UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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May 11, 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: DONALD C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000315/2015001;
05000316/2015001

Dear Mr. Weber:

On March 31, 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 April 15, 2015, with Mr. J. Gebbie, and other members of your staff.

Based on the results of this inspection, four NRC-identified findings of very low safety significance were identified. The findings involved violations of NRC requirements. 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

If you contest the subject or severity of this 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 (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

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

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

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	05000315; 05000316
License Nos:	DPR–58; DPR–74
Report No:	05000315/2015001; 05000316/2015001
Licensee:	Indiana Michigan Power Company
Facility:	D. C. Cook Nuclear Power Plant, Units 1 and 2
Location:	Bridgman, MI
Dates:	January 1 through March 31, 2015
Inspectors:	J. Ellegood, Senior Resident Inspector T. Taylor, Acting Senior Resident Inspector J. Mancuso, Acting Resident Inspector N. J. Feliz-Adorno, Senior Reactor Inspector M. Mitchell, Health Physicist L. Rodriguez, Reactor Inspector R. K. Walton, Senior Operator License Inspector
Approved by:	K. Riemer, Chief Branch 2 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000315/2015001, 05000316/2015001; 01/01/2015–03/31/2015; Donald C. Cook Nuclear Power Plant, Units 1 & 2; Annual Heat Sink Performance; Operability Determinations and Functional Assessments; Post-Maintenance Testing.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Four Green findings were identified by the inspectors. The findings were considered non-cited violations (NCVs) of 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 April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas" dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG–1649, "Reactor Oversight Process" Revision 5, dated February 2014.

Cornerstone: Mitigating Systems

Green. The inspectors identified a finding of very-low safety significance, and associated NCV of Title 10 Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion III, "Design Control," for the failure to account for the effects of the maximum strainer debris loading, and isolation valve gross leakage in the emergency service water flow balance testing and hydraulic analysis. As a result, the hydraulic calculations and flow balance test acceptance criteria overestimated the system flow capacity and, thus, did not ensure the capability of the system to meet its flow demand. The licensee entered this finding into their Corrective Action Program (CAP) to evaluate and resolve, including revising the affected calculations and test procedures.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. The finding screened as very-low safety significance (Green) because it did not result in the loss of operability or functionality. Specifically, the licensee reviewed the latest flow balance test results and determined sufficient margin existed between the as-found value and the minimum required flowrate value to account for the effects of the strainer maximum debris loading. In addition, the licensee performed a historical review which did not find instances of isolation valve leakage in excess of the remaining margin. The inspectors did not identify a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance due to the age of the performance deficiency. (Section 1R07.1.b(2))

Green. The inspectors identified a finding of very-low safety significance with an associated NCV of the Donald C. Cook Operating Licenses for the failure to ensure minimum fire sprinkler head pressure would be available for all required sprinkler systems. Specifically, the licensee transitioned to National Fire Protection Association (NFPA)–805 fire regulations without assessing the impact of a previously identified NRC finding regarding the starting setpoints of the fire pumps. The licensee changed the pressure setpoints such that it became possible only one pump would be automatically

started during certain fire scenarios. For those situations, the NRC identified that sufficient pressure may not be available to all required sprinklers per the requirements of NFPA 13, “Standard for the Installation of Sprinkler Systems.” The licensee corrected the issue by performing calculations to demonstrate one pump would be sufficient. However, when the licensee subsequently transitioned to NFPA–805 fire regulations (which added more required sprinklers and continued compliance to NFPA 13), the licensee did not review the previous issue to ensure sufficient pressure would be maintained with the newly required systems. When identified by the NRC, the licensee performed additional calculations to demonstrate that one pump could provide sufficient pressure based on current pump performance. However, the licensee also discovered that current surveillance procedures for the pumps were inadequate, in that, for the full range of allowed performance; pumps could pass the tests yet be below the requirements of the new systems. The licensee initiated action to change the procedures.

The finding was more than minor because adversely affected the Protection Against External Factors (Fire) attribute of the Mitigating Systems Cornerstone. The licensee failed to incorporate previous issues with fire pump starting setpoints while validating fire system performance under the new NFPA–805 fire regulations and that failure impacted the design control attribute of the mitigating system cornerstone. Specifically, the licensee did not ensure that at least 7 psi would be available at all required sprinkler heads, as required by NFPA 13. The inspectors determined the finding had an associated cross-cutting aspect in the Problem Identification and Resolution area, specifically, P.5, Operating Experience. The licensee did not effectively evaluate and implement relevant internal operating experience with respect to the adoption of new fire protection regulations. As a result, a previously identified NRC issue was not assessed with regard to new demands on the fire protection system. (Section 1R15)

Green. The inspectors identified a finding of very-low safety significance with an associated NCV of TS 5.4.1.a, “Procedures,” for the failure to perform all required post-maintenance testing (PMT) before declaring the Unit 1 West Motor-Driven Auxiliary Feedwater Pump operable following maintenance. Following work to repair degraded room cooler piping for the pump, Essential Service Water (ESW) was restored to the piping. A report was made to the control room that no leakage was identified. During the following shift, after vibration testing was complete, operations staff reviewed the status of other maintenance tasks. In the electronic work management system, it was noted that a task to perform a leak check was in “Finished” status. Based on this review and the earlier report of no leaks, the associated Auxiliary Feedwater (AFW) pump was declared operable. However, approximately one hour later, the control room received a report that there were leaks from the pump’s room cooler. Subsequent investigation by the licensee revealed that when the pump was declared operable, the American Society for Mechanical Engineers (ASME) Code-required leakage check had not been completed yet. The task for the leak check had actually been closed to another “contingency” task, which the operations staff did not believe was applicable when declaring the pump operable. Contrary to procedure PMP–2291–WMP–001, “Work Management Process Flowchart,” the licensee did not ensure PMTs were complete and adequate for the work scope. The licensee declared the cooler and the pump inoperable and addressed the leakage.

The finding is more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone, and affected the cornerstone objective

to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee returned the AFW system to an operable status prior to completing PMT. Further, the inspectors noted other recent examples of safety-related equipment that had been declared operable before the appropriate PMTs had been performed, indicating a more programmatic issue. In one case, new welds on charging system piping did not receive the ASME-Code inspections prior to the system being restored. In another instance, ESW flow was prematurely restored to a new control room chiller. As a result, a train of ESW and an associated AFW cooler became inoperable. The finding screened as Green, or very-low safety significance, because it did not represent an actual loss of function beyond Technical Specification allowed outage times. The finding had an associated cross-cutting aspect in the area of Human Performance; specifically, the aspect of H.4, "Teamwork," because the performance deficiency occurred, in part, due to communication issues between and within organizations. (Section 1R19)

Cornerstone: Barrier Integrity

Green. The inspectors identified a finding of very-low safety significance, and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to follow the containment spray (CS) heat exchanger inspection procedure. Specifically, the licensee did not develop acceptance criteria applicable for the visual inspection of these heat exchangers. The licensee entered this finding into their CAP to evaluate and resolve, including developing applicable visual inspection acceptance criteria for the CS heat exchangers.

The performance deficiency was determined to be more than minor because it was associated with the Barrier Integrity cornerstone attribute of structures, systems, components (SSCS), and barrier performance, and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) can protect the public from radionuclide releases caused by accidents or events. The finding screened as very-low safety significance (Green) because it did not represent an actual open pathway in the physical integrity of reactor containment, containment isolation system, or heat removal components, and did not involve an actual reduction in function of hydrogen igniters in the reactor containment. The inspectors determined this finding had an associated cross-cutting aspect in the area of Human Performance because the licensee did not stop when faced with uncertain conditions. Specifically, the licensee did not develop shell-side visual inspection acceptance criteria because they did not challenge the applicability of the guidance contained in their procedures. [H.11] (Section 1R07.1.b(1))

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near 100 percent power for the entire inspection period.

Unit 2 operated at or near 100 percent power until the plant was shut down to commence a refueling outage on March 25, 2015. The unit remained in the outage through the completion of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

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

- Unit 2 AB Emergency Diesel Generator (EDG) after testing;
- Unit 1 East Centrifugal Charging Pump during West Centrifugal Charging Pump maintenance; and
- Electric and West Diesel Fire Pumps during maintenance on East Diesel Fire Pump.

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 Inspection Procedure (IP) 71111.04–05.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

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

- Unit 2 Quad 3 and 4 Reactor Cable Tunnels;
- Fire Area AA 1, Auxiliary Building 573' Elevation;
- Unit 1 CD EDG` Room; and
- Unit 2 Turbine Deck, 633' Elevation.

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

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

b. Findings

No findings were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Triennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed operability determinations, completed surveillances, vendor manual information, calculations, inspection results, and procedures associated with the CS and residual heat removal (RHR) heat exchangers. These heat exchangers were chosen based, in part, on their risk significance in the licensee's probabilistic safety analysis, important safety-related functions, and operating history.

For the CS heat exchangers, the inspectors reviewed the methods and results of heat exchanger visual inspections. Specifically, the inspectors assessed the consistency of

these methods with as-found conditions and expected degradation trends. In addition, the inspectors assessed the associated acceptance criteria, and reviewed the documentation, evaluation, and disposition of as-found results. The inspectors also assessed the condition and operation of the CS heat exchangers. This assessment considered design assumptions included in heat transfer calculations, such as tube plugging limits, and design basis information described in the UFSAR. This review also considered the potential for water hammer and heat exchanger degradation due to excessive flow-induced vibration during operation. In addition, eddy current test reports and visual inspection records were reviewed to assess the structural integrity of the heat exchanger. The inspectors performed a walkdown of the CS heat exchangers, and assessed their material condition.

For the RHR heat exchangers, the inspectors assessed their condition and operation. This assessment considered design assumptions included in heat transfer calculations, such as tube plugging limits, and design basis information described in the UFSAR. This review also considered the potential for water hammer and heat exchanger degradation due to excessive flow-induced vibration during operation. The inspectors also reviewed the chemical treatment programs for corrosion control. The inspectors performed a walkdown of the RHR heat exchangers, and assessed their material condition.

The inspectors reviewed the performance of the ultimate heat sink (UHS), safety-related service water system, and subcomponents such as piping, intake screens, pumps, and valves. Specifically, the inspectors reviewed inspection results of the UHS underwater portions and documentation associated with debris or sediment removal. The inspectors also reviewed documentation associated with ESW performance including flow balance testing and hydraulic calculations. This review considered ESW isolation capability during design basis events, design leakage rate assumptions, performance of risk-significant nonsafety-related functions, and system configuration changes during a number of normal, abnormal, and accident scenarios. The inspectors also reviewed documentation related to UHS water temperature instruments and monitoring activities, and UHS functionality during adverse weather conditions. In addition, the inspectors performed a system walkdown of the intake structure, and assessed the material condition of components such as the traveling screens, pumps, and strainers.

In addition, the inspectors reviewed CAP documents related to the heat exchangers and heat sink performance issues to assess the licensee's threshold for identifying issues and the effectiveness of the corrective actions.

The documents that were reviewed are included in the Attachment to this report. These inspection activities constituted three heat sink inspection samples as defined in IP 71111.07–05.

b. Findings

(1) Inadequate Acceptance Criteria for Containment Spray Heat Exchanger Inspections

Introduction: The inspectors identified a finding of very low safety significance (Green), and associated NCV of Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to follow Revision 10 of procedure 12–EHP–8913–001–002, "Heat Exchanger Inspection." Specifically, the

licensee did not develop visual inspection acceptance criteria applicable to the CS heat exchangers.

Description: In 1989, the NRC issued Generic Letter (GL) 89–13, "Service Water System Problems Affecting Safety-Related Equipment," in response to operating experience related to service water systems, and requested licensees to supply information confirming the safety functions of their respective service water systems were met. As a result, the licensee developed procedures to implement GL 89–13 commitments. At the time of this inspection period, Revision 10 of procedure 12–EHP–8913–001–002 governed the inspections of GL 89–13 heat exchangers. Step 4.4.1 of this procedure required the licensee to "Complete Section 1 and Section 2 of Data Sheet 1, Heat Exchanger Inspection Report, using information gathered in Steps 4.1.2 through 4.1.4." Section 2 of Data Sheet 1 stated, "Develop Visual Inspection Acceptance Criteria (VIAC) [Complete Prior to Inspection]."

During this inspection period, the inspectors noted the licensee did not develop VIAC applicable for the shell side of the CS heat exchangers. Specifically, the VIAC developed on April 1 and April 20, 2013, for the Unit 1 west and east CS heat exchanger, respectively, were only applicable for tube side inspections. However, CS heat exchanger inspections were performed in the shell side because this is the side exposed to ESW raw water.

The CS system is part of the engineered safety features and its primary purpose is to prevent containment pressure from exceeding its design value by spraying cool water into the containment atmosphere during a loss-of-coolant accident. Each CS train contains a shell and U-tube type heat exchanger designed with sufficient capacity to ensure adequate heat removal from the containment sump water. The failure to develop VIAC applicable for these heat exchangers does not assure that inspection activities detect degraded conditions such that timely corrective actions are implemented assuring containment protects the public from radionuclide releases.

The licensee captured this concern in their CAP as Action Request (AR) 2015–1367, and took immediate corrective action to assess the operability impact of this issue. The licensee reasonably determined CS was operable based on recent heat exchanger differential pressure monitoring data, ESW flow balance results, and documented as-found conditions of the visual inspections. The planned corrective actions to restore compliance were to benchmark how the industry inspects heat exchangers with raw water on the shell side, evaluate the benchmark results, and revise the GL 89–13 Program accordingly.

Analysis: The inspectors determined the failure to develop visual inspection acceptance criteria for the CS heat exchangers was contrary to procedure 12–EHP–8913–001–002, and was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the Barrier Integrity cornerstone attribute of SSCS and barrier performance and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) can protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to develop VIAC applicable to the CS heat exchangers does not assure that inspection activities detect degraded conditions. Unacceptable CS heat exchanger conditions do not provide

reasonable assurance that containment can protect the public from radionuclide releases.

The inspectors determined the finding could be evaluated using the Significance Determination Process (SDP) in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Initial Characterization of Findings.” Because the finding impacted the Barrier Integrity cornerstone, the inspectors screened the finding through IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” using Exhibit 3, “Barrier Integrity Screening Questions.” The finding screened as very-low safety significance (Green) because the finding did not represent an actual open pathway in the physical integrity of reactor containment, containment isolation system, or heat removal components, and did not involve an actual reduction in function of hydrogen igniters in the reactor containment.

The inspectors determined this finding had an associated cross-cutting aspect in the area of Human Performance because the licensee did not stop when faced with uncertain conditions. Specifically, the licensee did not develop shell-side VIAC because they did not challenge the applicability of the guidance contained in their procedures. [H.11]

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” requires, in part, that activities affecting quality be prescribed by documented procedures of a type appropriate to the circumstances, and be accomplished in accordance with these procedures. The licensee established Revision 10 of 12–EHP–8913–001–002 as the implementing procedure for performing safety-related heat exchanger inspections, an activity affecting quality. Procedure 12–EHP–8913–001–002, Step 4.1.1, states, “Complete Section 1 and Section 2 of Data Sheet 1, Heat Exchanger Inspection Report, using information gathered in Steps 4.1.2 through 4.1.4.” Section 2 of Data Sheet 1 states, “Develop VIAC [Complete Prior to Inspection].”

Contrary to the above, on April 1 and April 20 of 2014, the licensee failed to follow Step 4.1.1 and Section 2 of Data Sheet 1 of Procedure 12–EHP–8913–001–002. Specifically, the licensee did not develop VIAC for the CS heat exchanger inspections.

The licensee is still evaluating its planned corrective actions. However, the inspectors determined that the continued non-compliance does not present an immediate safety concern because the licensee reasonably determined CS was operable. In addition, the U1 West CS heat exchanger was replaced with a new unit during the 2014 refueling outage.

Because this violation was of very-low safety significance, and was entered into the licensee’s CAP as AR 2015–1367, this violation is being treated as a NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000315/2015001–01; 05000316/2015001–01; Inadequate Acceptance Criteria for Containment Spray Heat Exchanger Inspections)**

(2) Failure to Account for Essential Service Water Strainer Debris Loading and Isolation Valve Gross Leakage

Introduction: A finding of very-low-safety significance, and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to account for the effects of the maximum strainer debris loading, and isolation valve gross leakage in the ESW flow balance verification and hydraulic analysis.

Description: The ESW system consists of two independent trains for each reactor unit, each serving certain safety-related components. Each train consists of one pump, one duplex strainer, and associated piping and valves. One crosstie valve is available on each train in order to crosstie the train to one of the ESW trains of the other reactor unit. Since each unit train has a crosstie valve, both must be open to crosstie the two trains.

According to TS Basis 3.7.8, "Essential Service Water System," each ESW train is normally cross-tied with the associated train of the other unit, with one pump in each of the cross-tied trains in operation because two pumps can supply all of the Unit 1 and Unit 2 ESW flow requirements for unit operation, shutdown, and refueling. However, the inspectors noted hydraulic calculation MD–12–ESW–111–N, "ESW Hydraulic Analyses for Replacement of CS Heat Exchangers," assumed the crosstie valves were closed. Similarly, procedures 1–OHP–4030–119–022FV and 2–OHP–4030–219–022FV, "ESW Flow Verification," performed flow balance testing with these valves closed. In addition, these 20-inch butterfly valves were not leak tested because the licensee assumed their leakage was inconsequential. Similar circumstances applied to the valves that isolate hydraulic loads from common headers such as the heat exchangers associated with the EDGs.

The inspectors also noted the hydraulic calculations and flow balance test acceptance criteria did not account for the strainer pressure losses due to the maximum allowed debris build up. Specifically, the strainer pressure drop values corresponded to clean strainers as opposed to the allowed higher values associated with the set point which triggers the strainer backwash function.

The inspectors were concerned because the hydraulic calculations and flow balance test acceptance criteria overestimated the ESW flow capacity and, thus, did not ensure the capability of the system to meet its flow demand. The lower strainer pressure drop values overestimated the flow supply by approximately 300 gallons per minute. In addition, the gross leakage of the isolation valves was not verified to be inconsequential by calculations or testing.

The licensee captured this concern in their CAP as AR 2015–1622 and AR 2015–1324. The licensee took immediate corrective actions to review the last two completed flow verifications and determined that the total ESW flowrate difference between the minimum required flowrate value and the as-left flowrate value was 723 gallons per minute. The licensee concluded the system was operable because this operational value was judged to be adequate to account for isolation valve gross leakage and the maximum ESW pump strainer pressure drop. The licensee confirmed there was no known recent history of ESW isolation valve leakage. The planned corrective actions to restore conformance were to revise calculation MD–12–ESW–111–N, and the

acceptance criteria contained in Procedures 1–OHP–4030–119–022FV and 2–OHP–4030–219–022FV.

Analysis: The inspectors determined the failure to account for the effects of the maximum strainer debris loading, and isolation valve gross leakage in the ESW flow balance verification and hydraulic analysis was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. Specifically, the failure to account for the effects of the maximum strainer debris loading, and isolation valve gross leakage in the ESW flow balance verification required revision of the associated hydraulic calculation, and flow balance test acceptance criteria to assure the system would be able to meet its flow demand.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings." Because the finding impacted the Mitigating Systems cornerstone, the inspectors screened the finding through IMC 0609 Appendix A, "The Significance Determination Process for Findings At-Power," using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as very-low safety significance (Green) because it did not result in the loss of operability or functionality. Specifically, the licensee reviewed the latest flow balance test results, and determined sufficient margin existed between the as-found value and the minimum required flowrate value to account for the effects of the strainer maximum debris loading. In addition, the licensee performed a historical review which did not find instances of isolation valve leakage in excess of the remaining margin.

The inspectors did not identify a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance due to the age of the performance deficiency. Specifically, a review of the associated calculation and procedure revisions in effect during the last 3 years determined that the flow balance verification method was not changed during this period.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.

Contrary to the above, as of February 3, 2015, the design control measures failed to verify the adequacy of the design. Specifically, the ESW hydraulic calculations and flow balance test procedures did not verify the performance of the system was adequate when operating with gross leakage through the isolation valves and maximum allowed strainer debris loading.

The licensee is still evaluating its planned corrective actions. However, the inspectors determined that the continued non-compliance does not present an immediate safety concern because the licensee reasonably determined ESW was operable.

Because this violation was of very-low safety significance, and was entered into the licensee's CAP as AR 2015–1622 and AR 2015–1324, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy.
(NCV 05000315/2015001–02; 05000316/2015001–02; Failure to Account for Essential Service Water Strainer Debris Loading and Isolation Valve Gross Leakage).

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On February 10, 2014, 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 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. The resident inspectors also observed a portion of the annual operating test. Additional scenarios for the test were also observed by a regional operator licensing examiner, as described in section 1R11.4 below.

b. Findings

No findings were identified.

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

a. Inspection Scope

On March 25, 2015, the inspectors observed the Unit 2 plant cooldown and initial solid-plant operation at the beginning of the refueling outage. The activities required heightened awareness and coordination between plant operators. 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 Emergency Plan 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. As described in the IP, it was done in conjunction with IP 71111.20.

b. Findings

No findings were identified.

.3 Annual Operating Test Results (71111.11A)

a. Inspection Scope

On March 25, 2015, the inspectors reviewed the overall pass/fail results of the Annual Operating Test administered by the licensee from February 18–March 20, 2015, as required by Title 10 CFR 55.59(a). The results were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process," to assess the overall adequacy of the licensee's Licensed Operator Requalification Training (LORT) Program to meet the requirements of 10 CFR 55.59. (02.02)

This inspection constituted one annual licensed operator requalification examination results sample as defined in IP 71111.11–05.

b. Findings

No findings were identified.

.4 Biennial Review (71111.11B)

a. Inspection Scope

The inspectors conducted an inspection during the week of March 17, 2015, to assess conformance with the requirements of 10 CFR 55.46, for use of a plant referenced simulator to conduct the annual operator licensing examination. The documents reviewed are listed in the Attachment to this report. The inspectors assessed:

- Licensee Requalification Examinations (10 CFR 55.59(c)); Systems Approach to Training Element 4 as defined in 10 CFR 55.4): The inspectors observed the

administration of the LORT annual operating test to assess the licensee's ability to develop and administer examinations that are acceptable for meeting the requirements of 10 CFR 55.59(a).

The inspectors conducted a detailed review of four simulator scenarios to assess content, level of difficulty, and quality of the operating test materials. (02.04)

The inspectors observed the administration of the annual operating test to assess the licensee's effectiveness in conducting the examinations, evaluations of individual operator and crew performance, and post-examination analysis. The inspectors evaluated the performance of two control room crews and one off-shift crew in parallel with the facility evaluators during two dynamic simulator scenarios administered to each crew. (02.05)

- Conformance with Examination Security Requirements (10 CFR 55.49): The inspectors assessed the licensee's processes related to examination physical security and integrity (e.g., predictability and bias), to verify compliance with 10 CFR 55.49, "Integrity of Examinations and Tests." The inspectors observed the implementation of physical security controls (e.g., access restrictions and simulator I/O controls). (02.06)

- Problem Identification and Resolution (10 CFR 55.59(c); Systems Approach to Training Element 5 as Defined in 10 CFR 55.4): The inspectors assessed the licensee's ability to identify, evaluate, and resolve problems associated with licensed operator performance (a measure of the effectiveness of its LORT Program and their ability to implement appropriate corrective actions to maintain its LORT Program up-to-date). The inspectors reviewed a dozen licensee condition/problem identification reports from Operations Training and Plant Operations. (02.10)

This inspection constituted one partial biennial requalification inspection. The full IP 71111.11B, Licensed Operator Requalification Program inspection sample as defined in IP 71111.11–05, was previously documented in IR 05000315/2014002; 05000316/2014002.

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:

- Reactor Protection System; and
- AFW Pump Room Cooling.

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 SSCS/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- Unit 2 emergent reactor trip Breaker ‘A’ replacement;
- Unit 2 emergent transformer T–4 repair;
- Unit 1 Increased generator hydrogen usage; and
- Unit 1 west AFW Pump Room Cooler emergent leak repairs and scheduled work during winter weather advisory.

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 four 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:

- Failure of the Unit 1 AB EDG voltage regulator;
- Failure of Unit 2 Transformer TR–4 and Train A Reserve Feed Loss;
- Functionality of Fire Pumps following NFPA–805 transition with respect to starting pressure setpoints;
- Operability of Unit 2 AFW system during control room chiller restoration;
- RCP #13 motor bearing oil level alarms; and
- Code-required leakage exam not performed for charging system modification.

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 six samples as defined in IP 71111.15–05.

b. Findings

.1 Failure to Ensure National Fire Protection Association–805 Sprinkler System Demands Met

Introduction: The inspectors identified a finding of very low safety significance (Green) with an associated NCV of the Donald C. Cook Operating Licenses for the failure to ensure minimum fire sprinkler head pressure would be available for all required sprinkler systems. Specifically, the licensee transitioned to NFPA–805 fire regulations without

assessing the impact of a previously identified NRC issue regarding the starting setpoints of the fire pumps.

Description: NRC Inspection Report 2013–009 documented an NRC-identified finding with an associated NCV (NCV 05000315/2013009–02; NCV 05000316/2013009–02) regarding a change the licensee made to the starting setpoints of the station fire pumps. The station has three fire pumps: one electric-driven and two diesel-driven. The pumps are designed to supply adequate water pressure to sprinklers and hoses in the event of fires. When a demand is placed on the fire water system, pressure drops and the fire pumps have been set up to individually start when certain pressures are reached. The previous NRC finding involved a change the licensee made in the starting pressures of the fire pumps. In essence, as a result of the change, a scenario could occur where only one pump would be running instead of two (two are assumed in the analyses). In that condition, the NRC determined sufficient pressure may not have been available at all of the required sprinkler systems. In response to the NRC finding, the licensee performed additional analyses to demonstrate that sufficient pressure would be available. Subsequent to the finding and its resolution, the licensee adopted NFPA–805 fire protection regulations for implementation at the site. Under NFPA–805, the licensee was required to consider more of their installed sprinkler systems in analyses of fire system performance to demonstrate compliance with the new regulations. This essentially increased the required demand on the fire pumps; however, the licensee did not consider the single-pump scenario mentioned above when establishing the new performance criteria for the fire pumps. As a result of NRC questions on this issue, the licensee implemented compensatory measures for the fire system pending further analysis of the single pump condition in light of the new demands required by NFPA–805. The licensee completed some calculations and determined that based on recent performance history, the pumps would currently fulfill all of the new requirements. However, current surveillance procedures could allow a pump to degrade to the point where it would pass the test yet be below the minimum requirements assumed under the new NFPA–805 regulations. The licensee has initiated action to investigate changes to the pump surveillance procedures.

Analysis: The failure to ensure adequate pressure would be available at all required sprinklers was contrary to NFPA 13, “Standard for the Installation of Sprinkler Systems,” Section 7–4.3.2, and was a performance deficiency. Specifically, the licensee could not demonstrate that sufficient pressure would be available in the sprinkler systems added by the NFPA–805 regulations.

The performance deficiency was determined to be more-than-minor because it adversely affected the Protection Against External Factors (Fire) attribute of the Mitigating Systems Cornerstone. The licensee failed to incorporate previous issues with fire pump starting setpoints while validating fire system performance under the new NFPA–805 fire regulations and that failure impacted the design control attribute of the mitigating system cornerstone. Specifically, , the licensee did not ensure that at least 7 psi would be available at all required sprinkler heads, as required by NFPA 13. Per IMC 0609, Attachment 4, “Initial Characterization of Findings,” effective June 19, 2012, since the finding impacted the Mitigating Systems Cornerstone and involved fixed fire protection systems, the inspectors utilized IMC 0609 Appendix F, “Fire Protection Significance Determination Process,” issued September 20, 2013, to determine the significance of the finding. The inspectors assigned a low degradation rating for the finding based on Step 1.3 of IMC 0609 Appendix F, Attachment 2, “Degradation Rating Guidance Specific

to Various Fire Protection Program Elements," issued February 28, 2005, since the licensee was able to show via additional calculations that all requirements would be met based on current fire pump performance. With a low degradation rating, the finding screened as Green, or very low safety significance.

The inspectors determined the finding had an associated cross-cutting aspect in the Problem Identification and Resolution area, specifically, P.5, Operating Experience. The licensee did not effectively evaluate and implement relevant internal operating experience with respect to the adoption of new fire protection regulations. As a result, a previously identified NRC issue was not assessed with regard to new demands on the fire protection system.

Enforcement: License conditions 2.C(4) and 2.C(3)(o) of the Operating Licenses for Unit 1 and Unit 2, respectively, require the licensee to implement and maintain in effect all provisions of the approved fire protection program that complies with 10 CFR 50.48(a) and 10 CFR 50.48(c), "National Fire Protection Association Standard NFPA–805," as approved in the Safety Evaluation Report dated October 24, 2013. Section 3.9.1 of NFPA–805 states, in part, that automatic or manual water-based fire suppression systems shall be installed in accordance with the appropriate NFPA standards including NFPA–13, "Standard for the Installation of Sprinkler Systems." The standard of record for DC Cook is the 1983 edition of NFPA–13. Section 7–4.3.2 of NFPA–13 states that the "minimum operating pressure of any sprinkler shall be 7 psi."

Contrary to the above, between October 24, 2013 and December 6, 2014, the licensee failed to ensure that the operating pressure of all operating sprinklers would be 7 psi. Specifically, NFPA–805 regulations (implemented October 24, 2013) added additional sprinkler systems to be considered in fire system performance. Given the starting setpoints of the fire pumps, a scenario could exist during a fire where only one fire pump would be automatically started. In this condition, it was not evident whether sufficient pressure would be available in the systems added by the NFPA–805 regulations. Further, current surveillance procedures for the fire pumps were inadequate to demonstrate compliance with the new requirements under the full range of allowed pump performance. The licensee has subsequently performed the necessary calculations to demonstrate the acceptability of the system.

This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy, because it was of very low safety significance (Green) and was entered into the licensee's corrective action program as AR 2014–15087. Pending further evaluations which demonstrated that current fire pump performance was acceptable, the licensee instituted compensatory measures to start an additional fire pump in the event of fires which required fire pump operation **(NCV 05000315/2015001–03; 05000316/2015001–03, Failure to Ensure NFPA–805 Sprinkler System Demands Met**).

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modification(s):

- EC–54104, Unit 2 Pressurizer Water Solid Operation, Revision 0.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected system(s). The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one permanent plant modification sample as defined in IP 71111.18–05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- Unit 2 ‘A’ Reactor Trip Breaker following replacement;
- Unit 2 East CCW Pump and Breaker Maintenance;
- Unit 2 Distributed Ignition System maintenance;
- East Diesel Fire Pump following control circuit maintenance;
- Restoration of Unit 1 West Motor Driven Auxiliary Feedwater Pump Room Cooler before performing post-maintenance tests; and
- Unit 1 modification to Charging for FLEX Implementation.

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

b. Findings

.1 Auxiliary Feedwater Pump Declared Operable–Without All Post-Maintenance Testing Complete

Introduction: The inspectors identified a Green NCV of TS 5.4.1.a, Procedures, for the licensee's failure to perform the required post-maintenance testing on the Unit 1 West motor-driven AFW pump room cooler prior to declaring it operable.

Description: On February 18, 2015, following maintenance to repair degraded copper tubing in the Unit 1 West motor-driven AFW pump room cooler, an Auxiliary Equipment Operator restored ESW flow to the cooler and reported to the control room that there were no leaks. This information was turned over to the following shift's Unit Supervisor. When it was later reported that post-maintenance vibration testing had been completed, the Unit Supervisor checked the status of other maintenance tasks. The Unit Supervisor noted that a task for a post-maintenance leak check indicated "Finished" in the electronic work management system. Based on this and the earlier report of no identified leakage, operations staff declared the AFW pump operable. Approximately 1 hour later, a report was made to the control room stating that leakage had been identified in the cooler, which resulted in the AFW pump being declared inoperable. Subsequent investigation by the licensee revealed that when the pump and cooler were declared operable, there was actually an outstanding Code-required visual exam left to do on the cooler. The report by the Auxiliary Equipment Operator was more of an informational report based on an initial observation of the cooler following restoration of cooling flow. The task for the more thorough leak check, although it indicated "Finished," had actually been closed to another task in the work order. That task was labeled as a "contingency" task, and was assumed by the operations staff to have not been applicable when making their decision to declare the AFW pump operable. The inspectors noted other recent examples of safety-related equipment that had been returned to service without the appropriate PMTs having been completed. During the most recent Unit 1 refueling outage, a modification was made to charging pump piping. The system was declared operable without the Code-required visual exam being complete for some new welds. When it was identified by the site several weeks later, no action was taken to complete the exam. Although a non-Code walkdown confirmed there was no leakage, the licensee inappropriately considered the system fully operable pending the Code exam. Upon questioning by the inspectors several weeks later after the site initiated another AR, the licensee performed the Code exam on the required welds and concluded the system was no longer non-conforming.

In another case, the licensee prematurely restored ESW flow to a new control room air conditioning unit following a modification. A few hours later, the following operations shift noted that this rendered the associated ESW train inoperable because a flow balance had not been performed. This also resulted in an AFW pump being declared inoperable due to an inoperable room cooler (as a result of the ESW inoperability).

Inspectors later confirmed via the subsequent flow balance test that despite another AFW pump being inoperable at the same time for unrelated work, both the ESW and AFW systems remained capable of performing their safety functions.

Analysis: The inspectors determined that the failure to perform post-maintenance testing following maintenance on a safety-related component was a performance deficiency that warranted a significance review. Specifically, licensee procedure PMP–2291–WMP–001, Work Management Process Flowchart, describes the process for performing maintenance and returning equipment to service. Section 3.13 covers the Work Closure Process, and states that when returning equipment to service, PMTs must be verified complete and adequate for the work scope. Contrary to the procedure, PMTs were not verified complete and adequate for the restoration of the AFW pump room cooler. The finding is more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee returned the AFW system to an operable status prior to completing PMT. When the licensee performed the required PMT, two leaks were identified, thus rendering the system inoperable. Further, utilizing the guidance in IMC 0612 Appendix E, “Examples of Minor Issues,” issued August 11, 2009, the inspectors determined the issue was more than minor based on evidence of a more programmatic issue given the other examples listed above. Using IMC 0609, Appendix A, Exhibit 2, “Mitigating Systems Screening Questions,” issued June 19, 2012, the inspectors determined the finding was of very low safety significance (Green) because all questions in Section A were answered "No," given the finding did not represent an actual loss of function beyond TS allowed outage times.

In addition, the inspectors concluded the finding had an associated cross-cutting aspect in the area of Human Performance; specifically, the aspect of H.4, “Teamwork,” because the performance deficiency occurred, in part, due to communication issues between and within organizations.

Enforcement: Technical Specifications Section 5.4, “Procedures,” requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Paragraph 9 of Appendix A requires, 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. PMP–2291–WMP–001, “Work Management Process Flowchart,” Section 13, “Work Closure Process,” states, in part, that if corrective maintenance or a recurring task is of a frequency greater than quarterly, then perform a review of the task to ensure post-maintenance testing is complete and adequate for the work scope. Contrary to the above, on February 18, 2015, the licensee returned a train of the AFW system to service and operable status prior to the completion of the required PMT. As the violation was of very low safety significance and promptly entered into the licensee’s CAP as AR 2015–2460, the violation is being treated as an NCV, consistent with section of 2.3.2 of the NRC Enforcement Policy. **(NCV 05000315/2015001–04; 05000316/2015001–04, Auxiliary Feedwater Pump Declared Operable without all Post-Maintenance Testing Complete)**

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan and contingency plans for the Unit 2 refueling outage, which commenced on March 25, 2015, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. The outage continued for the duration of the inspection period and concluded in the second quarter of 2015. During this inspection period, the inspectors observed portions of the shutdown and cooldown processes and toured containment. Completion of the inspection sample requirements will be documented in IR 2015002 after the completion of the refueling outage.

Documents reviewed are listed in the Attachment to this report.

This inspection did not constitute completion of a refueling outage sample as defined in IP 71111.20–05, given the outage continued into the second quarter.

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:

- Unit 2 West Charging Pump Test (Inservice Test);
- Unit 1 4kV Undervoltage Relay testing (Routine);
- Unit 2 Refueling Water Storage Tank level calibration (Routine); and
- Unit 2 Steam Generator Narrow Range Level Protection Set Calibration (Routine).

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

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the UFSAR, 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, ASME 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 three routine surveillance testing samples and one inservice testing sample as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on March 9, 2015, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the emergency operations facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures.

The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06–05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS5 Radiation Monitoring Instrumentation (71124.05)

This inspection constituted one complete sample as defined in IP 71124.05–05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant UFSAR to identify radiation instruments associated with monitoring area radiological conditions including airborne radioactivity, process streams, effluents, materials/articles, and workers. Additionally, the inspectors reviewed the instrumentation and the associated TS requirements for post-accident monitoring instrumentation, including instruments used for remote emergency assessment.

The inspectors reviewed a listing of in-service survey instrumentation, including air samplers and small article monitors, along with instruments used to detect and analyze workers' external contamination. Additionally, the inspectors reviewed personnel contamination monitors and portal monitors, including whole-body counters, to detect workers' internal contamination. The inspectors reviewed this list to assess whether an adequate number and type of instruments were available to support operations.

The inspectors reviewed licensee and third-party evaluation reports of the Radiation Monitoring Program since the last inspection. These reports were reviewed for insights into the licensee's program and to aid in selecting areas for review ("smart sampling").

The inspectors reviewed procedures that govern instrument source checks and calibrations, focusing on instruments used for monitoring transient high radiological conditions, including instruments used for underwater surveys. The inspectors reviewed the calibration and source check procedures for adequacy and as an aid to smart sampling.

The inspectors reviewed the area radiation monitor alarm setpoint values and setpoint bases as provided in the TS and the UFSAR.

The inspectors reviewed effluent monitor alarm setpoint bases and the calculational methods provided in the Offsite Dose Calculation Manual (ODCM).

b. Findings

No findings were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down effluent radiation monitoring systems, including at least one liquid and one airborne system. Focus was placed on flow measurement devices and all accessible point-of-discharge liquid and gaseous effluent monitors of the selected systems. The inspectors assessed whether the effluent/process monitor configurations aligned with ODCM descriptions and observed monitors for degradation and out-of-service tags.

The inspectors selected portable survey instruments that were in use or available for issuance and assessed calibration and source check stickers for currency as well as instrument material condition and operability.

The inspectors observed licensee staff performance as the staff demonstrated source checks for various types of portable survey instruments. The inspectors assessed whether high-range instruments were source checked on all appropriate scales.

The inspectors walked down area radiation monitors and continuous air monitors to determine whether they were appropriately positioned relative to the radiation sources or areas they were intended to monitor. Selectively, the inspectors compared monitor response (via local or remote control room indications) with actual area conditions for consistency.

The inspectors selected personnel contamination monitors, portal monitors, and small article monitors and evaluated whether the periodic source checks were performed in accordance with the manufacturer's recommendations and licensee procedures.

b. Findings

No findings were identified.

.3 Calibration and Testing Program (02.03)

Process and Effluent Monitors

a. Inspection Scope

The inspectors selected effluent monitor instruments (such as gaseous and liquid) and evaluated whether channel calibration and functional tests were performed consistent with radiological effluent TS/ODCM. The inspectors assessed whether; (a) the licensee calibrated its monitors with National Institute of Standards and Technology traceable sources; (b) the primary calibrations adequately represented the plant nuclide mix; (c) when secondary calibration sources were used, the sources were verified by the primary calibration; and (d) the licensee's channel calibrations encompassed the instrument's alarm set-points.

The inspectors assessed whether the effluent monitor alarm set-points were established as provided in the ODCM and station procedures.

For changes to effluent monitor setpoints, the inspectors evaluated the basis for changes to ensure that an adequate justification existed.

b. Findings

No findings were identified.

Laboratory Instrumentation

a. Inspection Scope

The inspectors assessed laboratory analytical instruments used for radiological analyses to determine whether daily performance checks and calibration data indicated that the frequency of the calibrations was adequate, and there were no indications of degraded instrument performance.

The inspectors assessed whether appropriate corrective actions were implemented in response to indications of degraded instrument performance.

b. Findings

No findings were identified.

Whole-Body Counter

a. Inspection Scope

The inspectors reviewed the methods and sources used to perform whole-body count functional checks before daily use of the instrument, and assessed whether check sources were appropriate and aligned with the plant's isotopic mix.

The inspectors reviewed whole-body count calibration records since the last inspection and evaluated whether calibration sources were representative of the plant source term, and that appropriate calibration phantoms were used. The inspectors looked for anomalous results or other indications of instrument performance problems.

b. Findings

No findings were identified.

Post-Accident Monitoring Instrumentation

a. Inspection Scope

The inspectors selected containment high-range monitors and reviewed the calibration documentation since the last inspection.

The inspectors assessed whether an electronic calibration was completed for all range decades above 10 rem per hour and whether at least 1 decade at or below 10 rem per hour were calibrated using an appropriate radiation source.

The inspectors assessed whether calibration acceptance criteria were reasonable; accounting for the large measuring range and the intended purpose of the instruments.

The inspectors selected effluent/process monitors that were relied on by the licensee in its emergency operating procedures as a basis for triggering emergency action levels and subsequent emergency classifications, or to make protective action recommendations during an accident. The inspectors evaluated the calibration and availability of these instruments.

The inspectors reviewed the licensee's capability to collect high-range, post-accident iodine effluent samples.

As available, the inspectors observed electronic and radiation calibration of these instruments to assess conformity with the licensee's calibration and test protocols.

b. Findings

No findings were identified.

Portal Monitors, Personnel Contamination Monitors, and Small Article Monitors

a. Inspection Scope

For each type of these instruments used on site, the inspectors assessed whether the alarm setpoint values were reasonable under the circumstances to ensure that licensed material is not released from the site.

The inspectors reviewed the calibration documentation for each instrument selected and discussed the calibration methods with the licensee to determine consistency with the manufacturer's recommendations.

b. Findings

No findings were identified.

Portable Survey Instruments, Area Radiation Monitors, Electronic Dosimetry, and Air Samplers/Continuous Air Monitors

a. Inspection Scope

The inspectors reviewed calibration documentation for at least one of each type of instrument. For portable survey instruments and area radiation monitors, the inspectors reviewed detector measurement geometry and calibration methods and had the licensee demonstrate use of its instrument calibrator as applicable. The inspectors conducted comparison of instrument readings versus an NRC survey instrument if problems were suspected.

As available, the inspectors selected portable survey instruments that did not meet acceptance criteria during calibration or source checks to assess whether the licensee had taken appropriate corrective action for instruments found significantly out of calibration (e.g., greater than 50 percent). The inspectors evaluated whether the licensee had evaluated the possible consequences of instrument use since the last successful calibration or source check.

b. Findings

No findings were identified.

Calibration and Check Sources

a. Inspection Scope

The inspectors reviewed the licensee's 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source term to assess whether calibration sources used were representative of the types and energies of radiation encountered in the plant.

b. Findings

No findings were identified.

.4 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring instrumentation were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring instrumentation.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours performance indicator (PI) at D. C. Cook Unit 1 and Unit 2 for the period from the first quarter 2014 through the fourth quarter 2014. 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, event reports and NRC Integrated IRs for the period January 2014 through December 2014 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 unplanned scrams per 7000 critical hours sample as defined in IP 71151–05.

b. Findings

No findings were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications performance indicator at D. C. Cook Unit 1 and Unit 2 for the period from the first quarter 2014 through the fourth quarter 2014. 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 and NRC Integrated IRs for the period of January 2014 through December 2014 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 unplanned scrams with complications sample as defined in IP 71151–05.

b. Findings

No findings were identified.

.3 Unplanned Power Changes per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Power Changes per 7000 Critical Hours performance indicator at D. C. Cook Unit 1 and Unit 2 for the period from the first quarter 2014 through the fourth quarter 2014. 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, maintenance rule records, event reports and NRC Integrated IRs for the period of January 2014 through December 2014 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 unplanned Power Changes per 7000 critical hours sample as defined in IP 71151–05.

b. Findings

No findings were identified.

.4 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures performance indicator at D. C. Cook Unit 1 and Unit 2 for the period of the first quarter of 2014 through the fourth quarter of 2014. 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, and NUREG–1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" definitions and guidance, were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, issue reports, event reports and NRC Integrated IRs for the period of the first quarter of 2014 through the fourth quarter of 2014 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 safety system functional failures samples as defined in IP 71151–05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

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

a. Inspection Scope

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

Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.3 Selected Issue Follow-up Inspection: Electrical Distribution System Issues Encountered During Dual-Unit Trip Event on November 1, 2014

a. Inspection Scope

On November 1, 2014, both units were manually tripped in response to a lake-debris intrusion event in the cooling water intake structure. Following the trip and during the subsequent restart of Unit 1, anomalies were noted with some electrical distribution system equipment. Specifically, for Unit 2, the inspectors reviewed a failure of Reserve Auxiliary Transformer 201CD to automatically control voltage and a failure of the main generator to automatically trip (electrically). For Unit 1, the inspectors reviewed a failure of three out of four Unit Auxiliary Transformer breakers to close when the licensee attempted to synchronize the plant to the grid. At the time, the inspectors reviewed immediate actions taken by the licensee and validated the causes revealed by troubleshooting efforts were appropriately addressed. For this sample, the inspectors reviewed the detailed causal analyses subsequently developed by the licensee and assessed whether or not extent of condition and extent of cause were appropriate. Additionally, the inspectors reviewed the corrective actions and timelines developed for them after the more detailed causal analyses were done.

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

b. Findings

No findings were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report 0500315/2014–003–00, Manual Reactor Trip due to Lake Debris Intrusion Causing Degraded Forebay Conditions

a. Inspection Scope

On November 1, 2014, the licensee manually tripped both reactors due to an influx of debris from Lake Michigan. On October 31, rough lake conditions mobilized significant amounts of dune grass and other debris. Lake currents transported the debris to the Cook intake structure. The accumulated debris deposited on the trash racks located in front of the travelling screens. Licensee staff removed significant amounts of debris from the travelling screens but lacked the ability to monitor or to remove debris loading on the trash racks. As more debris loaded onto the trash racks, forebay level dropped. In response, operation personnel throttled circulating water flow in an attempt to raise forebay level. At 0210, operators in Unit 2 started a rapid down power to approximately 50 percent in response to reduced condenser vacuum. The power reduction allowed a reduction in circulating water flow; however, significant debris continued to load on the trash racks. At 0249, the licensee tripped both units because the accumulated debris caused continued degradation of forebay conditions. With both units shutdown, the licensee secured circulating water pumps. The reduction in flow resulted in recovery of forebay level. Following the trip, the resident inspectors responded to the site. The inspectors verified operators had taken the appropriate actions and that no safety concerns existed. In particular, the inspectors validated that the debris intrusion had not impacted the safety-related service water system. The inspectors concluded that actions taken by the licensee prevented debris intrusion into the service water system. Following the transient, the licensee inspected and repaired several damaged trash racks as well as damaged travelling screens. Documents reviewed are listed in the Attachment to this report.

This licensee event report is closed.

This event follow-up review constituted one sample as defined in IP 71153–05.

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report 05000315/2014–001–00: Non-Compliance with Limiting Condition for Operation 3.4.3 During Reactor Coolant System Vacuum Fill

On February 20, 2014, the licensee identified that another facility received a NCV for placing the reactor coolant system at vacuum. The licensee recognized that during vacuum fill operations for both Unit 1 and 2, operators placed the units in a vacuum condition. Prior to amendment 287 (Unit 1) and amendment 269 (Unit 2), D. C. Cook technical specifications included operational limits figures in Limiting Condition for Operation (LCO) 3.4.3 that terminated at 0 psig. The pressure-temperature curves provide a maximum pressure that the plant can operate safely at for a given

temperature. For D. C. Cook, operation below 650 psig is acceptable for any temperature greater than 60 F. Because the curve did not extend below 0 psig, operation at vacuum was not addressed by the curve. Subsequently, the NRC revised the NCV and established a position that the curve did not provide a regulatory prohibition for operation below 0 psig. Therefore, the licensee may use 10 CFR 50.59, "Changes, Tests, and Experiments," to determine if operation at vacuum can occur without prior NRC approval. Based on the revised staff positon, the inspectors reviewed the licensee's design documents that established the vacuum fill process. The licensee developed a 50.59 screen under-pinned by a Westinghouse analysis which determined prior NRC approval was not necessary. The inspectors concluded that since the LCO did not prohibit operation below 0 psig and the licensee reviewed the activity pursuant to 10 CFR 50.59, no violation of NRC requirements occurred.

This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153–05.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 15, 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 inspection results for the area of radiation monitoring instrumentation with Mr. S. Partin, Plant Manager, on February 6, 2015;
- On January 30, 2015, the inspectors presented the triennial heat sink inspection results to Mr. L. Weber, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors had outstanding questions that required additional review and a follow-up exit meeting;
- On February 6, 2015, the inspectors presented the triennial heat sink inspection results to Mr. S. Partin, and other members of the licensee staff. The licensee acknowledged the issues presented; and
- On March 19, 2015, the inspectors presented the results of the biennial licensed operator requalification training inspection to Mr. J. Gebbie, Site Vice President, 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. Proprietary material received during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

L. Weber, Senior Vice President and Chief Nuclear Officer
J. Gebbie, Site Vice President
B. Evans, Operations Training Manager
K. Furneau, Operations Director
K. Henderson, Regulatory Affairs
B. Kusisto, Supervisor, Performance Assurance
S. Mitchell, Supervisor, Regulatory Affairs
R. Neuendorf, Engineering
S. Partin, Plant Manager
M. Scarpello, Regulatory Affairs Manager
W. Woods, Radiation Protection Manager
R. Wynegar, Regulatory Affairs

Nuclear Regulatory Commission

J. Ellegood, Senior Resident Inspector
C. Lipa, Branch Chief
N.J. Féliz-Adorno, Senior Reactor Inspector
R. Walton, Senior Operator Licensing Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000315/2015001–01; 05000316/2015001–01	NCV	Inadequate Acceptance Criteria for Containment Spray Heat Exchanger Inspections (Section 1R07.1.b(1))
05000315/2015001–02; 05000316/2015001–02	NCV	Failure to Account for Essential Service Water Strainer Debris Loading and Isolation Valve Gross Leakage (Section 1R07.1.b(2))
05000315/2015001–03; 05000316/2015001–03	NCV	Failure to Ensure NFPA–805 Sprinkler System Demands Met (Section 1R15)
05000315/2015001–04; 05000316/2015001–04	NCV	Auxiliary Feedwater Pump Declared Operable Without All Post-Maintenance Testing Complete (Section 1R19)

Closed

05000315/2015001–01; 05000316/2015001–01	NCV	Inadequate Acceptance Criteria for Containment Spray Heat Exchanger Inspections (Section 1R07.1.b(1))
05000315/2015001–02; 05000316/2015001–02	NCV	Failure to Account for Essential Service Water Strainer Debris Loading and Isolation Valve Gross Leakage (Section 1R07.1.b(2))
05000315/2015001–03; 05000316/2015001–03	NCV	Failure to Ensure NFPA–805 Sprinkler System Demands Met (Section 1R15)
05000315/2015001–04; 05000316/2015001–04	NCV	Auxiliary Feedwater Pump Declared Operable Without All Post-Maintenance Testing Complete (Section 1R19)
05000315/2014–003–00	LER	Manual Reactor Trip due to Lake Debris Intrusion Causing Degraded Forebay Conditions (Section 4OA3.1)
05000315/2014–001–00	LER	Non-Compliance with LCO 3.4.3 During Reactor Coolant System Vacuum Fill (Section 4OA3.2)

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.

1R04 Equipment Alignment

- 1–OHL–5030–S0M–005, Unit 1 Tours — Unit 1 Auxiliary Tour, Revision 28
- 2–OHP–4030–232–027AB, AB Diesel Generator Operability Test (Train B), Revision 35
- AR–2015–1210, Replace Dewpoint Sensor on 1–QR–100, January 28, 2015
- Drawing OP–2–5151B–68, Emergency Diesel Generator "AB" Unit 2
- OP–12–5152T–14, Flow Diagram Fire Protection—WTR. Piping In Pump house Floor, EL. 598'–0" Units 1 & 2
- OP–12–5152U–3, Flow Diagram Fire Protection Fuel Oil Piping to Diesels in Fire Pump House
- Work Week Schedule, Week of January 26, 2015

1R05 Fire Protection

- 12–FPP–4030–066–022, Inspection of Fire Doors, Frames and Their Hardware Protecting Safety-Related Areas, Revision 11
- AR 2015–3042, Hole in Unit 2 CD Diesel Door
- AR–2015–2077, Error in Pre-Fire Plans volume 1, February 12, 2015
- Fire Pre-Plans, Volume 1, Revision 19
- Fire Safety Analysis, Revision 0
- PMP–4030–001–002, Administrative Requirements for Ventilation Boundary and High Energy Line Break Barriers, Revision 26

1R07 Heat Sink Performance

- 01–OHL–4030–SOM–031, Unit 1 Tours — U1 CR M1&2 Shift CHKS, Revision 44
- 12–EHP–8913–001–001, Program for Implementing GL 89–13 Inspections, Revision 5
- 12–EHP–8913–001–002, Heat Exchanger Inspection, Revision 10
- 12–OHP–4021–019–001, Operation of the Essential Service Water System, Revision 56
- 12–THP–6020–CHM–305, Component Cooling Water, Revision 16
- 1–OHP–4021–016–003, Component Cooling Water System Operation, Revision 36
- 1–OHP–4022–019–001, ESW System Loss/Rupture, Revision 8
- 1–OHP–4024–104, Annunciator #104 Response: Essential Service Water and Component Cooling, Revision 35
- 1–OHP–4030–109–007W, West Containment Spray System Test, Revision 32
- 1–OHP–4030–117–054E, East Residual Heat Removal Train Operability Test — Shutdown, Revision 9
- 1–OHP–4030–119–022FV, ESW Flow Verification, Revision 19
- AR 2013–0076, GL 89–13 Inspection on 1–HV–AFP–EAC, January 2, 2013
- AR 2013–16644, Tailpipe for 2–SV–14W Had Shipping Cap Installed, October 29, 2013
- AR 2013–2640, Additional GL 89–13 Inspection on 1–HV–AFP–EAC, February 22, 2013
- AR 2013–4782, 1–HE–18W GL 89–13 SAT Inspection U1C25, April 2, 2013
- AR 2014–13110, ESW Flow Indicated to U–1 West CTS HX, October 21, 2014
- AR 2015–1221, Revise DB–12–CS and DB–12–ESW, January 27, 2015

- AR 2015–1241, Evaluate if Extra Nut is Needed, January 28, 2015
- AR 2015–1245, Inactive Boric Acid Leak on 1–RH–140, January 28, 2015
- AR 2015–1247, Possible Leak–By of 1–CMO–419, January 28, 2015
- AR 2015–1324, Non-Conservative ESW Strainer dP Used in ESW Hydraulic Model, January 29, 2015
- AR 2015–1367, Acceptance Criteria for CS Heat Exchangers, January 29, 2015
- AR 2015–1369, Error in Forebay Temperature Instrument Uncertainty, January 29, 2015
- AR 2015–1371, Missing Completed Procedures for ESW to AFP Flushes, January 29, 2015
- AR 2015–1505, ODE Failed to Address Impacts on ESW Train in Opposite Unit, January 31, 2015
- AR 2015–1505, ODE Failed to Address Impacts on ESW Train in Opposite Unit, January 31, 2015
- AR 2015–1622, ESW Cross-Tie Valve Leakage Is Not Accounted for in Analysis, February 3, 2015
- AR 2015–1647, NRC Observation from UHS Inspection, February 4, 2015
- AR00040039, Document the Acceptability of the Seismic Class III Intake, June 5, 2000
- AR2014–13796, Trash Rack in Front of 1–2 TWS is Damaged, November 3, 2014
- ASLP Project RU13–013, North Raw Water Intake Tunnel, May 27, 2013
- DIT–B–03459–00, CS Heat Exchanger — Effect of ESW Potential Leakage, June 6, 2011
- EC–0000050332, Unit 1 West CTS Heat Exchanger Replacement Modification, Revision 0
- EC–0000051509, 1–WMO–713/–717 Restrictions (U1 LBLOCA Analysis LOTIC2 Error Fix) {Limit ESW Flow Through Unit 1 CTS HXs to Fully Compensate for Resolution of CNMNT Back-Pressure Calculation Error}, Revision 0
- EHI–8913, Program for Implementing Generic Letter 89–13 (Service Water System Reliability), Revision 9
- ENVI–8913, Zebra Mussel Monitoring and Control Program, Revision 9
- MD–01–ESW–108–N, ESW System CS Heat Exchanger dP Assessment, Revision 1
- MD–01–ESW–108–N, ESW System CS Heat Exchanger dP Assessment, Revision 3
- MD–12–CTS–007–N, CS Heat Exchanger UA Determination for Containment Integrity Analysis, Revision 4
- MD–12–CTS–007–N, CS Heat Exchanger UA Determination for Containment Integrity Analysis, Revision 7
- MD–12–ESW–076–N, ESW Pump NPSH Available and Submergence, Revision 2
- MD–12–ESW–106–N, Assessment of Increased Lake Water Temperature on Safety-related and Nonsafety Related Systems, Revision 6
- MD–12–ESW–106–N, Assessment of Increased Lake Water Temperature on Safety-related and Nonsafety Related Systems, Revision 9
- MD–12–ESW–107–N, ESW Makeup Flow to EDG Jacket Water System, Revision 0
- MD–12–ESW–109–N, ESW Supply to the Suction of the AFW Pumps, Revision 0
- MD–12–ESW–111–N, ESW Hydraulic Analyses for Replacement of CS Heat Exchangers, Revision 3
- MD–12–ESW–111–N, ESW Hydraulic Analyses for Replacement of CS Heat Exchangers, Revision 3
- MD–12–MSC–068–N, Tube Plugging Allowances for Safety-Related Heat Exchangers, Revision 3
- MDS–607, Heat Exchanger Tube Plugging, Revision 13
- WO 55230960, Inspect Center Intake Crib Internal Structure, June 16, 2011
- WO 55237040–01, Perform Preventive Maintenance on 2–WMO–27, October 4, 2008
- WO 55250496, West Essential Service Water Pump Strainer Maintenance, March 12, 2008

- WO 552703290–01, 1–WMO–17–ACT, Perform MOV Preventive Maintenance, August 21, 2007
- WO 55292116–02, Unit 1 West Containment Spray Heat Exchanger Inspection, April 4, 2008
- WO 55335210–01, 1–MR–LFD & 1–MR–CRLFD Functional Check, December 14, 2009
- WO 55341866, Unit 2 Screenhouse Diving Inspection South Intake Tunnel, October 15, 2010
- WO 55344701–01, 2–MR–LFD & 2–MR–CRLFD Functional Check, March 27, 2010
- WO 55393373–01, 1–HE–18W Containment Spray Heat Exchanger Inspection Summary, April 13, 2013
- WO 55393388–02, U1 East Containment Spray Heat Exchanger Inspection, April 20, 2013
- WO 55398086–01, 1–MR–LFD & 1–MR–CRLFD Functional Check, April 23, 2013
- WO 55398736, Annual PM Calibration East ESW Pump, February 4, 2013
- WO 55404400–01, 2–MR–LFD & 2–MR–CRLFD Functional Check, May 8, 2013
- WO 55420258–02, U1 West Containment Spray Heat Exchanger Inspection, April 1, 2013

1R11 Licensed Operator Requalification Program

- Annual Operating Examination Crew Simulator Evaluation — Shift C, March 18, 2015
- AR 2013–10851, U2 Manual Reactor Trip Due to Secondary System Transient
- AR 2013–11991, Inadvertent Unit 2 ESW Pump Start, August 15, 2013
- AR 2013–3203, 4-Hour Temperature Monitoring Taken at 6 hours, March 5, 2013
- AR 2013–4995, Tag Hung on Wrong Component during Clearance, April 5, 2013
- AR 2013–6667, Audio Count Rate Malfunction Procedure Not Entered, May 3, 2013
- AR 2013–8377, Stroke Test for 2NRV–152 Performed in Incorrect Mode
- AR 2014–13323, Target Flow Value not Recorded in EDG Jacket Water ST
- AR 2014–4623, Alcoholic Beverage Discovered within Protected Area, April 10, 2014
- AR 2014–5982, Untimely EAL Notification During ERO Training Exercise, May 15, 2014
- AR 2014–6483, Ops did not Effectively Communicate with Leadership, June 10, 2014
- RQ–E–ANN–29, Rev 2, LOR Annual Operating Exam Simulator Scenario #29
- RQ–E–ANN–32, Rev 1, LOR Annual Operating Exam Simulator Scenario #32
- RQ–E–ANN–4, Rev 1, LOR Annual Operating Exam Simulator Scenario #4
- RQ–E–ANN–48, Rev 2, LOR Annual Operating Exam Simulator Scenario #48 September 30, 2013
- Simulator Exercise Guide for Period 3907 Unit 2 As-Found Simulator Evaluation
- Annual Operating Examination Crew Simulator Evaluation — Shift B, March 11, 2015

1R12 Maintenance Effectiveness

- 1–DCP–4595, Modification of Auxiliary Feedwater Pump Rooms Ventilation System, Revision 0
- 2–DCP–4261, Modification of Auxiliary Feedwater Pump Rooms Ventilation System, Revision 0
- AR 2013–4902, Failed Surveillance 1–IHP–4030–150–003
- AR 2014–7039, Test Switch Failures
- AR 2015–2292, Installed Agastat Timing Relays Have Exceeded Qualified Life
- AR–2013–0076, GL 89–13 Inspection on 1–HV–AFP–EAC, January 2, 2013
- AR–2013–5518, 2–HV–AFP–T1AC Causing Bus Ground, April 13, 2013
- AR–2014–12562, 2–HV–AFP–T1AC Refrigerant Coil Freezing
- AR–2014–15099, Identified Pin Hole Leak in 2–HV–AFP–EAC ESW Piping, December 2, 2014
- AR–2014–15766, 1–HV–AFP–EAC Running Too Cold, December 22, 2014
- AR–2014–3235, 1–HV–AFP–T1AC Cooler Running Continuously, March 7, 2014

- AR–2014–7026, Thru Wall Piping Leak, June 11, 2014
- AR–2014–7124, Unit 2 AFW Room Coolers, June 14, 2014
- AR–2014–7139, 2–HV–AFP–T1AC ESW Temperature Controller, June 14, 2014
- AR–2014–7570, Auxiliary Feedwater Pump Room Coolers ISI Class, June 25, 2014
- AR–2014–8097, U1 EMDAFP Cooler Runs Continuously, July 9, 2014
- Maintenance Rule a(1) Action Plan for Reactor Protection System RPS–02
- Maintenance Rule Scoping Document, Safety-related Ventilation Systems, Revision 4
- Receipt Inspection Report 138629 for AFW Room Cooler Skid-Mount, Purchase Order 01557415
- Various System Health Reports for Reactor Protection System [January, 2013 – December, 2014]

1R13 Maintenance Risk Assessments and Emergent Work Control

- 2–IHP–4030–211–001A, Train A SSPS Automatic Trip and Actuation Logic Operational Test and Reactor Trip Breaker Operational Test, Revision 6
- AR 2015–0585 Train A Reserve Feed Breaker BC Opened Resulting In A Loss
- AR–2015–2460, Operations Called Equipment Operable Prematurely, February 18, 2015
- DC Cook Unit 1 Technical Specifications, Section 3.3.1, Reactor Trip System Instrumentation, Amendment 300
- Drawing E–1000C, 34.5kV Three Line Diagram, Revision 0
- Plant Status Report And Schedule, February 18, 2015
- PMP–5039–GHS–001, Generator Hydrogen Standards
- Various Plant Status Summary Sheets, Week of February 13, 2015
- Various Plant Status Summary Sheets, Week of January 26, 2015

1R15 Operability Determinations

- 1–OHP–4022–002–001, Malfunction of a Reactor Coolant Pump, Revision 20
- 1–OHP–4022–002–001, Malfunction of a Reactor Coolant Pump, Revision 20
- 1–OHP–4024–107 Drop 66, RCP 3 Lower Oil Pot Level Hi or Lo Alarm Response, Revision 27
- 1–OHP–4024–107, Drop 66, RCP 3 Lower Oil Pot Level Hi or Lo, Revision 27
- AR12014–14921, 2–HV–AFP–EAC Middle Contactor Welded Shut
- AR–2012–12718, U2 Received RCP 3 Lower Oil Pot Level Hi Or Low, October 11, 2012
- AR–2012–12718, U2 Received RCP 3 Lower Oil Pot Level Hi Or Low, October 11, 2012
- AR–2013–10175, ANN 207 Drop 66 RCP Oil Level Lo Came In And Cleared, July 16, 2013
- AR–2013–9251, Inadequate Calculations for ICP–0083 Revision 0 12–ZPS–411, June 25, 2013
- AR–2014–10600, Differences Between Fire Pump Performance In Hydraulic Calculations, September 9, 2014
- AR–2014–12121, Failed AB EDG Surveillance, October 6, 2014
- AR–2014–14956, U2 West ESW Train INOP Due to cl# restoration
- AR–2014–15087, Fire Pump Setpoint And New TRM 8.7.6 Turbine Sprinkler Demand, December 5, 2014
- AR–2015–0583, Load Flow Program verse Procedure(s) Discrepancy
- AR–2015–0585, Train A Reserve Feed Breaker BC Opened Resulting In A Loss
- DIT–B–02317–06, ESW Flow Verification Test Target Flows for 01–OHP–4030–119–022FV & 02–OHP–4030–219–022FV
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- Various ROP Parent Process Data Review reports for Unplanned Power Changes per 7,000 Critical Hours [January, 2014–December, 2014]
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4OA2 Identification and Resolution of Problems

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- AR–2014–13672, Unit 2 Main Generator Motored, Emergency Unit Trip Pushed, November 1, 2014
- AR–2014–14190, Failure of 2D5 Synch Circuit, November 12, 2014

4OA3 Follow-up of Events and Notices of Enforcement Discretion

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- AR 2014–13669, Degraded Forebay Results in Manual Trip of Both Units
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LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
AR	Action Request
ASME	American Society for Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CS	Containment Spray
EDG	Emergency Diesel Generator
ERO	Emergency Response Organization
ESW	Essential Service Water System
GL	Generic Letter
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LORT	Licensed Operator Requalification Training
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records System
PI	Performance Indicator
PMT	Post-Maintenance Test
RHR	Residual Heat Removal
SDP	Significance Determination Process
SSC	Structure, System and Component
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UHS	Ultimate Heat Sink
VIAC	Visual Inspection Acceptance Criteria
WO	Work Order

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Sincerely,

/RA/

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