



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION III  
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May 6, 2016

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

SUBJECT: DONALD C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2  
NRC INTEGRATED INSPECTION REPORT 05000315/2016001;  
05000316/2016001

Dear Mr. Gebbie:

On March 31, 2016, 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 12, 2016, with Mr. Q.S. Lies, and other members of your staff.

Based on the results of this inspection, the NRC has identified one issue that was evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that a violation is associated with this issue. The violation is being treated as a Non-Cited Violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. The NCV is described in the subject inspection report. Additionally, a licensee-identified violation is listed in Section 4OA7 of this report.

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

J. Gebbie

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

Sincerely,

**/RA/**

Kenneth Riemer, Chief  
Branch 2  
Division of Reactor Projects

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

Enclosure:  
IR 05000315/2016001; 05000316/2016001

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 05000315; 05000316

License Nos: DPR-58; DPR-74

Report No: 05000315/2016001; 05000316/2016001

Licensee: Indiana Michigan Power Company

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

Location: Bridgman, MI

Dates: January 1 through March 31, 2016

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

Enclosure

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## SUMMARY

Inspection Report (IR) 05000315/2016001, 05000316/2016001; 01/01/2016 – 03/31/2016;  
Donald C. Cook Nuclear Power Plant, Units 1 & 2; Other Activities

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

### Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance and associated NCV of with Title 10 of the *Code of Federal Regulations* (CFR) Part 50, Appendix B, Criterion III, "Design Control." Specifically, the licensee failed to ensure that regulatory requirements and design bases were correctly translated into specifications and procedures, in that the licensee used an incorrect mission time for the turbine driven auxiliary feedwater (TDAFW) pump to determine operability. The licensee developed a procedure that permitted continued operability of the TDAFW pump without room ventilation provided room temperature remained below 104° F. The underlying engineering document assumed TDAFW pump mission time was 4 hours; however, this assumption was not supported by current license bases documents. This condition violates 10 CFR 50 Appendix B Criterion III, which requires licensees to establish measures to assure that applicable regulatory requirements and the design bases, as defined in 10 CFR 50.2 and as specified in the license application, for those systems structures and components to which the Appendix applies, are correctly translated onto specifications, drawings, procedures and instructions. The licensee has since restored the room coolers to an operable status, thus, no current safety concern exists. The licensee has entered the condition into the corrective action program (CAP).

The licensee's use of an incorrect mission time was a performance deficiency that warranted a significance review. Using IMC 0612 appendix B dated September 7, 2012, the inspectors determined that the finding was more than minor because it was associated with the Mitigating System cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events and adversely affected the attribute of design control. Specifically, the licensee applied an incorrect mission time when determining room temperatures to ensure TDAFW pump operability. Using IMC 0609 Appendix A, Exhibit 2-1, dated June 19, 2012, the inspectors answered 'no' to Questions A. 1 thru 4. In particular, control room logs document about 6 hours with the TDAFW room ventilation not functioning; therefore the inspectors determined that the pump would not have been inoperable for longer than the 72 hour completion time in technical specifications. The inspectors also identified a cross cutting aspect of H.14, conservative bias, in the human performance area.

### **Other Findings**

- A violation of very low safety or security significance that was identified by the licensee has been reviewed by the NRC. Corrective actions taken or planned by the licensee have been entered into the licensee's CAP. This violation and CAP tracking numbers are listed in Section 4OA7 of this report.

## **REPORT DETAILS**

### **Summary of Plant Status**

Unit 1 operated at or near 100 percent power until March 20, 2016. On that date, the licensee began a downpower in preparation for a refueling outage. On March 23, 2016, Unit 1 entered Mode 3. Unit 1 remained shutdown for the remainder of the inspection period.

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

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### **1R01 Adverse Weather Protection (71111.01)**

##### **.1 Readiness for Impending Adverse Weather Condition—High Winds**

##### **a. Inspection Scope**

On February 19, 2016, a high-winds advisory was issued for the area. The inspectors observed the licensee's preparations and planning for the significant weather potential. The inspectors reviewed licensee procedures and discussed preparations with plant personnel. The inspectors conducted a site walkdown which included transformer and switchyard areas. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Documents reviewed are listed in the Attachment to this report.

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

##### **b. Findings**

No findings were identified.

#### **1R04 Equipment Alignment (71111.04)**

##### **.1 Quarterly Partial System Walkdowns**

##### **a. Inspection Scope**

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

- Unit 2 west component cooling water following planned maintenance;
- Unit 1 east essential service water (ESW) during west ESW maintenance;
- Unit 1 east residual heat removal (RHR) following maintenance; and
- east control air dryer with west out of service.

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 four partial system walkdown sample as defined in IP 71111.04–05.

b. Findings

No findings were identified.

.1 Semi-Annual Complete System Walkdown

a. Inspection Scope

On February 29, 2016, the inspectors performed a complete system alignment inspection of the Unit 1 component cooling water system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

These activities constituted one complete system walkdown sample as defined in IP 71111.04–05.

b. Findings

No findings were identified.



1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Unit 2 safety injection pump rooms, Fire Zone 65A and B;
- Unit 2 Quadrant 1 and 2 cable tunnels, Fire Zone 27 and 26;
- Unit 2 Quadrant 3 and 4 cable tunnels, Fire Zone 23,24,25 and 26; and
- Unit 2 refueling water storage tank, condensate storage tank, and pipe tunnel, Fire Zone 117.

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.

1R06 Flooding (71111.06)

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the

failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area to assess the adequacy of flood mitigation features, and that the licensee complied with its commitments:

- 573' elevation of the auxiliary building

Documents reviewed during this inspection are listed in the Attachment to this report.

This inspection constituted one internal flooding sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On January 15, 2016, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

On March 23, 2016, the inspectors observed the licensee place Unit 1 on RHR and cooldown the unit. This was an activity that required heightened awareness or was related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- the 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 71111.11-05.

b. Findings

No findings were identified.

.3 Biennial Written and Annual Operating Test Results (71111.11A)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the Annual Operating Test, and Written Examination administered by the licensee between February 8, 2016, through March 11, 2016, required by Title 10 of the *Code of Federal Regulations* (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.

This inspection constituted one annual licensed operator requalification inspection sample as defined in IP 71111.11A.

b. Findings

No findings were identified.

.4 Biennial Review (71111.11B)

a. Inspection Scope

The following inspection activities were conducted during the week of February 29, 2016, to assess: (1) the effectiveness and adequacy of the facility licensee's implementation and maintenance of its Systems Approach to Training (SAT) based LORT program implemented to satisfy the requirements of 10 CFR 55.59; (2) conformance with the requirements of 10 CFR 55.46 for use of a plant reference simulator to conduct operator licensing examinations and for satisfying experience requirements; and (3) conformance with the operator license conditions specified in 10 CFR 55.53. Documents reviewed are listed in the Attachment to this report.

- Problem Identification and Resolution (10 CFR 55.59(c); SAT Element 5 as Defined in 10 CFR 55.4. The inspectors evaluated the licensee's ability to assess 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 about a dozen corrective action documents related to the plant's operation and associated responses (e.g., recent examination and inspection reports; and licensee Condition Reports). The inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports.
- Licensee Requalification Examinations (10 CFR 55.59(c); SAT Element 4 as defined in 10 CFR 55.4. The inspectors reviewed the licensee's program for development and administration of the LORT biennial written examination and annual operating tests to assess the licensee's ability to develop and administer examinations that were acceptable for meeting the requirements of 10 CFR 55.59(a).
  - The inspectors conducted a detailed review of one biennial requalification written examination to assess content, level of difficulty, and quality of the written examination materials.
  - The inspectors conducted a detailed review of ten Job Performance Measures and four simulator scenarios to assess content, level of difficulty, and quality of the operating test materials.
  - The inspectors reviewed the methodology used to construct the examination including content, level of difficulty, and general quality of the examination/ test materials. The inspectors also assessed the level of examination material duplication from week-to-week of the operating tests conducted during 2016. The inspectors reviewed the written examination given during the inspection week and associated answer keys to check for consistency and accuracy.
  - The inspectors observed the administration of the annual operating test to assess the licensee's effectiveness in conducting the examinations, including the conduct of pre-examination briefings, evaluations of individual operator and crew performance, and post-examination analysis. The inspectors evaluated the performance of two crews, in parallel with the facility evaluators during two dynamic simulator scenarios, and evaluated various licensed crew

members concurrently with facility evaluators during the administration of several job performance measures.

- The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the last requalification examination and the training planned for the current examination cycle to ensure that the licensee addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed several individual remedial training plans.
- Conformance with Examination Security Requirements (10 CFR 55.49): The inspectors conducted an assessment of 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 reviewed the facility licensee's examination security procedure, and observed the implementation of physical security controls (e.g., access restrictions and simulator input/output controls) and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the inspection period.
- Conformance with Simulator Requirements (10 CFR 55.46): The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements. The inspectors reviewed a sample of simulator performance test records (e.g., transient tests, malfunction tests, post-event tests, steady state tests, and core performance tests), simulator discrepancies, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy corrective action process to ensure that simulator fidelity was being maintained. Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions, as well as on nuclear and thermal hydraulic operating characteristics.
- Conformance with Operator License Conditions (10 CFR 55.53): The inspectors reviewed the facility licensee's program for maintaining active operator licenses to assess compliance with 10 CFR 55.53(e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators, and which control room positions were granted watch-standing credit for maintaining active operator licenses. Additionally, medical records for nine licensed operators were reviewed for compliance with 10 CFR 55.27.

This inspection constitutes one biennial licensed operator requalification inspection sample as defined in IP 71111.11B.

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:

- 4kV breakers; and
- spent fuel pool monitoring.

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

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

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

This inspection constituted 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 CD EDG unplanned inoperability;
- Unit 1 main generator rectifier leak and dual-train power operated relief valve (PORV) surveillance;
- Unit 2 ESW and PORV work; and
- Maintenance risk controls during Unit 1 ESW flow verification.

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.

This inspection constituted four maintenance risk assessments and emergent work control activities 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:

- Potentially undedicated parts in ESW strainer valves;
- transformer 5 cooling system issues;
- 2CD EDG voltage issues;
- non-seismic piping in battery rooms;
- control room fan high vibration;
- failure of a rod-group to move during testing on Unit 2; and
- steam leak from main steam isolation dump valve pressure indicating root valve.

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 seven samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

## 1R19 Post-Maintenance Testing (71111.19)

### a. Inspection Scope

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

- U2 E ESW pump and check valve following maintenance;
- Unit 2 stop valve/dump valve 2–MRV–232 repair;
- Unit 2 pressurizer sample line leak isolation;
- 2CD EDG following field-flash circuit repair;
- Unit 2 digital metal impact monitoring system modification; and
- repair of Unit 2 south safety injection pump oil relief valve

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

No findings were identified.

## 1R20 Outage Activities (71111.20)

### .1 Refueling Outage Activities

#### a. Inspection Scope

The inspectors reviewed the Outage Safety Plan (OSP) and contingency plans for the Unit 1 refueling outage (RFO), which commenced on March 23, 2016, 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 period continued into the second quarter. During the RFO, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below:



- licensee configuration management, including maintenance of defense-in-depth commensurate with the OSP for key safety functions and compliance with the applicable TS when taking equipment out of service;
- installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- monitoring of decay heat removal processes, systems, and components;
- reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- controls over activities that could affect reactivity;
- maintenance of containment closure capability in accordance with shutdown risk procedures; and
- licensee identification and resolution of problems related to RFO activities.

Documents reviewed are listed in the Attachment to this report.

This inspection does not yet constitute a RFO sample as defined in IP 71111.20–05 because the outage period extended 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 east motor driven auxiliary feedwater (AFW) pump (in-service test);
- Unit 1 reactor coolant system temperature instrument calibrations (routine);
- Unit 1 Control Room cable vault halon testing (routine);
- inspection of the Unit 1 reactor head lift rig (routine); and
- leak-rate testing of valves 1–DCR–205 and 1–DCR–206 (containment isolation valves)

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

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;

- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted three routine surveillance testing samples, one in-service test sample, and one containment isolation valve sample as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

1EP2 Alert and Notification System Evaluation (71114.02)

a. Inspection Scope

The inspectors reviewed documents and held discussions with Emergency Preparedness (EP) staff regarding the operation, maintenance, and periodic testing of the primary and backup Alert and Notification System (ANS) in the plume pathway Emergency Planning Zone. The inspectors reviewed monthly trend reports and siren test failure records from June 2014 to March 2016. Information gathered during document reviews and interviews were used to determine whether the ANS equipment was maintained and tested in accordance with Emergency Plan commitments and procedures. Documents reviewed are listed in the Attachment to this report.

This ANS evaluation inspection constituted one sample as defined in IP 71114.02–06.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03)

a. Inspection Scope

The inspectors reviewed documents and held discussions with EP staff regarding Emergency Plan commitments and procedures that addressed the primary and alternate methods of initiating an Emergency Response Organization (ERO) activation to augment the on-shift staff. The inspectors reviewed the ERO qualification lists and provisions for maintaining the plant's ERO team. The inspectors reviewed reports and a sample of CAP records of unannounced off-hour augmentation drills and pager tests, which were conducted from June 2014 to March 2016, to determine the adequacy of the drill critiques and associated corrective actions. The inspectors also reviewed a sample of the training records of a selection of ERO personnel, who were assigned to key and support positions, to determine the status of their training as it related to their assigned ERO positions. Documents reviewed are listed in the Attachment to this report.

This ERO augmentation testing inspection constituted one sample as defined in IP 71114.03–06.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness (71114.05)

a. Inspection Scope

The inspectors reviewed the February 2015 audit of Donald C. Cook's Emergency Preparedness Program, to determine that the independent assessments met the requirements of 10 CFR 50.54(t). The inspectors reviewed samples of CAP records associated with the 2015 biennial exercise, as well as various EP drills conducted from June 2014 to March 2016, in order to determine whether the licensee fulfilled drill commitments and to evaluate the licensee's efforts to identify and resolve identified issues. The inspectors reviewed a sample of EP items and corrective actions related to the station's EP program, and activities to determine whether corrective actions were completed in accordance with the site's CAP. Documents reviewed are listed in the Attachment to this report.

This maintenance of emergency preparedness inspection constituted one sample as defined in IP 71114.05–06.

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 15, 2016, 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 and control room simulator 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.

#### 4. **OTHER ACTIVITIES**

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

#### 4OA1 Performance Indicator Verification (71151)

##### .1 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) for Units 1 and 2 for the period from the first quarter of 2015 through the fourth quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee’s operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for the period of January 1, 2015, through December 31, 2015, to validate the accuracy of the submittals. The inspectors also reviewed the licensee’s issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two 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 for Units 1 and 2 for the period from the first quarter of 2015 through the fourth quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for the period of January 1, 2015, through December 31, 2015, to validate the accuracy of the submittals 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 samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Drill and Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill and Exercise Performance (DEP) Indicator for the fourth quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment PI Guideline," Revision 7, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the DEP indicator, in accordance with relevant procedures and NEI guidance. Documents reviewed are listed in the Attachment to this report.

This inspection constitutes one DEP sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Emergency Response Organization Drill Participation

b. Inspection Scope

The inspectors sampled licensee submittals for the ERO Drill Participation PI for the fourth quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment PI Guideline," Revision 7, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator, in accordance with relevant procedures and NEI guidance. Documents reviewed are listed in the Attachment to this report.

This inspection constitutes one ERO Drill Participation sample as defined in IP 71151-05.

c. Findings

No findings were identified.

.5 Alert and Notification System Reliability

a. Inspection Scope

The inspectors sampled licensee submittals for the ANS PI for the fourth quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment PI Guideline," Revision 7, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator, in accordance with relevant procedures and NEI guidance. Documents reviewed are listed in the Attachment to this report.

This inspection constitutes one ANS sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.6 Unplanned Power Changes per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours performance indicator for Units 1 and 2 for the period from the first quarter through the fourth quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, plant computer data, and event reports for the period of the first quarter through the fourth quarter of 2015 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two Unplanned Transients per 7000 Critical Hours samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.7 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures PI for Units 1 and 2 for the period from the first quarter through the fourth quarter of 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99–02, “Regulatory Assessment Performance Indicator Guideline,” Revision 7, dated August 31, 2013, 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, issue reports, event reports, and NRC Integrated Inspection Reports for the period of the first quarter through the fourth quarter of 2015 to validate the accuracy of the submittals. The inspectors also reviewed the licensee’s issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two Safety System Functional Failures samples as defined in IP 71151–05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report 05000315/2015-002-00 and -01: Technical Specification Violation Due to Inoperable Residual Heat Removal Pump

a. Inspection Scope

On June 14, 2015, an oil leak was discovered on the Unit 1 east RHR pump lower motor bearing oil reservoir. An engineering evaluation concluded that based on the leak rate, the pump would not have been able to satisfy its 30 day mission time. Review of oil addition logs concluded that the leak had existed since March 9, 2015. The licensee considered the pump inoperable from March 9, 2015 until the plant entered Mode 5 on June 2, 2015. The issue was documented in NRC Inspection Report 05000315/2015003; 05000316/2015003 as a licensee-identified violation. The inspectors reviewed the license event report (LER) and LER supplement for the issue.

The inspectors noted that none of the reporting criteria pertaining to a loss of safety function had been checked on either LER. The inspectors had reviewed operating logs for the time period covering the inoperability of the Unit 1 east RHR pump and discovered numerous times when the opposite, or West, train of RHR had been declared inoperable for planned maintenance or testing. The inspectors questioned whether the periods of dual-train inoperability had been assessed for a loss of safety function. Many of the instances had not been reviewed for a loss of safety function.

The inspectors determined that a Minor violation of 10 CFR 50.73, "Licensee Event Report System," existed for the failure to check the blocks associated with a loss of safety function on the LER and LER supplement. At the time, having not done an



assessment for those periods, the licensee should have identified on the LERs that a loss of safety function existed during times both trains were inoperable. The inspectors determined this based on the definitions provided in NUREG-1022, "Event Report Guidelines 10 CFR 50.72 and 50.73," Revision 3. The issue was determined to be of Minor significance because the licensee was able to demonstrate by subsequent engineering analysis that the system safety functions were maintained. Per the NRC Enforcement Policy, a failure to check all the appropriate blocks on an LER would be a Severity Level IV violation if the omission could affect the completeness or accuracy of other information submitted to the NRC. PI data was specifically mentioned as an example. In this case, via the engineering analysis, the licensee was able to demonstrate that PI data submitted for the Safety System Functional Failures attribute was still accurate, hence, the issue was Minor. Pending completion of the engineering analysis, the licensee resubmitted the LER with the loss of safety function blocks checked, and initiated an Action Request (AR) to evaluate the issue.

Documents reviewed are listed in the Attachment to this report. This LER is closed.

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

b. Findings

No findings were identified.

4OA5 Other Activities

.1 (Closed) Unresolved Item 05000315/2012007-03, 05000316/2012007-03; Concerns with Periodic Design Basis Testing of Installed Relays and Motor-Starter Contactors

During the 2012 Component Design Bases Inspection, the inspectors were concerned that the licensee was not testing installed relays and motor starter contactors to verify their design basis capacity in accordance with Institute of Electrical & Electronics Engineers (IEEE) Standard 336-1971, and Regulatory Guides 1.30 and 1.33. In response, the licensee had initiated AR 2012-1028, "2012 CDBI - Periodic Testing of HGA Relays," on September 6, 2012. Since then, the licensee was waiting for the result of the URI resolution by NRC to initiate appropriate corrective actions. During follow-up inspection/review, the inspectors noted that the Regulatory Guides did not contain detailed or specific testing instructions and only had general guidelines. The IEEE-336 did have detailed instructions for installation, inspection, and testing for class 1E power, instrumentation and control equipment at nuclear facilities. While reviewing the applicability section of the IEEE-336, inspectors noted the standard did not apply to periodic testing and maintenance following initial installation. The standard only applied to initial installation of new equipment or equipment modifications, or modification of power, instrumentation and control equipment and systems in a nuclear facility from the time the equipment was turned over for installation until it was declared operable for service. Therefore, the inspectors concluded the existing periodic testing and maintenance activities performed by the licensee on installed relays and motor starter contactors were adequate. No violations of NRC requirements were identified by the inspectors. Therefore, this unresolved item (URI) is closed.

.2 (Closed) Unresolved Item 05000315/2014002-02, 05000316/2014004-02, Turbine Driven Auxiliary Feedwater Mission Time

In June of 2014, the inspectors identified an unresolved item related to the mission time of the TDAFW pumps. The licensee assumed a four hour mission time for the TDAFW pumps; however, TS requirements for the condensate storage tanks, which provide the inventory for the TDAFW pumps, require a nine hour water inventory. The inspectors could not resolve the discrepancy during the inspection period. The question arose while reviewing the inoperability of Cook TDAFW pump room coolers. The inspectors had noted that the licensee had calculated that as long as the room temperature remained below 104°F, room temperature would not challenge pump operability for four hours. The inspectors recognized that current technical specification bases establish condensate storage tank inventory sufficient for 9 hours of AFW use. The inspectors inquired as to the difference between condensate storage tank inventory requirements and AFW mission time. The licensee reported that TDAFW pump mission time was bounded by the 4 hour station black out coping time. While the licensee provided technical data to support AFW capability to mitigate the station blackout accident, the data provided did not address AFW mission times to cool the plant down to RHR entry criteria. The inspectors have subsequently determined that TDAFW pump mission time exceeds four hours; therefore, the licensee analysis did not support operability of the TDAFW.

While reviewing information provided by the licensee, the inspectors identified that the licensee did not have an analysis that demonstrated when a single train of RHR could remove decay heat during bounding conditions. The inspectors also noted that several documents generated by the licensee or licensee contractors report values well in excess of four hours before RHR can remove assumed decay heat. For example:

- Calculation CN-SEE-III-07-8 includes tables that show RHR cannot remove decay heat for 10 hours after shutdown if both reactor coolant pumps are running.
- A recent simulator run to demonstrate cooldown to RHR for a SGTR required 6 hours to reach RHR entry criteria. Note: Operators used a procedure designed to limit release; they estimated 4 hours could be achieved if the affected steam generator PORV was used.
- The alternate source term amendment changed assumed cooldown from 8 to 24 hours because the licensee stated they could not justify termination of steam release within 8 hours.
- The technical specification bases for the condensate storage tank states that the applicable safety analysis for the condensate storage tank is to provide cooling water to remove decay heat to cool down the unit following all events in the accident analysis.

Based on the above information as well as other documents forming the current license bases, the inspectors concluded the mission time for AFW exceeds four hours.

b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control." Specifically, the licensee failed to ensure that regulatory requirements and design bases were correctly translated into specifications and procedures.

Description: As stated above, the inspectors identified that the licensee developed and approved a calculation that concluded the TDAFW pump would remain operable with the room coolers out of service provided the initial temperature remained below the temperature needed for a 4 hour run of the TDAFW pump. Operations staff based continued operability of the TDAFW following loss of room ventilation on procedure PMP-4030-001-001, which stated that the pump would remain operable for room temperatures up to 104F. The licensee based the procedural temperature limit on design document DIT-B-01874-01, which incorrectly stated the TDAFW pump was not required for any accident analysis after four hours. The inspectors discussed the condition with the licensee and were informed that the licensee based the 4 hour mission time on the 4 hours coping time associated with loss of all AC – station black out. The inspectors inquired as to other accidents the TDAFW pump mitigated and were informed that the station blackout was the most limiting. The licensee developed a paper to document their review and understanding of AFW mission time. In that paper, the licensee summarized the various UFSAR Chapter 14 analysis that rely on AFW for mitigation. While the summary does establish that steady state conditions are reached in no more than 2 hours, this portion of accident analysis does not analyze plant response to RHR entry criteria, nor to conditions when AFW may be secured. The inspectors noted that AFW continues to perform a safety related function until the plant is placed on RHR and RHR can remove all the decay heat. The Chapter 14 analysis includes a section on radiological consequences. In this section (14.2.4.5) the analysis states that "eight hours after the accident, the residual heat removal system is assumed to start operating to cool down the plant, and steam and activity are no longer assumed to be released to the environment."

The licensee also stated that operations staff would cool down the plant to reach RHR entry conditions within four hours. The inspectors noted that neither technical specifications nor plant procedures require the plant to cooldown within four hours. In addition, the licensee does not have an analysis to demonstrate that under bounding conditions RHR can remove decay heat to maintain RCS temperature less than 350 F.

In reviewing the issue, the inspectors considered the operability definition within the technical specifications. The definition states:

*"A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s)."*

Although safety function is not defined in Cook's TS nor in 10 CFR Part 50, Part 50 does include a definition for safety related components as follows:

Safety-related structures, systems and components means those structures, systems and components that are relied upon to remain functional during and following design basis events to assure:

- 1) The integrity of the reactor coolant pressure boundary;
- 2) The capability to shut down the reactor *and maintain it in a safe shutdown condition*; or
- 3) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the applicable guideline exposures set forth in § 50.34(a)(1) or § 100.11 of this chapter, as applicable.

In the licensee's assessment of AFW mission time, they focused on the accident mitigation portion, specifically, the mitigation through reaching a steady state condition where decay heat is demonstrated to be within the capability of mitigating systems. By ending at this state, the licensee does not consider the safety related function to "maintain it in a safe shutdown condition." In addition, the UFSAR (10.5.2.3) lists as a design function the ability to provide sufficient make up to the steam generators when the main feedwater system is not available. Thus, AFW has safety functions to both mitigate accidents described in Chapter 14 and to maintain the reactor in a safe shutdown condition following anticipated accidents and operation occurrences. In the UFSAR, Section 1.4.5 states the plant can be maintained in safe hot shutdown for an extended period of time. This section of the FSAR references a PSAR question response which states, in part, that "it is possible, however, that a cold shutdown could be performed from outside of the control room in the order of one week's time." The TS bases for remote shutdown monitoring instrumentation (3.3.4) states "a safe shutdown condition is defined as Mode 3. With the unit in Mode 3, the AFW system and the main steam safety valves or the steam generator power operated relief valves can be used to remove core decay heat and meet all safety requirements." The TS bases also states "The unit automatically reaches Mode 3 and can be maintained safely in MODE 3 for an extended period of time."

In addition, the licensee does not have an analysis that demonstrates RHR can remove decay heat with a single train of RHR 4 hours after shutdown. Calculation CN-SEE-III-07-8 includes an analysis that shows a single train of RHR will not be able to cooldown the RCS until 10 hours after shutdown with a RCP running.

In reviewing the CLB for D.C. Cook, the inspectors concluded that the mission time for the TDAFW pumps exceeds the four hours assumed by the licensee. Therefore, the inspectors concluded basing an analysis on room cooling for only 4 hours represented a performance deficiency.

Analysis: The licensee's use of an incorrect mission time was a performance deficiency that warranted a significance review. Using IMC 0612 Appendix B, dated September 7, 2012, the inspectors determined that the finding was more than minor because it was associated with the Mitigating System cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events and adversely affected the attribute of Design Control. Specifically, the licensee applied an incorrect mission time when determining room temperatures to ensure TDAFW pump operability. Using IMC 0609 Appendix A, Exhibit 2-1, dated June 19, 2012, the inspectors answered 'no' to questions A. 1 thru 4. In particular, control room logs

document about 6 hours with the TDAFW room ventilation not functioning; therefore the inspectors determined that the pump would not have been inoperable for longer than the 72 hour completion time in technical specifications.

The inspectors determined that the finding included a cross-cutting aspect of H.14 (conservative bias) in the human performance area. The inspectors concluded that the licensee failed to emphasize prudent choices in decision making, in that the licensee did not consider operation of AFW for more than four hours following an event or transient to be important.

**Enforcement:** 10 CFR 50, Appendix B, Criterion III, requires, in part, that licensees establish measures to assure that applicable regulatory requirements and the design bases, as defined in 50.2 and as specified in the license application, for those systems structures and components to which the Appendix applies are correctly translated onto specifications, drawings, procedures and instructions. Contrary to this requirement, as of June 14, 2014, the licensee failed to assure design bases requirements for AFW mission time were correctly translated into procedures. The licensee failed to assure the design bases requirement, as stated in the UFSAR and technical specification bases, to provide sufficient makeup to the steam generators when the main feedwater system is not available, could be met. Specifically, the licensee used a four hour mission time to determine acceptable room conditions for the TDAFW pump room when the room cooler was not operable; but a four hour basis is not supported by the current licensing bases for the facility. The licensee entered the issue into their CAP as AR 2014–7259. This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. **(NCV 05000315/2016001–01; 05000316/2016001–01, Incorrect Auxiliary Feedwater Mission Time)”**

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On April 12, 2014, the inspectors presented the inspection results to Mr. Q.S. Lies and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

##### .2 Interim Exit Meetings

Interim exits were conducted for:

- The results of the Emergency Preparedness Program inspection were discussed with Mr. Q. S. Lies, Site Vice President, on March 11, 2016;
- The inspection results from the biennial licensed operator requalification program area assessment with Mr. J. Gebbie, Chief Nuclear Officer, and his staff on March 4, 2016; and
- The licensed operator annual operator test results were provided by Mr. B. Evans, via e-mail on March 14, 2016.

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

#### 4OA7 Licensee-Identified Violations

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

- The licensee identified a finding of very low safety significance (Green) with an associated NCV of 10 CFR 50 Appendix B, Criterion III, "Design Control," for the failure to ensure appropriate quality standards were specified and included in design documents associated with the Unit 1 and Unit 2 ESW strainer backwash valves. Specifically, this resulted in the use of non-dedicated parts in the backwash valves. The backwash function of the ESW strainers was originally classified as non-safety-related. However, in 2007, the backwash function became safety-related. When this change occurred, the Safety Classification Determination (SCD), which documented the safety classification of the various parts of the valves, was not updated accordingly. During a maintenance period on the ESW system in 2015, some licensee personnel questioned the adequacy of the SCD. The licensee later determined that non-dedicated replacement parts had been used in some of the strainer backwash valves since 2007. The issue was more than minor because per IMC 0612 Appendix B, it adversely affected the Mitigating Systems cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. The issue screened as Green based on the guidance in IMC 0609 Appendix A, Exhibit 2. Specifically, the finding was associated with the design or qualification of a mitigating SSC where the operability was maintained.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

J. Gebbie, Chief Nuclear Officer  
S. Lies, Site Vice President  
L. Baun, PA Director  
D. Emery, Licensed Operator Training Supervisor  
B. Evans, Operations Training Manager  
M. Lloyd, VP Engineering  
M. Scarpello, NRA Manager  
S. Schneider, Senior Operations License  
P. Schoepf, NSS Director  
R. Sieber, Emergency Preparedness Manager  
K. Simpson, EP Supervisor

#### Nuclear Regulatory Commission

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

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000315/2016001-01; 05000316/2016001-01	NCV	Incorrect Auxiliary Feedwater Mission Time (4OA5.2)
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### Closed

05000315/2015-002-00; 05000315/2015-002-01	LER	Technical Specification Violation due to Inoperable Residual Heat Removal Pump (4OA3.1)
05000315/2012007-03; 05000316/2012007-03	URI	Concerns with Periodic Design Basis Testing of Installed Relays and Motor-Starter Contactors (4OA5.1)
05000315/2016001-01; 05000316/2016001-01	NCV	Incorrect Auxiliary Feedwater Mission Time (4OA5.2)

### Discussed

None



## LIST OF DOCUMENTS REVIEWED

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

### 1R01 Adverse Weather Protection

- 12-OHP-4022-001-010, Severe Weather

### 1R04 Equipment Alignment

- 1-OHP-4021-008-002, Placing Emergency Core Cooling System in Standby Readiness, Revision 30
- 1-OHP-4021-013-001, Filling And Venting The Component Cooling Water System, Revision 31
- 1-OHP-4021-016-003, Component Cooling Water System Operation, Revision 39
- 1-OHP-4030-108-053V, E.C.C.S Valve Position Verification, Revision 4
- 1-OHP-4030-116-020E, East Component Cooling Water Loop Surveillance Test, Revision 23
- 1-OHP-4030-116-020W, West Component Cooling Water Loop Surveillance Test, Revision 24
- 2-OHP-4021-016-001, Filing and Venting the Component Cooling Water System, Revision 34
- 2-OHP-4021-064-001, Operation of Plant and Control Air Systems, Revision 41
- AR 2015-15267, 1SV-121 Did not Lift, November 24, 2015
- AR 2015-5491, Unit 2 West CCW Hx ESW Leak, April 16, 2015
- Component Cooling Water Open Work Order Report Generated March 16, 2016
- OP-1-5113-97, Flow Diagram, Essential Service Water, March 12, 2015
- OP-1-5143-77, Flow Diagram Emergency Core Cooling (RHR) Unit 1, Revision 77

### 1R05 Fire Protection

- Fire Pre-Plans Volume 1, Revision 22
- Fire Pre-Plans, Volume 1, Revision 23
- Fire Hazards Analysis, Revision 16

### 1R06 Flooding

- DCC-PV-12-MC17-N, Flood Protection Features, Revision 2
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## LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ANS	Alert and Notification System
AR	Action Request
CAP	Corrective Action Program
CFR	Code of Federal Regulations
DEP	Drill and Exercise Performance
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
ERO	Emergency Response Organization
ESW	Essential Service Water
IEEE	Institute of Electrical & Electronic Engineers
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
LER	Licensee Event Report
LORT	Licensed Operator Requalification Training
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OSP	Outage Safety Plan
PARS	Publicly Available Records System
PI	Performance Indicator
PORV	Power Operated Relief Valve
RHR	Residual Heat Removal
RFO	Refueling Outage
SAT	systems Approach to Training
SCD	Safety Classification Determination
SSC	System, Structure, and Component
TDAFW	Turbine-Driven Auxiliary Feedwater
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order

J. Gebbie

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Sincerely,

/RA/

Kenneth Riemer, Chief  
Branch 2  
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