two underground vaults samples as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On August 20, 2015, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and 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 (EP) 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 requalification 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 July 24, 2015, the inspectors observed licensee attempts to reseat a main feedwater check valve. This was an activity that required heightened awareness or was related to 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;
- prioritization, interpretation, and verification of annunciator alarms (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and EP actions and notifications (if applicable).

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:

- Unit 2 AB EDG;
- turbine building and service water screenhouse structure; and
- safety-related inverters for Control Room instrumentation.

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 10 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 three 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:

- Emergent replacement of Unit 1 east ESW pump motor;
- AFW work and ESW work during the week of August 17; and
- emergent pipe replacement on Unit 2 emergency boration line (included freeze seal use).

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 three 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:

- Mechanism operated contact issues in reserve feed breakers affecting EDG droop circuitry;
- Unit 1 east RHR pump oil leak;
- 2–NCR–106 containment isolation valve operating issues(partial);
- Degraded welds on 1AB EDG lube oil cooler;
- oil leak from Unit 1 east ESW pump motor; and
- 1–FW–118–3 check valve leakage (partial)(AFW to main feed isolation).

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. Two samples (2–NCR–106 and 1–FW–118–3) were started but not completed in the third quarter.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modification(s):

- Modification of steam dump valve design; and
- Deletion of procedures to operate the hot shutdown panels (HSDs).

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 reviewed the root cause evaluation associated with the failure of newly designed steam dump valves on Unit 2. The inspectors reviewed the conclusions of the root cause evaluation, which included input from an outside engineering firm that assisted the licensee. The inspectors reviewed site procedures associated with engineering modifications and conducted interviews with plant personnel regarding the design and operation of the steam dump system. Differences in design between the original and failed steam dumps were also reviewed with plant personnel. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two permanent plant modification samples as defined in IP 71111.18–05.

b. Findings

(1) Introduction: A finding of very low safety significance (Green) was self-revealed on April 23, 2015 when the Unit 2 reactor was manually tripped shortly after startup from a refueling outage due to two condenser steam dump valves failing open. Contrary to the requirements of Modification Procedure PMP–5040–MOD–007, the design of the new valves that were installed was not compatible with the steam dump system.

Description: On April 23, 2015, Unit 2 was operating at low power following reactor startup at the conclusion of a refueling outage. In accordance with plant procedures, Operations staff were in the process of un-isolating the main condenser steam dump valves. The steam dumps help control primary coolant system temperature and reactor power after reactor startup but before the main turbine is placed fully in service and electrically loaded. By procedure, the licensee began placing the steam dumps in service. The first valve opened was of the original design. The next two valves were of the new design. In the middle of placing the third valve in service, it started acting erratically and then slammed open. Shortly thereafter, the second valve placed in service also failed open. Upon noting the lowering temperature of the primary coolant caused by the valves opening, Operators manually tripped the reactor to comply with the TS associated with the minimum temperature for critical reactor operations. Operators stabilized the plant in accordance with procedures, which also included re-isolating the

steam dump valves to terminate further cooldown. Operators successfully placed the unit in a safe, stable condition in Mode 3.

In 2013, the licensee decided to replace the existing steam dump valves with a new design due to an increasing number of valve failures and other issues. However, design work and planning to perform the modifications failed to meet timeliness milestones prior to the outage. Contrary to the modification procedure for these circumstances, the change was not considered 'fast-track,' therefore, additional risk assessments and management oversight were not provided. Additionally, prior to the start of the modification package, components were procured 'at-risk' given the shortened timeline available to get the modification ready. Guidance in the modification procedure required personnel to confirm that a design had progressed sufficiently before allowing 'at-risk' procurement. In this case, procurement occurred prior to the start of the modification package. Further, stakeholder meetings to assess the modification only occurred after parts had been procured (i.e., the design had already been selected). Attendance at the meetings was also noted to be poor. As a result of the issues in adhering to the modification process, key attributes regarding the operation of the steam dump system were not incorporated into the design of the new valves; namely, the fact that the steam dump lines can be subject to significant amounts of condensate under normal operations. The design of the new valves allowed some of this condensate to be trapped in the valve body, unlike the original design. The potential for this condition was not considered when selecting the design nor conveyed as a possibility to the valve manufacturer. When steam was admitted to the valves, a two-phase flow dynamic was established due to the trapped water. This, combined with a different plug design in the new valves, created a significant backpressure within the valves, causing them to fail open. This conclusion was determined by an outside engineering firm the licensee consulted as part of the root cause process, and was accepted by the licensee.

Analysis: Contrary to PMP–5040–MOD–007, "Engineering Modifications," steam dump valves were modified and installed without recognizing all of the operational impacts the new design would have. The inspectors determined that the performance deficiency was more than minor because it adversely affected the Design Control attribute of the Initiating Events Cornerstone, whose objective is to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inadequate design caused the new valves to fail open, which resulted in a manual reactor trip. Utilizing IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," effective July 1, 2012, the inspectors determined the finding was Green, or very low safety significance, by answering 'no' to the "Transient Initiators" question in Exhibit 1. Specifically, while the transient caused a plant trip, all mitigation equipment remained available to respond to the trip. The inspectors determined the finding had an associated cross-cutting aspect in the Human Performance area, namely, H.8, "Procedure Adherence." The licensee failed to follow the requirements of the modification procedure, which would have prompted a more thorough review of the modification.

Enforcement: This finding does not involve enforcement action because no violation of a regulatory requirement was identified. The steam dumps are classified as a nonsafety-related system. The finding was entered into the CAP as AR–2015–5825. Because this finding does not involve a violation and is of very low safety or security significance, it is identified as a finding (FIN). **(FIN 05000316/2015003–02, Failure of Steam Dump Valves Results in Plant Trip)**

(2) Introduction: The inspectors identified an Unresolved Item (URI) related to deletion of procedures used to operate the HSD. The UFSAR and TS bases describe the HSD and its use; therefore procedures to operate the panel should have remained in place. Licensing actions, including NFPA 805 conversion and transition to improved TSs complicate the current license bases requirements for the HSD.

Description: In 2003, the licensee determined that the HSDs were not required under appendix R since local instrumentation panels had been installed. The licensee prepared a 50.59 screen that inappropriately concluded that the procedures could be deleted without assessing the deletion using a full evaluation. The licensee deleted the procedures but failed to address the discussion of the HSDs in the UFSAR and TS bases. Subsequent to deletion of the procedures, the licensee received approval to convert their TSs from custom TSs to improved TSs. The revised TS still discussed the HSDs; however, reference to specific instruments were moved from the TS to the TS bases.

In addition to the conversion to improved TSs, the licensee also converted fire protection from appendix R to NFPA 805 via the license amendment process. This revision recognized that the local panels would be credited for achieving and maintaining safe shutdown from outside the control room. However, the HSD satisfies draft GDC 11, which is part of the current licensing basis, and states the license must be able "to shutdown the reactor and maintain it in a safe condition if access to the control room is lost due to fire or other cause."

In 2009, the licensee recognized the UFSAR still substantively discussed use of the HSDs despite the deletion of procedures for them, and entered this issue into the CAP; however, the CAP did not result in substantive changes to the UFSAR and also failed to recognize the improper screen performed in 2003.

In reviewing this issue, the inspectors recognized that the issue involved multiple changes to the license bases and that multiple violations of NRC requirements might exist. Because of the interactions between various licensing actions and requirements, this issue will remain a URI pending better understanding of potential violations and the current license bases for the HSD.

As part of the inspection, the inspector reviewed the requirements of TS 3.3.4, Remote shutdown Monitoring Instrumentation. This TS addresses five indication functions on the HSDs and the licensee continues to perform surveillances on these instruments. Therefore, instrumentation remains operable. In addition, the licensee has entered the condition into the CAP and developed new procedures to operate the HSD.
(URI 05000315/2015003–03; 05000316/2015003–03, Deletion of Hot Shutdown Panel Procedures)

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- Restoration of 1AB EDG following bearing failure;

- 1–FW–118–3 AFW to main feed check valve repair;
- Unit 1 east ESW pump motor replacement; and
- pipe replacement in Unit 2 emergency boration line.

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 post-maintenance 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 four post-maintenance testing samples as defined in IP 71111.19–05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

a. Inspection Scope

The inspectors evaluated outage activities for an unscheduled outage on Unit 1 that began on June 1, 2015, and continued through July 29, 2015. The plant had shutdown to comply with TSs following the failure of the 1AB EDG during testing following a maintenance period. The inspectors reviewed activities to ensure that the licensee considered risk in developing, planning, and implementing the outage schedule. Part of the review was conducted in the second quarter and was documented in the associated inspection report (IR).

The inspectors observed or reviewed outage equipment configuration and risk management, control and monitoring of decay heat removal, control of containment activities (to include inspections of containment just prior to reactor startup), personnel fatigue management, startup and heatup activities, and identification and resolution of problems associated with the outage.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted one other outage sample as defined in IP 71111.20–05.

b. Findings

No findings were identified.

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:

- Pressurizer power-operated relief valve stroke time testing (IST);
- Unit 2 main generator reactive capability test (routine); and
- Reactor Coolant System (RCS) leak rate for Unit 1 (RCS leakage).

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 one routine surveillance testing sample, one inservice testing sample, and one RCS leak inspection sample, as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (IP 71114.04)

a. Inspection Scope

The regional inspectors performed an in-office review of the latest revisions to the EP and Emergency Action Levels (EAL). The licensee transmitted the EP and EAL revisions to the NRC pursuant to the requirements of 10 CFR 50, Appendix E, Section V, "Implementing Procedures." The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment to this report.

This EAL and EP Changes inspection constituted one inspection sample as defined in IP 71114.04.

b. Findings

Introduction: The inspectors identified a finding of very-low safety significance with an associated SL–IV NCV of 10 CFR 50.54(q)(3) and 10 CFR 50.54(q)(4) related to a staffing change in the licensee's EP that reduced the effectiveness of the Plan, which was made without prior NRC approval. Specifically, in March 2004, the licensee made changes to wording in the Donald C. Cook EP that allowed two RP Technician positions to be augmented by staff that were not qualified RP Technicians. This issue was originally documented as URI 05000315/2014005–05.

Description: During a review of EP changes in December 2014, the inspectors noted there was a change in Table 1 of Revision 35 to the licensee's EP. The change for personnel conducting offsite surveys in the 60-minute responder column was from three RP Technicians to two RP Technicians and one Environmental Assessment Coordinator (EAC). The second change was for personnel conducting in-plant surveys in the 60-minute responder column from two RP Technicians to one RP Technician and one Radiological Assessment Coordinator (RAC). Consistent with the requirements in 10 CFR 50.54(q)(3) and 10 CFR 50.54(q)(4), a licensee may make changes to its EP without NRC approval only if the licensee performs and retains an analysis demonstrating that the changes do not reduce the effectiveness of the Plan, and changes to a licensee's EP that reduce the effectiveness of the Plan may not be implemented without prior approval by the NRC. As stated in 10 CFR 50.54(q)(1)(iv), a

reduction in effectiveness means a change in an EP that results in reducing the licensee's capability to perform an emergency planning function in the event of a radiological emergency. According to the licensee's 10 CFR 50.54(q) screening, this change was to align the wording in Sections B.5.c.4 and B.5.a.4 of the EP with Table 1. After further review, the inspectors noted this wording in the EP was changed to include the EAC and the RAC as 60-minute responders in Revision 19 of the Plan. When the inspectors reviewed the 10 CFR 50.54(q) screening of the changes in Revision 19, there was no evaluation done for this specific change. The inspectors then reviewed Revision 18 of the EP as well as the associated safety evaluation that was conducted by the NRC and approved by the NRC for Revision 18. The changes this safety evaluation approved were a removal of 30-minute augmented staffing positions from the EP and placement of staff either on shift or in a 60-minute response position. In this evaluation, the 60-minute response positions for offsite surveys and in-plant surveys were specifically stated as fully qualified RP Technicians. The EAC and RAC are not fully qualified RP Technicians. Therefore, the changes that were made in Revision 19 to Sections B.5.c.4 and B.5.a.4, to include the EAC and RAC as 60-minute responders, reduced the effectiveness of the EP and this was done without prior NRC approval. In addition, the 10 CFR 50.54(q) screening for this change from EP Revision 18 to 19 did not address the specific change and an evaluation of this change was not performed. The licensee entered this issue into its CAP as AR 2014–15685, and changed the EP to restore compliance with the NRC-approved EP (Revision 18).

Analysis: The inspectors determined the licensee's failure to perform and retain an analysis demonstrating that the changes did not reduce the effectiveness of its EP, and to request prior approval for a change that decreased the effectiveness of its EP by allowing an RAC and an EAC to be 60-minute responders was contrary to the requirements in 10 CFR 50.54(q)(3) and 10 CFR 50.54(q)(4); and, therefore was a licensee performance deficiency warranting a significance evaluation. The inspectors reviewed the examples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," dated August 11, 2009, and found no examples related to this issue. Consistent with the guidance in IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, the inspectors determined the performance deficiency was a finding of more than minor significance because it was associated with the Emergency Preparedness Cornerstone attribute of Procedure Quality, and affected the cornerstone objective of ensuring the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, a failure to evaluate changes to the EP as required by 10 CFR 50.54(q)(3) resulted in unacceptable changes made to the Plan that decreased its effectiveness without prior NRC approval as required by 10 CFR 50.54(q)(4) and reduced the licensee's capability to perform an emergency planning function in the event of a radiological emergency.

In accordance with IMC 0609, "Significance Determination Process [SDP]," Attachment 0609.04, "Initial Characterization of Findings," Table 3, "SDP Appendix Router," the inspectors determined this finding affected the Emergency Preparedness Cornerstone, specifically the Failure to Comply with a Planning Standard or Risk-Significant Planning Standard component, and would require review using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process", dated September 23, 2014. The NRC provided an approval in a safety evaluation for Revision 18 of the Donald C. Cook EP. Revision 18 included three RP Technicians as 60-minute responders for offsite surveys, and two RP Technicians as 60-minute

responders for onsite surveys. The licensee revised the EP in Revision 19 and this change allowed the RAC and EAC as 60-minute responders to augment RP Technicians. The RAC and EAC were not qualified RP Technicians. This change was not evaluated by the licensee and was a reduction in effectiveness made without prior NRC approval. In accordance with IMC 0609, Appendix B, Attachment 2, "Failure to Comply Significance Logic", the inspectors determined this finding was a licensee performance deficiency of very-low safety significance (green) because the finding was a failure to comply that did not result in a loss of the planning standard function.

Violations of 10 CFR 50.54(q) are dispositioned using the traditional enforcement process because they are considered to be violations that potentially impede or impact the regulatory process. This violation was also associated with a finding that had been evaluated by the SDP, and communicated with a SDP color reflective of the safety impact of the deficient licensee performance. The SDP, however, does not specifically consider regulatory process impact. Thus, although related to a common regulatory concern, it is necessary to address the violation and finding using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated finding. In accordance with Section 6.6.d of the NRC Enforcement Policy, this violation was categorized as SL–IV because it involved the licensee's ability to meet or implement a regulatory requirement not related to assessment or notification such that the effectiveness of the EP decreases.

The inspectors concluded that because the performance deficiency involved a change to the licensee's EP in 2004, this issue would not be reflective of current licensee performance and no cross-cutting aspect was identified.

Enforcement: 10 CFR 50.54(q)(3) states, in part, the licensee may make changes to its EP without NRC approval only if the licensee performs and retains an analysis demonstrating that the changes do not reduce the effectiveness of the plan. In addition, 10 CFR 50.54(q)(4) states, in part, the changes to a licensee's EP that reduce the effectiveness of the Plan as defined in Paragraph (q)(1)(iv) of this section may not be implemented without prior approval to the NRC. 10 CFR 50.54(q)(1)(iv) states a reduction in effectiveness means a change in an EP that results in reducing the licensee's capability to perform an emergency planning function in the event of a radiological emergency.

Contrary to the above, on March 3, 2004, the licensee made changes to its EP without performing and retaining an analysis demonstrating that the changes did not reduce the effectiveness of the Plan, and did not request prior NRC approval for the change which decreased the effectiveness of the Plan. Specifically, the changes allowed individuals who were not qualified RP Technicians to be 60-minute responders. Because this violation was not repetitive or willful, and was entered into the licensee's CAP, it is being treated as a NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy (**NCV 05000315/2015003–04; 05000316/2015-003-04, Changes to Minimum 60-Minute Emergency Responder Staffing Without Prior NRC Approval**). The licensee entered this violation into its CAP as AR 2014–15685 and changed the EP to restore compliance with the NRC-approved EP (Revision 18).

URI 05000315/2014005–05, "Changes to Minimum 60-Minute Emergency Responder Staffing Without Prior Approval," is closed.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index—High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - High Pressure Injection Systems performance indicator (PI) for Units 1 and 2 for the period from the third quarter 2014 through the second quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99–02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated IRs for the period of the third quarter of 2014 through the second quarter of 2015 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. 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 and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI high pressure injection system samples as defined in IP 71151–05.

b. Findings

Introduction: During review of MSPI, the inspectors identified an URI associated with the adequacy of the Probable Risk Assessment (PRA) model of record used for MSPI. Specifically, an error in the PRA model resulted in extremely high hours for system unavailability. The same error impacted the PRA for NFPA–805 and internal events.

Description: While reviewing MSPI, the inspectors identified an URI regarding the licensee's PRA model. While reviewing margin reports as part of the inspection, the inspectors noted that available margin for unavailability for all the SSCs covered by MSPIs was extremely high. The SSC with the least amount of available margin had about 250,000 hours of unavailability before the MSPI would cross the threshold from Green to White. The inspectors discussed the issue with licensee and learned that an error in the PRA model of record caused the high numbers. AR 2014–3184 documents the issue. The licensee told the inspectors that during NFPA 805 reviews, the NRC had inquired about the model's treatment of test and maintenance. In response, the licensee identified the error, and corrected the model for NFPA 805. The licensee has also updated the model for on line risk management. Because of additional controls on the model used for MSPI, the corrected model did not become the PRA model of record until September 2015.

The inspectors inquired if the licensee had performed any evaluation to validate that information previously submitted to the NRC using the flawed model resulted in a masked greater-than-green MSPI result. The licensee stated they believed all the prior MSPI submittals would remain green; however, the licensee also stated that the NRC endorsed NEI guidance did not require licensee's to resubmit MSPI data if the model changed. In particular, the licensee noted that NEI 99–02 guidance regarding model revisions requires the model to be in effect for the entire quarter. A revised PRA model becomes effective on the first day of the quarter following approval of the revised model as the PRA model of record. Thus, a revised model would not impact previously submitted MSPI data.

In addition, the inspectors learned that some of the licensee conditions for NFPA 805 addressed the adequacy of the PRA model and imposed requirements for conducting peer review of the PRA model. During the inspection period, the inspectors could not determine if the licensee satisfied the associated license conditions.

The inspectors noted that NEI 99–02 also requires the PRA model to be technically accurate with requirements included in appendix G. In addition, NEI 99–02 also requires licensees to correct data errors for previously submitted data. In this case, the inspectors, during the inspection period, could not determine:

1) If the flawed model met the Appendix G requirements for technical adequacy;

2) if the model does not meet appendix G, would the data be considered in error and in need of correction;

3) impacts of the flawed PRA model on other documents submitted to the NRC; and

4) impact of the error on license condition for NFPA 805.

Pending resolution of the above items, this issue is considered a URI.
(URI 05000315/2015003-05; 05000316/2015003-05; PRA Model Errors)

.2 Mitigating Systems Performance Index—Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Heat Removal System PI for Unit 1 and Unit 2 for the period from the third quarter of 2014 through the second quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99–02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, MSPI derivation reports, and NRC Integrated IRs for the period of the third quarter of 2014 through the second quarter of 2015 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. 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 and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI heat removal system samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index—Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - RHR System PI for Unit 1 and Unit 2 for the period from the third quarter of 2014 through the second quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99–02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC Integrated IRs for the period of the third quarter of 2014 through the second quarter of 2015 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 and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI - RHR system 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 IPs 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 followup, 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 Annual Followup of Selected Issues: Failure of 1AB Emergency Diesel Generator

a. Inspection Scope

On May 21, 2015, the 1AB EDG suffered a failure of the #4 main bearing during a post-maintenance test run. As a result of the failure, the EDG automatically shutdown on high bearing temperature. At the time of the failure, Unit 1 was in day three of a 14 day TS action statement allowed for major EDG maintenance outages. Because repairs would exceed the allowed outage time, on June 1 the licensee shutdown Unit 1 in accordance with TSs. During the forced outage, the license repaired the EDG, which included replacement of the crankshaft and several bearings. Following repairs, the licensee tested the 1AB EDG, confirmed operability, and returned it to service. On July 29, the licensee restarted Unit 1.

During the repair activities, the licensee gathered information to determine the cause of the failure via the root cause analysis process. In order to ensure a thorough evaluation of the technical portion, the licensee contracted with outside experts to analyze the data. The experts helped identify that electrical arcing through the bearing led to the failure. Some of the physical factors that led to the arcing were:

- Air entrainment in the bearing oil which reduced electrical resistance across the bearing oil film;
- previously unknown degradation of the #6 rear connecting rod bearing; and
- rotor eccentricity outside of vendor recommendations.

Regarding air entrainment, in the past, the licensee recognized the potential for residual air in the lube oil system following refill. Piping configuration included some localized high points that could not be vented. However, since no previous problems had

occurred, the station determined it was not an issue (in-fact, a note had been added to procedures identifying that air might be left in the system following a drain and fill). However, the maintenance performed in this case drained the system lower than had been done previously. Further, instead of refilling certain filter housings prior to refilling the system-proper, the automatic vent lines were relied upon to clear the air out, which may not have been fully effective. These issues had an impact on the volume of air remaining in the system upon this particular EDG start. Regarding the other factors necessary for arcing to occur, during repairs it was identified that the #6 rear connecting rod bearing had been damaged during a maintenance period in 2008. The degradation helped complete a current path for the arcing to occur. Additionally, the licensee determined that rotor eccentricity was outside of manufacturer's tolerances (eccentricity refers to the centering of the rotor within the generator and exciter). This would allow a voltage to be developed on the shaft to help produce the arcing.

In order to preclude recurrence, the licensee developed corrective actions to add additional vents to the EDG lube oil systems. Additional corrective actions to preclude recurrence were to add procedural steps to fill strainer/filter housings following any draining, prior to filling the rest of the system. Additionally, procedural notes to allow air in the system were removed. Throughout the licensee's root cause determination process, the inspectors reviewed available information to validate there were no potential concerns with the other EDGs onsite. As a result of their review of the licensee's investigation, the inspectors determined there was a licensee-identified violation associated with the 1AB EDG bearing failure. The violation is discussed in Section 4OA7 of this report.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152–05.

b. Findings

A licensee-identified finding is discussed in Section 4OA7 of this report.

4OA5 Other Activities

.1 Operation of an Independent Spent Fuel Storage Installation at Operating Plants (60855.1)

a. Inspection Scope

(1) Review of Loading and Storage Operations

The inspectors observed and evaluated select licensee loading, processing, and transfer operations of the tenth canister during the licensee's 2015 dry fuel storage campaign to verify compliance with the applicable Certificate of Compliance (CoC) conditions, the associated TSs, and approved Independent Spent Fuel Storage Installation (ISFSI) procedures. Specifically, the inspectors observed: loading and independent verification of fuel assemblies placed into a multi-purpose canister (MPC); movement of the transfer cask (HI-TRAC) from the spent fuel pool to the decontamination area; decontamination and surveying; welding and nondestructive testing of the MPC lid; forced helium dehydration; and restrained vertical transfer operations. The licensee used the Holtec International HI-STORM (storage cask) 100 Cask System for this campaign.

The inspectors reviewed procedures used to perform ISFSI preparation, loading, sealing, transfer, monitoring, and storage activities. The inspectors reviewed applicable heavy loads procedures and inspection documentation to determine compliance with the site's heavy loads program. The inspectors reviewed select documents, in part, after the licensee completed certain loading activities.

The inspectors reviewed the licensee's evaluations associated with fuel characterization and selection for storage. The inspectors reviewed the campaign cask fuel selection packages to verify that the licensee was loading fuel in accordance with the CoC approved contents.

The inspectors reviewed a number of condition reports and the associated corrective actions since the last ISFSI inspection. The inspectors also reviewed 72.48 screenings and changes to the licensee's 10 CFR 72.212 evaluations since the last ISFSI inspection.

The inspectors performed a walk down of the ISFSI pad to assess the material condition of the pad and the loaded HI-STORM 100 storage casks. The inspectors reviewed the licensee's radiation monitoring program. Additionally, the inspectors performed independent radiation surveys around the ISFSI pad and storage casks.

(2) Review of ISFSI Activities for Determination of No Adverse Impact on Site Operation or Technical Specifications

During the licensee's initial loading campaign, the licensee provided physical restraint of vertical transfer operations when a HI-TRAC containing an MPC loaded with spent fuel is rested on a HI-STORM while in the Fuel Handling Building.

The licensee has completed revised calculations that demonstrate a free-standing configuration during vertical transfer operations will not tip-over or excessively slide during a postulated design basis seismic event, without physical restraints.

The inspectors, with the assistance of the Division of Spent Fuel Management, reviewed the licensee's revised calculations to the vertical transfer configuration and Fuel Handling Building structure to ensure the stability and structural integrity of an unrestrained vertical transfer system. The licensee determined the proposed activity will not impact plant operations, nor does it adversely affect the function of any plant equipment or structure that is used in establishing the Plant or ISFSI Design Basis.

b. Findings

No violations of NRC requirements were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 1, 2015, the inspectors presented the inspection results to Mr. J. Gebbie, 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 results of the ISFSI operational inspection were presented on September 4, 2015 to the Plant Manager, Mr. S. Partin, and other members of the licensee's staff; and
- The Annual Review of EAL and EP Changes with the Licensee's Emergency Preparedness Manager, Mr. R. Sieber, on September 23, 2015.

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.

4OA7 Licensee-Identified Violations

The following violations of very low significance (Green) or SL–IV were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as NCVs.

- A finding of very low safety significance (Green) with an associated NCV of TS 5.4, "Procedures," was identified by the licensee for the failure of the 1AB EDG during testing following a maintenance period. Shortly after the EDG was started, it automatically shut down on high bearing temperature. Investigation revealed that the #4 main bearing had failed. The licensee performed a root cause analysis which determined that electric arcing had occurred through the bearing which led to the failure. One of the contributors to the arcing was that air had been left in the lube oil system following maintenance. 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 of Regulatory Guide 1.33 states, in part, that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to this requirement, the procedures for performing maintenance on the lube oil system allowed air to remain in the lube oil system, which helped facilitate electric arcing in the 1AB EDG bearings. The issue was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems cornerstone, with the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as Green based on answering 'no' to the Mitigating Systems screening questions in IMC 0609 Appendix A, "The Significance Determination Process for Findings at Power," effective July 1, 2012. The issue was entered into the CAP as AR-2015-6917. The inspectors concluded the issue was licensee-identified based on the guidance in IMC 0612, "Power Reactor Inspection Reports," issue date January 24, 2013. Under the definition of licensee-identified findings, IMC 0612 states that "most, but not all, licensee-identified findings or violations are discovered through a licensee program or process." One of the processes listed is post-maintenance testing, which was how the bearing failure was discovered.

- A finding of very low safety significance (Green) with an associated NCV of TS 3.5.2, “Emergency Core Cooling System-Operating,” was identified by the licensee for the failure to properly address an oil leak on the Unit 1 East RHR Pump. A leak was identified in March of 2015 and assessed to have no operability impact. Following entry into Mode 5, Cold Shutdown, for the 1AB EDG repairs in June 2015, the leak was again identified and written-up in the CAP. The operability determination performed identified that given the rate of leakage, the pump would not have been able to operate for its thirty-day mission time. A past operability assessment was performed which determined the pump would not have fulfilled the mission time when the pump was required to be operable per TS in Modes 1–4. This should have been identified when the leak was discovered in March. TS 3.5.2 requires two RHR trains to be operable in Modes 1–4. Contrary to this requirement, the East RHR train was inoperable between March and June of 2015. The issue was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems cornerstone, with the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as Green because the pump would have been able to perform for at least its 24 hour PRA mission time. The inspectors’ conclusions regarding significance were confirmed after consultation with a regional Senior Risk Analyst. The issue was entered into the CAP as AR–2015–8659 and AR–2015–7898.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

P. Carteaux, Manager, Dry Cask Operations
A. Christensen, Emergency Preparedness
S. Erickson, Emergency Preparedness
K. Harper, Regulatory Affairs
J. Nimitz, Senior Licensing Activity Coordinator
P. Schoepf, Nuclear Site Services Director
R. Sieber, Emergency Preparedness Manager
K. Simpson, Emergency Preparedness Supervisor
A. Thompson, Emergency Preparedness Supervisor

Nuclear Regulatory Commission

K. Riemer, Chief, Reactor Projects Branch 2
N. Shah, Project Engineer Branch 2
L. Kozak, Senior Risk Analyst
B. Passehl, Senior Risk Analyst

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000315/2015003–01	NCV	Failure to Evaluate Fire Brigade Fire Fighting Techniques (1R05.2)
05000316/2015003–02	FIN	Failure of Steam Dump Valves Results in Plant Trip (1R18)
05000315/2015003–03; 05000316.2015003–03	URI	Deletion of Hot Shutdown Panel Procedures (1R18)
05000315/2015003–04; 05000316/2015003–04	SL–IV	Changes to Minimum 60-Minute Emergency Responder Staffing Without Prior Approval (1EP4)
05000315/2015003–05; 05000316/2015003–05	URI	PRA Model Errors (4OA1)

Closed

05000315/2015003–01	NCV	Failure to Evaluate Fire Brigade Fire Fighting Techniques (1R05.2)
05000316/2015003–02	FIN	Failure of Steam Dump Valves Results in Plant Trip (1R18)
05000315/2015003–03; 05000316/2015003–03	SL–IV	Changes to Minimum 60-Minute Emergency Responder Staffing Without Prior Approval (1EP4)
05000315/2014005–05	URI	Changes to Minimum 60-Minute Emergency Responder Staffing Without Prior Approval (1EP4)

Discussed
None

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

- AR 2015-11984, Geomagnetic Disturbance Warning-Issues with Online Risk
- PMP-2291-WMP-001, Work Management Process Flow Chart, Revision 39

1R04 Equipment Alignment

- 1-OHP-4021-008-002, Placing Emergency Core Cooling in Standby Readiness, Revision 29
- 1-OHP-4021-009-001, Placing the Containment Spray System in Standby Readiness, Revision 23
- 2-OHL-5030-SOM-006, Unit 2 Tours-Unit 2 Turbine Tour, Revision 66
- Drawing 1-OP-5143-77, Emergency Core Cooling (RHR)
- Drawing OP-1-5143-77, Emergency Core Cooling (RHR)
- Drawing OP-2-5106A-56, Flow Diagram Aux Feedwater
- PMP-4030-001-001, Impact of Safety-Related Ventilation on the Operability of TS Equipment, Revision 20

1R05 Fire Protection

- D.C. Cook Fire Safety Analysis, Revision 0
- D.C. Cook Nuclear Plant Fire Safety Analysis, Revision 0
- Drill 315-002-A, Unit 2 BOP Battery Charger, July 28, 2015
- Fire Hazards Analysis, Revision 16
- Fire Pre-Plans, Volume 1, Fire Area AA 5/6, Revision 22
- Fire Pre-Plans, Volume 1, Fire Area AA3, Revision 22
- Fire Pre-Plans, Volume 1, FZ 42D, AB Battery Room – Unit 1, Revision 21

1R06 Flooding

- 12-OHP-4022-001-010, Severe Weather, Revision 15
- AR 2015-3705, Turbine Building Submarine Doors Open While Painting, March 19, 2015
- DCC-PV-12-MC17-N, Flood Protection Features, Revision 1
- DCC-PV-12-MC22-N, Flood Protection ESW Pipe Tunnel, Revision 2
- MD-12-CW-005-N, Flooding Due to Circulating Water Expansion Joint Failure, Revision 1
- MD-12-Flood-005-N, Local Intense Precipitation Generated Flood Elevations, Cook Nuclear Plant Flood Hazard Re-Evaluation, Revision 0
- SD-061206-001, Flooding Evaluation Report for D.C. Cook Nuclear Power Plant
- WO 55353125-01, Quarterly Manhole Inspections
- WO 55393580-01, Annual Inspection of Manholes for Water/Battery Replacement

1R11 Licensed Operator Requalification Program

- 1-OHP-SO-392, IPTE for Seating Unit 1 Main Feed Check Valve
- 1-OHP-SP-392, Seating Unit 1 Main Feed Check Valve, Revision 1

- RQ-S-4003-U12-T1, Period 4003 U12 Dual Unit Training Scenario 1, Revision 0

1R12 Maintenance Effectiveness

- AR 2013-14944, 2AB EDG 3F Fuel Injection Pump Generated a Leak, October 8, 2013
- AR 2014-12151, Re-Evaluate MR and MSPI Failures Based on PODE 2013-14994-8, October 9, 2014
- AR 2014-9853, Unexpected Control Room Alarm and Unplanned TS Entry, August 20, 2014
- AR 2014-9877, FME Cover Installed on AB DG Vent Caused Indicator Problems, August 21, 2014
- AR 2015-4400, Loss of Indication During 2AB EDG Surveillance, March 31, 2015
- AR-2013-16137, Multiple Indications Protection Set 1 Briefly Restored and Lost Power Again, October 22, 2013
- AR-2013-17115, Unexpected Alarm, CRID-2 Inverter Abnormal, November 6, 2013
- AR-2014-12019, During Performance of PMT, 1-CRID-4 Inverter Failed to Switch to Normal Source, October 5, 2014
- AR-2014-12086, WO Not Complete, Failed Post-Maintenance Tests Following Control Board Replacements, October 6, 2014
- AR-2014-13012, Test Leads Heated and Began to Melt, October 20, 2014
- AR-2014-6898, Voltmeter 2-CRID-1-INV-VM-1 is Reading 257V, June 9, 2014
- AR-2015-4656, Unit 2 CRID Inverter 3 Transfer Capability Questionable, April 3, 2015
- AR-2015-6542, Unit 2 CRID Voltage Has Lowered Three Volts, May 11, 2015
- AR-2015-6935, CRID-3-CVT Making Unusual Noise, May 21, 2015
- Drawing OP-1-12050-26, 120/280V AC Control Room Instrument Distribution Cabinets “CRID I” Through “CRID IV” Engineered Safety System
- Drawing OP-1-98085-24, 120VAC Instrument Distribution Cabinet “CRID-III” Elementary Diagram, SH-1
- DTG-MRE-001, Maintenance Rule Evaluation Desktop Guide, Revision 2
- EDG 2AB Unavailability Hours, July 2013 to July 2015
- Maintenance Rule Scoping Document, EDGs, Revision 3
- System Health Report, Unit 2 EDG, Third Quarter 2014 and First Quarter 2015
- Various System Health Reports, Unit 1 and Unit 2 120VAC Distribution Systems, 2013-2015
- WO 55018546,2-6-1-DGAB Remove/Replace HFA Relay, June 20, 2006
- WO 55463038, 2-DGAB-VRCKT, Install New Voltage Regulator, April 23, 2015

1R13 Maintenance Risk Assessments and Emergent Work Control

- 12-MHP-5021-005-001, Freeze Seals, Revision 8
- 12-OHP-5030-057-001, Screen House Vulnerability Determination, Revision 27
- AR-2015-11681, Air/Gas Void Found After Fill and Vent of 2-QFI-420
- Drawing 2-CS-553, Isometric of Drawings 12-5129 and 12-5131
- Drawing OP-12-5115D-33, Flow Diagram Primary Water System
- Drawing OP-12-5131-49, Flow Diagram CVCS Makeup Units 1 and 2
- Drawing OP-2-5129-54, Flow Diagram CVCS Reactor Letdown and Charging
- Drawing OP-2-5129A-41, Flow Diagram CVCS Reactor Letdown and Charging
- IPTE Briefing Repair 2-QFI-420 Boration Flowmeter Via Freeze Seal, Aug 27, 2015
- Operator Logs, Unit 1, August 10, 2015
- Plan of the Day, Wednesday August 19, 2015
- PMP-2291-OLR-001, Online Risk Management, Revision 34
- PMP-2291-WAR-001, Work Activity Risk Management Process, Revision 42
- PMP-2291-WMP-001, Work Management Process Flowchart, Revision 38

- Unit 1 Control Room Logs, August 10, 2015

1R15 Operability Determinations

- 1-OHP-4023-SUP-002, Restoration of Reserve Power to 4kV Busses, Revision 12
- 1-OHP-4030-132-217A, DG1CD Load Sequencing and ESF Testing, Revision 41
- AR-2015-10367, 1-PP-7E, U1 E ESW Pump-Abnormal Conditions After Shutdown, August 10, 2015
- AR-2015-1147, U1 E RHR Pump Lower Motor Bearing Oil Level Low, January 26, 2015
- AR-2015-12845, Work Request for Compensatory Measure From 2-NCR-106 ODE, October 1, 2015
- AR-2015-6009, Annunciator for 2C Bus Failed To Alarm While Swapping Power Supplies, April 28, 2015
- AR-2015-7898, RHR Pump Oil Leak, June 14, 2015
- AR-2015-8252, Added A Total Amount Of 7 Oz. to 1-PP-35E Motor Lower Bearing, June 23, 2015
- AR-2015-8443, 2-NCR-106 Closes Very Sluggishly, June 27, 2015
- AR-2015-8479, Requirements For a Full Penetration Weld Not Met, June 29, 2015
- AR-2015-8659, Missed Opportunities To Identify And Correct RHR Pump Oil Leak, July 2, 2015
- AR-2015-9639, Streaming Analysis Results, July 24, 2015
- AR-2015-9807, 2-NCR-106 Slow To Close, July 29, 2015
- AR-2015-9829, Annunciator 120 Drop 74 Did Not Alarm When Paralleled, July 29, 2015
- Drawing OP-1-5105D-10, Flow Diagram Steam Generating System, Unit 1
- Drawing OP-1-5106-60, Flow Diagram Feedwater
- Drawing OP-1-5106A-61, Flow Diagram Aux Feedwater
- Drawing OP-2-5141-43, Flow Diagram Nuclear Sampling
- Drawing OP-2-5141-43, Nuclear Sampling
- OP-1-98044-54, 4kV Diesel Generator 1CD ACB Elementary Diagram
- Operator Logs, Unit 1, June 14, 2015
- PMP-7030-OPR-001, Operability Determination, Revision 24
- Unit 1 TS Bases, Section 3.8.1, AC Sources- Operating, Revision 41

1R18 Plant Modifications

- 12-EHP-2291-RIS-001, Engineering Risk Analysis, Revision 12
- 12-EHP-5040-MOD-009, Engineering Change Reference Guide, Revision 55
- 2003-0206-00, Update/Development of Operation Procedures for Appendix R Program, Revision 0
- 2-OHP-4025-001-001, Emergency Remote Shutdown, Revision 1
- 2-OHP-4025-001-001, Emergency Remote Shutdown, Revision 11
- AR 00860618, Hot Shutdown Control Described in UFSAR Out-of-Date, November 12, 2009
- AR-2015-0132, Evaluate Hot Shutdown Control Stations as Abandoned Equipment, January 6, 2015
- AR-2015-5825, U2 Reactor Trip Due to Failed Steam Dump System, April 23, 2015
- Cook Nuclear Plant Unit 1 LCO 3/4.3 Remote Shutdown Instrumentation, Amendment 281
- DB-12-AFWS, AFW System, Revision 6
- PMP-5040-MOD-007, Engineering Modifications, Revision 42

1R19 Post-Maintenance Testing

- 12-IHP-6030-032-004, EDG Woodward 2301A Analog Governor Tuning and Adjustment, Revision 9
- 12-MHP-5021-032-146, EDG System Mechanical Maintenance, Revision 4
- 12-MHP-5021-032-152, Emergency Diesel Engine Cylinder Lining O-Ring Replacement, Revision 4
- 12-QHP-5070-NDE-002, Visual VT-2 Examinations, Revision 6
- 1-OHP-4021-032-001AB, DG1AB Operation, Revision 32
- 1-OHP-4021-055-003, Placing a Main Feed Pump In-Service, Revision 47
- 1-OHP-4030-102-060, PZR Power Operated Relief Valve Testing, Revision 14
- 1-OHP-4030-119-022E, East ESW Group A and Comprehensive Pump Test, Revision 30
- 1-OHP-4030-132-217B, DG1AB Load Sequencing and ESF Testing, Revision 39
- 2-OHP-SP-395, Fill and Vent 2-QFI-420, Revision 1
- AR- 2015-9764, Written Instruction Performed Out of Sequence, July 28, 2015
- AR-2015-10463, M&TE Used Past Expiration Date, August 11, 2015
- AR-2015-11681, Air/Gas Void Found After Fill and Vent of 2-QFI-420
- AR-2015-9087, Broken Cotter Pins Found in 1AB Crankcase, July 14, 2015
- Check Valve Condition Monitoring Report, CMP-FW-03, Revision 1
- Condition Report 06098018, Combustion Pressures Are Greater Than 145 PSIG Between Cylinders, April 8, 2006
- DIT-S-1247-00, EDG Cylinder Combustion and Compression Pressures and Lube Oil System Fill and Vent Process
- Drawing OP-12-5115D-33, Flow Diagram Primary Water System
- Drawing OP-12-5131-49, Flow Diagram CVCS Makeup Units 1 and 2
- Drawing OP-1-5151A-49, Flow Diagram EDG, Unit 1
- Drawing OP-2-5129-54, Flow Diagram CVCS Reactor Letdown and Charging
- Drawing OP-2-5129A-41, Flow Diagram CVCS Reactor Letdown and Charging
- EC-54508, 1-FW-118-3, Installation of Heli-Coil Threaded Inserts in Containment Isolation Check Valve, Revision 0
- ESI-EMD Owners Group EDG Standby Condition Paper, June 23, 2003
- ES-PIPE-1013-QCN, Pipe Material Specification, Revision 5
- IEEE Standard 387-1995, Power Supplies for Nuclear Generating Stations
- PORC Meeting Notes 4650, IPTE for 1AB EDG Restart, July 9, 2015
- Regulatory Guide 1.9, Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants, Revision 4
- Test Plan Outline for 1AB EDG Operability Testing
- Various Past 1AB EDG Operating Data, From 1-OHP-4030-132-027AB, AB Diesel Generator Operability Test (Train B)
- Various Past 1CD EDG Operating Data, From 1-OHP-4030-132-027CD, CD Diesel Generator Operability Test (Train A)
- VTD-ATWD-0041, Atwood and Morrill Instruction Manual for Check Valves, Revision 0
- VTD-WORT-0001, Installation and Operating Instructions, Four-Cycle Diesel and Dual Fuel Engines, Type SWB-VEE
- WO 55423219-05, Full Load Current Readings (PMT)
- WO 55423219-06, Verify 1-PP-7E Operability After Motor Replacement
- WO 55467188-88, EDPM, 1-OME-150-AB-EN, Support MTM Slow Speed Engine Runs
- WO 55468049-14, Perform Checks After Initial One Hour Run
- WO 55468049-47, Slow Speed Engine Runs and Maintenance Checks in Support of U1 AB Crank Replacement
- WO 55469481-02, 1-FW-118-3, Disassemble, Clean/Inspect, Repair Valve, July 24, 2015

- WO 55469481-20, NQQS: 1-FW-118-3, Perform VT-2 System Leakage Exam
- WO 55470897-17, 2-QFI-420, Perform VT-2
- WOER 20012534, Engineering to Provide Direction on a Schedule for New Bearing 'Run In'
- WOER 20013220, Provide Base Coupling Gap
- WOER 20013224, Unit 1 East ESW Pump Coupling Gap Evaluation
- WOER 20013243, ESW Pump Discharge Head Machining For Alignment

1R20 Outage Activities

- AR 2015-8177, 1-QRV-21 Will Not Open on Demand, June 23, 2015
- AR 2015-8428, West CTS Breaker Push Button on Breaker Not Flush, June 26, 2015
- AR 2015-8405, Igniter 1-LDISB-B32 SN/059 Temperature Fluctuates, June 26, 2015
- AR 2015-8447, Mode 4 Restraint PMT 1-IMO-54, June 27, 2015
- AR 2015-7311, Oil Found On and Around 1-PP-45-1 Reactor Coolant Pump #1, June 1, 2015
- AR 2015-7855, DIS Low Range Current, June 12, 2015
- AR 2015,7313, 1-NRV-153 Failed IST, June 1, 2015
- AR 2015-8521, Oil on 1-PP-45-1-MTR, June 30, 2015
- 1-OHP-4021-001-002, Reactor Startup, Revision 55
- 1-OHP-4021-001-001, Plant Heat-Up From Cold Shutdown to Hot Standby, Revision 72

1R22 Surveillance Testing

- 12-OHP-SP-308, Main Generator Reactive Capability Test, Revision 2 and Revision 3
- 1-OHP-4030-102-060, Power Operated Relief Valve Testing,
- AR-2015-9975, U-1 RCS Leak Rates at Tier 3 Criteria After Forced Outage, August 2, 2015
- AR-2015-10260, ODMI for Unit 1 RCS Leakage Issue, August 6, 2015

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

- EP; Revisions 34, 35, and 36
- AR 2013-18700; Four of Eight RP Techs Responded to Unannounced Drill; December 12, 2013
- AR 2014-10545; RP to Evaluate Adequacy of ERO Staffing; September 18, 2014
- AR 2014-15685; Potential EP Finding; December 19, 2014
- AR 2015-2337; ERO Staffing in TSC for PET Engineering Needed Modification; February 17, 2015
- AR 2015-6616; No Show During ERO Unannounced Call-Out Drill; May 13, 2015
- AR 2015-6628; ERO Drill Chemistry Technician Support; May 14, 2015
- AR 2015-6659; CAQ-Condition Adverse to Quality; May 14, 2015
- AR 2015-10784; CAQ-Condition Adverse to Quality; August 18, 2015

4OA1 Performance Indicator Verification

- 2-OHP-4030-208-053B, ECCS Valve Operability Test, Revision 26
- AR 2014-3184, PRA Test and Maintenance Modeling Error, May, 6 2014
- D.C. Cook MSPI Scoping Document
- MSPI Margin Reports, Heat Removal System, Third Quarter 2014 Through Second Quarter 2015
- MSPI Margin Reports, High Pressure Injection System, Third Quarter 2014 Through Second Quarter 2015
- NEI 99-02, Regulatory Assessment PI Guideline, Revision 7
- Various Control Room Log Entries Regarding RHR Components, 2015

4OA2 Identification and Resolution of Problems

- AR-2015-6917, Unit 1 AB EDG Tripped During PMT Run, May 21, 2015
- AR-2015-7286, Spare EDG Crankshaft Journal Not In Spec, June 1, 2015
- AR-2015-7814, #7 EDG Bearing Half From Materials Storage Had Gouges, June 11, 2015
- AR-2015-8972, Evaluate The Organizational Results to AR-2015-6827, July 10, 2015
- EPRI Field Guide, 1026566, Bearing Damage Mechanisms, Final Report, October 2012
- EPRI Report 1021780, Manual of Bearing Failures and Repair in Power Plant Rotating Equipment, 2011 Update
- Unit 1 AB EDG CMP-Week 9407 Schedule, Revision 17
- Various Generator and Exciter Eccentricity Results, 2006-2015

4OA5 Other Activities

- 10 CFR 72.212 Evaluation Report, Revision 2
- 12-OHP-4051-DCO-300; MPC Loading Operations; Revision 16
- 12-OHP-4051-DCO-301; MPC Boron Sampling; Revision 13
- 12-OHP-4051-DCO-400; MPC Welding Blowdown Drying and Backfill; Revision 19
- 12-OHP-4051-DCO-500; Transfer Operations; Revision 15
- 12-OHP-4051-DCO-600; Dry Cask Operations Abnormal Response; Revision 6
- 12-OHP-4051-DCO-700; MPC Unloading; Revision 4
- 12-OHP-4051-DCO-805; Dry Cask Special Lifting Device Inspection; Revision 3
- 72.48 2013-426 Through 72.48 2015-281
- Dry Cask Storage ALARA Plan; Revision 0
- Dry Cask Storage Campaign Two Preparations Checklist; May 21, 2015
- EC 52584; D.C. Cook Dry Cask Loading Campaign Two; Revision 0
- EC 54262; Dry Cask Unrestrained/Freestanding Stack-Up Configuration; Revision 0
- Holtec Qualification Records
- Miscellaneous Dry Cask Storage Conditions Reports 2013-2015
- MPC-317 Through MPC-323 Radiological Survey Datasheets
- PA-12-02; ISFSI Audit; January 8, 2013
- PA-13-18; ISFSI Audit; August 5, 2013
- PCI Qualifications Records
- Quarterly ISFSI Pad and Pole Building Survey Map; June 26, 2015
- WO 55445681-05; Dry Cask Lifting Device Inspection; May 9, 2015

LIST OF ACRONYMS USED

10 CFR	Title 10 of the *Code of Federal Regulations*
AC	Alternating Current
ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
AR	Action Request
CAP	Corrective Action Program
CoC	Certificate of Compliance
DC	Direct Current
EAC	Environmental Assessment Coordinator
EAL	Emergency Action Levels
EDG	Emergency Diesel Generator
EP	Emergency Plan
ESW	Essential Service Water System
FIN	Finding
HI-STORM	Storage Cask
HI-TRAC	Transfer Cask
HSD	Hot Shutdown Panel
ISFSI	Independent Spent Fuel Storage Installation
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
MPC	Multi-Purpose Canister
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
PI	Performance Indicator
PRA	Probable Risk Assessment
RAC	Radiological Assessment Coordinator
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RP	Radiation Protection
SDP	Significance Determination Process
SL-IV	Severity Level IV
SSC	Structure, System, and Component
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order

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; 72-072
License Nos. DPR–58; DPR–74

Enclosure:
IR 05000315/2015003; 05000316/2015003; 07200072/2015001
w/Attachment: Supplemental Information

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