



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

May 8, 2014

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 05000315/2014002;
05000316/2014002

Dear Mr. Weber:

On March 31, 2014, 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, 2014, with Mr. J. Gebbie, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, two NRC-identified findings and one self-revealed finding 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. Additionally, a licensee-identified violation is listed in Section 4OA7 of this report.

If you contest the subject or severity of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with 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.

L. Weber

-2-

Additionally, as we informed you in the most recent NRC integrated inspection report, cross-cutting aspects identified in the last six months of 2013 using the previous terminology were being converted in accordance with the cross-reference in Inspection Manual Chapter (IMC) 0310. Section 4OA5 of the enclosed report documents the conversion of these cross-cutting aspects which will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review. If you disagree with the cross-cutting aspect assigned, 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 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), 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 05000315/2014002; 05000316/2014002
w/Attachment: Supplemental Information

cc w/encl: Distribution via **LISTSERV**[®]

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000315/2014002; 05000316/2014002

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, 2014

Inspectors: J. Ellegood, Senior Resident Inspector
T. Taylor, Resident Inspector
J. Gilliam, Acting Resident Inspector
J. Lennartz, Acting Resident Inspector
M. Bielby, Senior Operator License Inspector
M. Mitchell, Health Physicist
D. Reeser, Operator License Inspector
B. Cushman, Resident Inspector

Approved by: Kenneth Riemer, Chief
Branch 2
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS	2
REPORT DETAILS	5
Summary of Plant Status.....	5
1. REACTOR SAFETY.....	5
1R04 Equipment Alignment (71111.04).....	5
1R05 Fire Protection (71111.05).....	6
1R06 Flood Protection Measures (71111.06).....	9
1R11 Licensed Operator Requalification Program (71111.11).....	10
1R12 Maintenance Effectiveness (71111.12).....	13
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13).....	14
1R15 Operability Determinations and Functional Assessments (71111.15).....	14
1R18 Plant Modifications (71111.18).....	15
1R19 Post-Maintenance Testing (71111.19).....	16
1R22 Surveillance Testing (71111.22).....	16
1EP6 Drill Evaluation (71114.06).....	18
2. RADIATION SAFETY.....	18
2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01).....	18
2RS2 Occupational As-Low-As-Reasonably-Achievable Planning and Controls (71124.02).....	20
2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03).....	21
2RS4 Occupational Dose Assessment (71124.04).....	25
4. OTHER ACTIVITIES.....	30
4OA1 Performance Indicator Verification (71151).....	30
4OA2 Identification and Resolution of Problems (71152).....	32
4OA3 Followup of Events and Notices of Enforcement Discretion (71153).....	34
4OA5 Other Activities.....	36
4OA6 Management Meetings.....	43
4OA7 Licensee-Identified Violations.....	44
SUPPLEMENTAL INFORMATION	1
KEY POINTS OF CONTACT.....	1
LIST OF ITEMS OPENED, CLOSED AND DISCUSSED	2
LIST OF DOCUMENTS REVIEWED.....	3
LIST OF ACRONYMS USED.....	10

SUMMARY OF FINDINGS

Inspection Report (IR) 05000315/2014002, 05000316/2014002; 01/01/2014 – 03/31/2014; Donald C. Cook Nuclear Power Plant, Units 1 and 2; Fire Protection; Other Activities; Licensee Identified Violations.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three 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 June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas" effective date January 1, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Initiating Events

- Green. A finding and associated non-cited violation of technical specification (TS) 5.4.1, Procedures, self-revealed pertaining to establishing and maintaining procedures to ensure reliable indication of reactor vessel level during reduced RCS inventory and vacuum fill operations. Specifically, the licensee failed to include in procedures for vacuum fill methods to ensure the level detection system sensing lines were vacuum tight and to include provisions to normalize level indications. During the vacuum fill evolution for Unit 1, the licensee made 5 attempts to draw vacuum because of diverging level indications. The additional time spent in reduced inventory as well as the additional drain downs resulted in increased plant risk. As immediate corrective actions, the licensee corrected the leaking fitting, normalized level readings, and completed the vacuum fill evolution. The licensee has entered this issue into the corrective action program (CAP) as action request (AR) 2013-6907.

The inspectors concluded the finding was more than minor because it adversely affected the Initiating Event cornerstone objective of limiting the likelihood of events that upset plant stability while shutdown. Specifically, the issue impacted the Procedure Quality attribute. Based on the screening criteria of IMC 0609, the inspectors and regional SRA concluded a phase 2 or 3 evaluation was needed. The Office of Nuclear Reactor Regulatory (NRR) performed a phase 3 assessment and estimated the conditional core damage probability at $5.9E-7$. Therefore, the finding is of very low safety significance (Green). The finding included a cross-cutting aspect of H.9, Training, in the human performance area because the licensee lacked understanding of the precision level instruments. (Section 4OA5)

- Green. A finding and associated non-cited violation of TS 5.4.1, Procedures, self-revealed pertaining to establishing and maintaining procedures to ensure reliable indication of reactor vessel level during reduced RCS inventory and vacuum fill operations. Specifically, the licensee failed to include in procedures for vacuum fill methods to ensure the level detection system sensing lines were vacuum tight.

Although the licensee implemented some corrective actions prior to the scheduled vacuum fill evolution, the actions taken failed to prevent recurrence. During the vacuum fill evolution for Unit 2, the licensee made 2 attempts to draw vacuum because of diverging level indications. The additional time spent in reduced inventory as well as the additional drain down resulted in increased plant risk. As immediate corrective actions, the licensee corrected the leaking fitting, normalized level readings, and completed the vacuum fill evolution. The licensee has entered this issue into the CAP as AR 2013-18146.

The inspectors concluded the finding was more than minor because it adversely affected the Initiating Event cornerstone objective of limiting the likelihood of events that upset plant stability while shutdown. Specifically, the issue impacted the Procedure Quality attribute. Based on the screening criteria of IMC 0609, the inspectors and regional SRA concluded a phase 2 or 3 evaluation was needed. Since the issue in Unit 2 was bounded by the phase 3 assessment performed for Unit 1, the inspectors and SRA concluded the finding was of very low safety significance, (Green). The finding included a cross-cutting aspect of P.3, Resolution, in the corrective action area because the licensee failed to implement corrective actions that prevented recurrence. (Section 4OA5)

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation of License Condition 2.C.4 for Unit 1, for the licensee's failure to ensure that a fire door would be closed at the time of a fire. Specifically, fire door 1-DR-AUX387 was found with a degraded latch that prevented the door from closing. Donald C. Cook is required to comply with the National Fire Protection Association (NFPA) 80, 1970 which requires a closing device to ensure fire doors close and latch at the time of a fire. Contrary to this requirement, fire door 1-DR-AUX-387 would not close and latch because the latching mechanism for the inactive leaf had failed in a manner preventing the door from closing. As immediate corrective action, the licensee started hourly fire watches on the door and performed an interim repair to restore the door to a functional status. The licensee has entered the condition into the corrective action program as AR 2014-0802.

The inspectors determined the finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Protection Against External Events (Fire) and adversely affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee failed to maintain door 387 such that it could perform its required function as a 3 hour fire barrier. Using IMC 0609, Appendix F, the inspectors concluded that the finding was of very low safety significance (Green) because the fire loading was below the screening criteria of 120,000 btu/ft². The inspectors concluded the finding included a cross-cutting aspect of H.5, Work Planning, in the area of human performance because the licensee did not incorporate risk insights. (Section 1R05)

B. Licensee-Identified Violation

- A violation of very low safety significance that was identified by the licensee has been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's corrective action program. This violation and corrective action tracking number is listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near 100 percent power except for a downpower on March 21, 2014, to 92 percent power for turbine valve testing. Unit 1 returned to 100 percent power on March 22.

Unit 2 operated at or near 100 percent power for the entire 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 east component cooling water;
- Unit 1 and Unit 2 supplemental diesel generators;
- Unit 1 east residual heat removal; and
- Unit 1 nitrogen supply to steam generator power-operated relief valve.

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 samples as defined in Inspection Procedure (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 1 auxiliary building 609 fire area 44n;
- Unit 1 auxiliary building quadrant 2 cable pen tunnel - fire area 38;
- Unit 1 east containment spray heat exchanger room - fire area 44a; and
- Unit 1 west containment spray heat exchanger room - fire area 44b.

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

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated NCV of License Condition 2.C.4 for Unit 1, for the licensee's failure to ensure that a fire door would be closed at the time of a fire. Specifically, fire door 1-DR-AUX387 was found with a degraded latch that prevented the door from closing.

Description: On January 17, during a walkdown of the auxiliary building, the inspectors identified that door 387 would not close because part of the latching mechanism interfered with door closure. Figure 1 shows the door in the as found condition. After identifying the issue, the inspector located an auxiliary operator. The operator attempted to correct the condition but could not reposition the latch. The auxiliary operator informed the shift manager and fire protection. Upon notification, fire protection impaired the door and commenced an hourly fire watch as required by the fire protection program. Shortly thereafter, fire protection succeeded in rotating the latch, allowing the door to

close and restoring it to a functional status. A few days later, the licensee completed a permanent repair of the door.



Figure 1

Door 387 provides separation between fire area 44N, which contains safety-related and safe shutdown equipment, and fire zone 38, which contains safety-related equipment and safety-related cabling. The Fire Hazards Analysis describes the door as a 3 hour fire door. In addition, the door is a High Energy Line Break (HELB) door intended to mitigate the effects of a HELB in fire zone 38 from impacting equipment in zone 44N. In response to the inspectors inquiries regarding the impact of the impairment on HELB, the licensee performed an analysis and concluded that the in the event of a HELB, equipment in zone 44N would remain operable.

The licensee conducts a daily fire door inspection. Because of the inspection, the licensee was able to provide the inspectors with a timeline bounding the period when the door could not perform its function. Fire protection had inspected the door at about 2000 on 16 January and verified the door closed. The inspectors identified the failure at approximately 0900 the following day.

During review of the condition, the inspectors noted that the licensee had identified latch degradation on September 25, 2013. When first discovered, the door remained capable of performing its intended function. The licensee processed the deficiency through the work control process. As part of the prioritization process, the licensee obtains the criticality code. Per PMP-2291-WMP-001, if no criticality code is assigned, the equipment is considered run to failure. Since the licensee considered the door as run to failure, by procedure, the door was assigned a priority of 3C, or routine maintenance. As a result, the maintenance was not performed until after the door could no longer perform its function.

Analysis: The inspectors determined the licensee's failure to ensure a fire door would close during a fire was a performance deficiency that warranted a significance determination. Using IMC 0612, Appendix "Issue Screening", issued September 7, 2012, the inspectors concluded that traditional enforcement did not apply. The inspectors determined the finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Protection Against External Events (Fire) and adversely affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee failed to maintain door 387 such that it could perform its required function as a 3 hour fire barrier.

In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," Table 2, issued June 19, 2012, the inspectors determined that the finding affected the Mitigating Systems cornerstone. The finding affected the ability to confine the effect of a fire, and the inspectors determined using Table 3, that it could be evaluated using Appendix F, "Fire Protection Significance Determination Process." The inspectors screened out the finding as Green. In accordance with Appendix F attachment 1, Fire Protection Significance determination Process Worksheet, issued September 20, 2013, the inspectors assigned a category of fire confinement. Using the same attachment, the inspectors screened the finding as Green because the fire loading, per the licensee's Fire Hazards Analysis is 67,000 btu/ft². This is less than 120,000 per question 3 and screens as Green.

The inspectors concluded that the finding included a cross-cutting aspect of H.5, Work Management, in the area of human performance. In September 2013, the licensee identified that the latch had degraded but the door could still perform its safety function. Using the site's process for classifying equipment, the licensee determined that since the classification was indeterminate the door would be treated as run to failure. The classification process did not consider the importance of this door as a fire and HELB barrier. Using the common language included in NUREG-2165, the inspectors concluded that examples: 1) (Work is effectively planned and executed by incorporating risk insights) and 2) (The work process appropriately prioritizes work and incorporates contingency plans, compensatory actions, and abort criteria, as needed.) of WP.1 apply. WP.1 is associated with aspect H.5, work management.

Enforcement: License Condition 2.C.4 of the D. C. Cook Unit 1 operating license, requires, in part, that the licensee implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the licensee's amendment request dated July 1, 2011. The amendment request states that Cook complies, with clarification, with NFPA 80 with reference to the Fire Protection Program Manual. The Fire Protection Program Manual,

Section 14 "NFPA Code Compliance Evaluation," requires D. C. Cook Nuclear Power Plant to comply with NFPA-80, 1970 Edition for fire doors. National Fire Protection Association 80, 1970 Edition, Section 1101, states that, "a closing device shall be installed on every fire door." Section 1101.b states, in part, that a closing device is a mechanism which, if kept in good working condition, will ensure that fire doors are kept in a closed position and latched or, if normally open, will close and latch the door at time of fire. In addition, section 1203 states, in part "Doors, shutters and windows shall be operable at all times. They shall be kept closed and latched or arranged for automatic closing." Contrary to the above, on January 17, the licensee failed to ensure Fire Door 1-DR-AUX387 was closed or would automatically close at time of fire in Fire Areas 44N or 38. This Fire Door was held open by a degraded latch. Following the identification of this issue, the licensee established fire tours of the affected areas and on January 21 replaced the degraded latch. Because this violation was of very low safety significance and it was entered into the licensee's CAP as AR 2014-0802, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000315/2014002-01; 05000316/2014002-01, Degraded Latch Prevents Closure of Fire Door)

1R06 Flood Protection Measures (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 areas to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Unit 1 and Unit 2 essential service water pump rooms; and
- Unit 1 and Unit 2 screen house.

Documents reviewed during this inspection are listed in the Attachment to this report. This inspection constituted two internal flooding samples as defined in IP 71111.06-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On February 14, 2014, the inspectors observed a crew of licensed operators in the plant's simulator during a dual unit licensed operator training session. The inspectors verified that operator performance was adequate, evaluators were identifying 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
- Unit 1 and Unit 2 crew's ability to coordinate actions while responding to events.

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.

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

a. Inspection Scope

On March 6, 2014, the inspectors observed operators reduce power and close a turbine generator control valve on Unit 2. This was an activity that required heightened awareness. 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.

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 Biennial Written Examination administered by the licensee from February 27 – March 27, 2014, and the Annual Operating Test administered by the licensee from February 25 – March 28, 2014, as required by 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 following inspection activities were conducted during the weeks of March 10, 2014, and March 17, 2014, 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 put into effect to satisfy the requirements of 10 CFR 55.59; (2) conformance with the requirements of 10 CFR 55.46 for use of a plant referenced 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. The documents reviewed are listed in the Attachment to this report.

- 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 are acceptable for meeting the requirements of 10 CFR 55.59(a).
 - The inspectors conducted a detailed review of two biennial requalification written examination versions to assess content, level of difficulty, and quality of the written examination materials. (02.03)

- The inspectors conducted a detailed review of 16 Job Performance Measures (JPMs) and 6 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 and biennial written examination 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 one operating crew (two simulator crews) in parallel with the facility evaluators during two dynamic simulator scenarios administered to each simulator crew, and evaluated various licensed crew members concurrently with facility evaluators during the administration of several JPMs. (02.05)
- The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the last requalification examinations and the training planned for the current examination cycle to ensure they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans. (02.07)
- Conformance with Examination Security Requirements (10 CFR 55.49): The inspectors conducted an assessment of the licensee's processes related to examination of 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 I/O controls) and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the inspection period. (02.06)
- Conformance with Operator License Conditions (10 CFR 55.53): The inspectors reviewed the facility licensee's program for maintaining active operator licenses and 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 10 licensed operators were reviewed for compliance with 10 CFR 55.53(l). (02.08)
- Conformance with Simulator Requirements Specified in 10 CFR 55.46: The inspectors assessed the adequacy of the licensee's simulation facility (i.e., 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, scenario based 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. (02.09)

- Problem Identification and Resolution (10 CFR 55.59(c); SAT 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 documents related to licensed operator performance issues (e.g., recent examination and inspection reports including cited and non-cited violations, NRC end-of-cycle and mid-cycle reports, NRC plant issue matrix, licensee event reports, licensee condition/problem identification reports including documentation of plant events and review of industry operating experience). The inspectors also sampled the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. (02.10)

This inspection constituted one biennial Licensed Operator Requalification Program inspection sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- Unit 1 and Unit 2 annunciator system

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 one quarterly maintenance effectiveness sample 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:

- Repair of Unit 1 CD battery fire damper;
- supplemental diesel generator outage;
- failure of turbine stop valve position indication; and
- emergent repair of pressurizer level controller with hydrogen monitoring system work.

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:

- Unit 1 CD battery while fire damper was closed;
- annunciator and plant process computer ventilation; and
- manual flashing of diesel field during slow speed start.

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 three samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modifications:

- Unit 1 annunciator temporary power supply; and
- liquid metal injection to temporarily repair Steam Generator power operated relief valve leak, Unit 1.

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. 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 two temporary modification samples as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- Unit 1 west essential service water;
- Unit 1 annunciator inverter replacement;
- Unit 2 west component cooling water pump;
- Unit 2 control valve proximity switch replacement; and
- Unit 2 control room air conditioning motor replacement.

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 TSSs, 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 five post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- Unit 2 west charging pump (IST);
- Unit 2 upper ice condenser (Ice Condenser);
- Unit 1 pressurizer level (Routine); and
- Unit 1 distributed hydrogen ignition system (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, American Society of Mechanical Engineers code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted two routine surveillance testing samples, one inservice (IST) testing sample, and one ice condenser sample as defined in IP 71111.22, Sections - 02 and - 05.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on March 5, 2014, 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 Technical Support Center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors validated activation of the facilities was timely. The inspectors also attended the licensee drill critique to compare any inspector-observed weaknesses 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

Cornerstone: Occupational Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted a partial sample as defined in IP 71124.01-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed all licensee performance indicators for the Occupational Exposure Cornerstone for follow-up. The inspectors reviewed the results of Radiation Protection Program audits (e.g., licensee's quality assurance audits or other independent audits). The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed the results of the audit and operational report reviews to gain insights into overall licensee performance.

b. Findings

No findings were identified.

.2 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors conducted walkdowns of the facility, including radioactive waste processing, storage, and handling areas to evaluate material conditions and performed independent radiation measurements to verify conditions.

b. Findings

No findings were identified.

.3 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors selected various containers holding non-exempt licensed radioactive materials that may cause unplanned or inadvertent exposure of workers and assessed whether the containers were labeled and controlled in accordance with 10 CFR 20.1904, "Labeling Containers," or met the requirements of 10 CFR 20.1905(g), "Exemptions To Labeling Requirements."

The inspectors reviewed selected occurrences where a worker's electronic personal dosimeter noticeably malfunctioned or alarmed. The inspectors evaluated whether workers responded appropriately to the off-normal condition. The inspectors assessed whether the issue was included in the CAP and dose evaluations were conducted as appropriate.

b. Findings

No findings were identified.

.4 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors assessed whether radiation monitoring devices were placed on the individual's body consistent with licensee procedures. The inspectors assessed whether the dosimeter was placed in the location of highest expected dose or that the licensee properly employed an NRC-approved method of determining effective dose equivalent.

b. Findings

No findings were identified.

.5 Radiation Worker Performance (02.07)

a. Inspection Scope

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be human performance errors. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the

licensee to resolve the reported problems. The inspectors discussed with the radiation protection manager any problems with the corrective actions planned or taken.

b. Findings

No findings were identified.

.6 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be radiation protection technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

b. Findings

No findings were identified.

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

This inspection constituted a partial sample as defined in IP 71124.02-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the plant's three year rolling average collective exposure.

b. Findings

No findings were identified.

.2 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors reviewed the as-low-as-reasonably-achievable (ALARA) work activity evaluations, exposure estimates, and exposure mitigation requirements. The inspectors determined whether the licensee reasonably grouped the radiological work into work activities based on historical precedence, industry norms, and/or special circumstances.

The inspectors assessed whether the licensee's planning identified appropriate dose mitigation features, considered alternate mitigation features, and defined reasonable dose goals. The inspectors evaluated whether the licensee's ALARA assessment has taken into account decreased worker efficiency from use of respiratory protective devices and/or heat stress mitigation equipment (e.g., ice vests). The inspectors determined whether the licensee's work planning considered the use of remote

technologies (e.g., teledosimetry, remote visual monitoring, and robotics) as a means to reduce dose and the use of dose reduction insights from industry operating experience and plant-specific lessons learned. The inspectors assessed the integration of ALARA requirements into work procedure and radiation work permit documents.

The inspectors compared the results achieved (dose rate reductions and person-rem used) with the intended dose established in the licensee's ALARA planning for these work activities. The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements and evaluated the accuracy of these time estimates. The inspectors assessed the reasons (e.g., failure to adequately plan the activity and failure to provide sufficient work controls) for any inconsistencies between intended and actual work activity doses.

The inspectors determined whether post-job reviews were conducted and if identified problems were entered into the licensee's CAP.

b. Findings

No findings were identified.

.3 Source Term Reduction and Control (02.04)

a. Inspection Scope

The inspectors used licensee records to determine the historical trends and current status of significant tracked plant source terms known to contribute to elevated facility aggregate exposure. The inspectors assessed whether the licensee had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

This inspection constituted one complete sample as defined in IP 71124.03-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant UFSAR to identify areas of the plant designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation. Instrumentation review included continuous air monitors (continuous air monitors and particulate-iodine-noble-gas-type instruments) used to identify changing airborne radiological conditions such that actions to prevent an overexposure may be taken. The review included an overview of the Respiratory Protection Program and a description of the types of devices used. The inspectors

reviewed UFSAR, TSs, and emergency planning documents to identify location and quantity of respiratory protection devices stored for emergency use.

The inspectors reviewed the licensee's procedures for maintenance, inspection, and use of respiratory protection equipment including self-contained breathing apparatus as well as procedures for air quality maintenance.

The inspectors reviewed any reported performance indicators related to unintended dose resulting from intakes of radioactive material.

b. Findings

No findings were identified.

.2 Engineering Controls (02.02)

a. Inspection Scope

The inspectors reviewed the licensee's use of permanent and temporary ventilation to determine whether the licensee uses ventilation systems as part of its engineering controls (i.e., in lieu of respiratory protection devices) to control airborne radioactivity. The inspectors reviewed procedural guidance for use of installed plant systems, such as containment purge, spent fuel pool ventilation and auxiliary building ventilation, and assessed whether the systems are used, to the extent practicable, during high-risk activities (e.g., using containment purge during cavity floodup).

The inspectors selected installed ventilation systems used to mitigate the potential for airborne radioactivity and evaluated whether the ventilation airflow capacity, flow path (including the alignment of the suction and discharges), and filter/charcoal unit efficiencies, as appropriate, were consistent with maintaining concentrations of airborne radioactivity in work areas below the concentrations of an airborne area to the extent practicable.

The inspectors selected temporary ventilation system setups (high-efficiency particulate air/charcoal negative pressure units, down draft tables, tents, metal "Kelly buildings," and other enclosures) used to support work in contaminated areas. The inspectors assessed whether the use of these systems is consistent with the licensee's procedural guidance and ALARA concept.

The inspectors reviewed airborne monitoring protocols by selecting installed systems used to monitor and warn of changing airborne concentrations in the plant and evaluated whether the alarms and setpoints were sufficient to prompt licensee/worker action to ensure that doses are maintained within the limits of 10 CFR Part 20 and the ALARA concept.

The inspectors assessed whether the licensee established trigger points (e.g., the Electric Power Research Institute's "Alpha Monitoring Guidelines for Operating Nuclear Power Stations") for evaluating levels of airborne beta-emitting (e.g., plutonium-241) and alpha-emitting radionuclides.

b. Findings

No findings were identified.

.3 Use of Respiratory Protection Devices (02.03)

a. Inspection Scope

For those situations where it is impractical to employ engineering controls to minimize airborne radioactivity, the inspectors assessed whether the licensee provided respiratory protective devices such that occupational doses are ALARA. The inspectors selected work activities where respiratory protection devices were used to limit the intake of radioactive materials and assessed whether the licensee performed an evaluation concluding that further engineering controls were not practical and that the use of respirators is ALARA. The inspectors also evaluated whether the licensee established means (such as routine bioassay) to determine if the level of protection (i.e., protection factor) provided by the respiratory protection devices during use was at least as good as that assumed in the licensee's work controls and dose assessment.

The inspectors assessed whether respiratory protection devices used to limit the intake of radioactive materials were certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration or have been approved by the NRC per 10 CFR 20.1703(b). The inspectors selected work activities where respiratory protection devices were used. The inspectors evaluated whether the devices were used consistent with their National Institute for Occupational Safety and Health/Mine Safety and Health Administration certification or any conditions of their NRC approval.

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing apparatus bottles to assess whether the air used in these devices meets or exceeds Grade D quality. The inspectors reviewed plant breathing air supply systems to determine whether they meet the minimum pressure and airflow requirements for the devices in use.

The inspectors selected several individuals qualified to use respiratory protection devices and assessed whether they have been deemed fit to use the devices by a physician.

The inspectors selected several individuals assigned to wear a respiratory protection device and observed them donning, doffing, and functionally checking the device as appropriate. Through interviews with these individuals, the inspectors evaluated whether they knew how to safely use the device and how to properly respond to any device malfunction or unusual occurrence (i.e., loss of power, loss of air, etc.). The inspectors chose multiple respiratory protection devices staged and ready for use in the plant or stocked for issuance for use. The inspectors assessed the physical condition of the device components (e.g., mask or hood, harnesses, air lines, regulators, air bottles, etc.) and reviewed records of routine inspection for each. The inspectors selected several of the devices and reviewed records of maintenance on the vital components (e.g., pressure regulators, inhalation/exhalation valves, hose couplings). The inspectors reviewed the Respirator Vital Components Maintenance Program to ensure onsite personnel assigned to repair the vital components have received the appropriate manufacturer-approved training.

b. Findings

No findings were identified.

.4 Self-Contained Breathing Apparatus for Emergency Use (02.04)

a. Inspection Scope

Based on the UFSAR, TSs, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of self-contained breathing apparatuses staged in-plant for use during emergencies. The inspectors reviewed the licensee's capability for refilling and transporting self-contained breathing apparatus air bottles to and from the control room and operations support center during emergency conditions.

The inspectors selected several individuals on control room shift crews and from designated departments currently assigned emergency duties (e.g., onsite search and rescue duties) to assess whether control room operators and other emergency response and radiation protection personnel (i.e., assigned in-plant search and rescue duties or as required by emergency operating procedures or the emergency plan) were trained and qualified in the use of self-contained breathing apparatuses (including personal bottle changeout). The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

The inspectors determined whether appropriate mask sizes and types are available for use (i.e., in-field mask size and type match that was used in fit-testing). The inspectors determined whether on-shift operators had no facial hair that would interfere with the sealing of the mask to the face and whether vision correction (e.g., glasses inserts or corrective lenses) were available as appropriate.

The inspectors reviewed the past two years of maintenance records for select self-contained breathing apparatus units used to support operator activities during accident conditions and designated as "ready for service" to assess whether any maintenance or repairs on any self-contained breathing apparatus unit's vital components were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. The vital components typically are the pressure-demand air regulator and the low-pressure alarm. The inspectors reviewed the onsite maintenance procedures governing vital component work to determine any inconsistencies with the self-contained breathing apparatus manufacturer's recommended practices. For those Self-contained breathing apparatuses designated as "ready for service," the inspectors determined whether the required, periodic air cylinder hydrostatic testing was documented and up-to-date, and the retest air cylinder markings required by the U.S. Department of Transportation were in place.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed whether the corrective actions were appropriate for a selected sample of problems involving airborne radioactivity and were appropriately documented by the licensee.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

This inspection constituted one complete sample as defined in IP 71124.04-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the results of Radiation Protection Program audits related to internal and external dosimetry (e.g., licensee's quality assurance audits, self-assessments, or other independent audits) to gain insights into overall licensee performance in the area of dose assessment and focus the inspection activities consistent with the principle of "smart sampling."

The inspectors reviewed the most recent National Voluntary Laboratory Accreditation Program accreditation report on the vendor's most recent results to determine the status of the contractor's accreditation.

A review was conducted of the licensee's procedures associated with dosimetry operations, including issuance/use of external dosimetry (routine, multi-badging, extremity, neutron, etc.), assessment of internal dose (operation of whole body counter, assignment of dose based on derived air concentration-hours, urinalysis, etc.), and evaluation of and dose assessment for radiological incidents (e.g., distributed contamination, hot particles, loss of dosimetry, etc.).

The inspectors evaluated whether the licensee established procedural requirements for determining when external and internal dosimetry is required.

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

The inspectors evaluated whether the licensee's dosimetry vendor is National Voluntary Laboratory Accreditation Program accredited and if the approved irradiation test

categories for each type of personnel dosimeter used are consistent with the types and energies of the radiation present and the way the dosimeter is being used (e.g., to measure deep dose equivalent, shallow dose equivalent, or lens dose equivalent).

The inspectors evaluated the onsite storage of dosimeters before their issuance, during use, and before processing/reading. The inspectors also reviewed the guidance provided to rad-workers with respect to care and storage of dosimeters.

The inspectors assessed whether non-National Voluntary Laboratory Accreditation Program accredited passive dosimeters (e.g., direct ion storage sight-read dosimeters) were used according to the licensee's procedures that provide for periodic calibration, application of calibration factors, usage, reading (dose assessment), and zeroing. The licensee does not use non-National Voluntary Laboratory Accreditation Program accredited passive dosimeters.

The inspectors assessed the use of active dosimeters (i.e., electronic personal dosimeters) to determine if the licensee uses a "correction factor" to address the response of the electronic personal dosimeter as compared to the passive dosimeter for situations when the electronic personal dosimeter must be used to assign dose. The inspectors also assessed whether the correction factor is based on sound technical principles.

The inspectors reviewed dosimetry occurrence reports or CAP documents for adverse trends related to electronic personal dosimeters, such as interference from electromagnetic frequency, dropping or bumping, failure to hear alarms, etc. The inspectors assessed whether the licensee identified any trends and implemented appropriate corrective actions.

b. Findings

No findings were identified.

.3 Internal Dosimetry (02.03)

Routine Bioassay (In Vivo)

a. Inspection Scope

The inspectors reviewed procedures used to assess the dose from internally deposited nuclides using whole body counting equipment. The inspectors evaluated whether the procedures addressed methods for differentiating between internal and external contamination, the release of contaminated individuals, the route of intake, and the assignment of dose.

The inspectors reviewed the whole body count process to determine if the frequency of measurements was consistent with the biological half-life of the nuclides available for intake.

The inspectors reviewed the licensee's evaluation for use of its portal radiation monitors as a passive monitoring system to determine if instrument-minimum detectable activities were adequate to determine the potential for internally deposited radionuclides sufficient to prompt additional investigation.

The inspectors selected several whole body counts and evaluated whether the counting system used had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest. The inspectors reviewed the radionuclide library used for the count system to determine its appropriateness. The inspectors evaluated whether any anomalous count peaks/nuclides indicated in each output spectra received appropriate disposition. The inspectors reviewed the licensee's 10 CFR Part 61 data analyses to determine whether the nuclide libraries included appropriate gamma-emitting nuclides. The inspectors evaluated how the licensee accounts for hard-to-detect nuclides in the dose assessment.

b. Findings

No findings were identified.

Special Bioassay (In Vitro)

a. Inspection Scope

The inspectors selected internal dose assessments obtained using in vitro monitoring. The inspectors reviewed and assessed the adequacy of the licensee's program for in vitro monitoring (i.e., urinalysis) of radionuclides (e.g., tritium), including collection and storage of samples.

The inspectors reviewed the vendor laboratory Quality Assurance Program and assessed whether the laboratory participated in an industry recognized Cross-Check Program including whether out-of-tolerance results were resolved appropriately.

b. Findings

No findings were identified.

Internal Dose Assessment – Airborne Monitoring

a. Inspection Scope

The inspectors reviewed the licensee's program for airborne radioactivity assessment and dose assessment, as applicable, based on airborne monitoring and calculations of derived air concentration. The inspectors determined whether flow rates and collection times for air sampling equipment were adequate to allow lower limits of detection to be obtained. The inspectors also reviewed the adequacy of procedural guidance to assess internal dose if respiratory protection was used. The licensee had not performed dose assessments using airborne/derived air concentration monitoring since the last inspection.

b. Findings

No findings were identified.

Internal Dose Assessment – Whole Body Count Analyses

a. Inspection Scope

The inspectors reviewed several dose assessments performed by the licensee using the results of whole body count analyses. The inspectors determined whether affected personnel were properly monitored with calibrated equipment and that internal exposures were assessed consistent with the licensee's procedures.

b. Findings

No findings were identified.

.4 Special Dosimetric Situations (02.04)

Declared Pregnant Workers

a. Inspection Scope

The inspectors assessed whether the licensee informs workers, as appropriate, of the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, and the specific process to be used for (voluntarily) declaring a pregnancy.

The inspectors selected individuals who declared pregnancy during the current assessment period and evaluated whether the licensee's Radiological Monitoring Program (internal and external) for declared pregnant workers is technically adequate to assess the dose to the embryo/fetus. The inspectors reviewed exposure results and monitoring controls employed by the licensee and with respect to the requirements of 10 CFR Part 20.

b. Findings

No findings were identified.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

a. Inspection Scope

The inspectors reviewed the licensee's methodology for monitoring external dose in non-uniform radiation fields or where large dose gradients exist. The inspectors evaluated the licensee's criteria for determining when alternate monitoring, such as use of multi-badging, was to be implemented.

The inspectors reviewed dose assessments performed using multi-badging to evaluate whether the assessment was performed consistently with the licensee's procedures and dosimetric standards.

b. Findings

No findings were identified.

Shallow Dose Equivalent

a. Inspection Scope

The inspectors reviewed shallow dose equivalent dose assessments for adequacy. The inspectors evaluated the licensee's method (e.g., VARSKIN or similar code) for calculating shallow dose equivalent from distributed skin contamination or discrete radioactive particles.

b. Findings

No findings were identified.

Neutron Dose Assessment

a. Inspection Scope

The inspectors evaluated the licensee's Neutron Dosimetry Program, including dosimeter types and/or survey instrumentation.

The inspectors reviewed neutron exposure situations (e.g., independent spent fuel storage installation operations or at-power containment entries) and assessed whether:

- (a) dosimetry and/or instrumentation was appropriate for the expected neutron spectra;
- (b) there was sufficient sensitivity for low dose and/or dose rate measurement; and
- (c) neutron dosimetry was properly calibrated.

The inspectors also assessed whether interference by gamma radiation had been accounted for in the calibration and whether time and motion evaluations were representative of actual neutron exposure events, as applicable.

b. Findings

No findings were identified.

Assigning Dose of Record

a. Inspection Scope

For the special dosimetric situations reviewed in this section, the inspectors assessed how the licensee assigns dose of record for total effective dose equivalent, shallow dose equivalent, and lens dose equivalent. This included an assessment of external and internal monitoring results, supplementary information on individual exposures (e.g., radiation incident investigation reports and skin contamination reports), and radiation surveys and/or air monitoring results when dosimetry was based on these techniques.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors assessed whether problems associated with occupational dose assessment are being identified by the licensee at an appropriate threshold and are 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 involving occupational dose assessment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES
Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

40A1 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) (IE01) at D. C. Cook Unit 1 and Unit 2 for the period of the first quarter thru fourth quarter of 2013. 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 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 the first quarter through fourth quarter of 2013 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 samples 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 PI (IE04) at D. C. Cook Unit 1 and Unit 2 for the period of the first quarter thru the fourth quarter of 2013. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 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 the first quarter thru the fourth quarter of 2013 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 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours PI (IE03) at D. C. Cook Unit 1 and Unit 2 for the period of the first quarter thru the fourth quarter of 2013. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 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 the first quarter thru the fourth quarter of 2013 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.

.4 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures PI (MS05) at D. C. Cook Unit 1 and 2 for the period of the first quarter thru the fourth quarter of 2013. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," 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 thru the fourth quarter of 2013 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: Action Request Focused on Ineffective Corrective Action Document

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting concerns with the effectiveness of corrective actions associated with vacuum fill processes and the turbine digital control systems. The licensee wrote the AR to assess whether a process or oversight issue that allowed corrective actions to be taken in a manner that did not meet plant expectations existed. Because the inspectors have concerns regarding the effectiveness of corrective actions, and both the vacuum fill process and turbine digital control have been the subject of findings, the inspectors selected this AR for an in-depth review.

With respect to vacuum fill, during the Unit one outage, the licensee required 5 attempts to complete the evolution. A finding and associated NCV is documented in this report as 05000315/2014002-02. Despite the attention by the site on this issue, during the Unit 2 outage, the licensee required two attempts to complete the vacuum fill evolution. The licensee had performed a root cause (AR 2013-6907) following the Unit 1 outage in to understand and correct the conditions that led to multiple vacuum fill attempts. Although the licensee implemented several corrective actions, the completed actions were not effective at precluding recurrence. The inspectors reviewed the root cause in AR 05000315/2013004; 05000316/2013004.

With respect to the turbine digital control system, at the end of the Unit 1 outage, the licensee picked up excessive load on the turbine. The inspectors documented the issue as FIN 05000315/2013004-03. After the Unit 1 outage, during synchronization following a forced outage on Unit 2, the Unit 2 generator did not assume load. Action by plant operators to pick up load prevented motoring of the turbine.

In reviewing the condition, the licensee used barrier analysis, a process review and an organizational and programmatic failures modes review. These techniques led the licensee to conclude that the apparent cause was poor timing of interim effectiveness reviews with a contributing cause of ineffective oversight coupled with ineffective reinforcement of corrective action completion requirements. The licensee has identified corrective actions to improve timeliness of effectiveness reviews and validation that interim corrective actions are implemented in a timely manner. Based on the licensee's use of structured cause analysis techniques and review of the Apparent Cause Evaluation, the inspectors concluded the licensee identified a reasonable apparent cause.

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

b. Findings

No findings were identified.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000315-2013-002: System Actuation of the Unit 1 CD Emergency Diesel Generator

The inspectors reviewed the LER and associated corrective action documents regarding an automatic start of the Unit 1 CD diesel generator on April 24, 2013. The inspectors previously reviewed and documented this event in NRC IR 05051500315/2013-004 and documented a finding as FIN 05000315/2013004-02. In summary, on April 16, 2013 the licensee attempted to restore power to the Unit 1 reserve auxiliary transformer, CD-101. About 30 seconds after energizing the transformer, upstream breaker 12CD opened, de-energizing both Unit 1 and Unit 2 reserve auxiliary transformers. This event did not result in a diesel start because the Unit 1 C and D safety busses were already de-energized; Unit 2 C and D busses remained powered from the unit auxiliary transformers. The licensee could not locate a cause for the breaker trip and re-energized the transformer on April 21. On April 24, breaker 12 CD opened again. As stated in the LER, since the C and D busses were powered, the CD auto-started and energized the busses. Following the breaker trip, the licensee identified a faulted cable and replaced it. The action to replace the faulted cable, as well as other cables of similar age, should reasonably preclude recurrence.

The breaker trips caused a loss of one qualified offsite circuit for Unit 2. In both cases, the licensee performed the required actions of TS 3.8.1, condition A. For Unit 1, since it was defueled, no TS entry was required. The second event did result in a loss of one spent fuel pool pump on load shed and a 2 degree rise in spent fuel pool temperature. The licensee restored the pump 37 minutes later.

This issue resulted in a finding of very low safety significance (Green), which was documented in NRC IR 05000316/2013004. No other issues of concern were identified. Documents reviewed are listed in the Attachment to this report. This LER is closed.

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

.2 (Closed) LER 05000315-2013-001: Unit 1 Reactor Coolant System Weld Defect and Pressure Boundary Leakage

On March 30, with Unit 1 in cold shutdown (Mode 5) licensee personnel observed a boric acid deposit on the elbow just upstream of NFP-222-V2, low pressure side root shutoff valve. Subsequent analysis of the deposit confirmed that it was boric acid. The licensee performed a dye penetrant test of the location and confirmed the presence of a small crack on the downstream weld of the elbow. The licensee removed the elbow and replaced it. In the LER, the licensee reported that vibration fatigue likely caused the crack. Subsequent metallurgical analysis determined that poor fusion at the weld root coupled with vibration caused the failure. During review of the LER, the inspectors also noted that in 2011 the licensee had identified a discoloration at the location of the crack but that information was not included in the LER. The licensee could not obtain a sample of the material causing the discoloration nor could the licensee locate a crack; therefore, the licensee concluded that the discoloration was not associated with a crack. However, with the new information discovered in March of 2013, the inspectors concluded that the discoloration could reasonably be associated with the crack. Since the licensee reported a condition prohibited by technical specification, the inspectors concluded the information was not a material omission. However, inclusion of

information regarding previously observed discoloration would allow readers to understand the most likely time the flaw was introduced into the component.

The licensee determined that the leak was pressure boundary leakage and had existed during the previous operating cycle and mode of applicability. Technical Specification 3.4.13, condition D, required the licensee to be in mode 3 in 6 hours and mode 5 in 36 hours. Since the licensee was unaware of the pressure boundary leak, the licensee did not perform the required actions. The LER reported the condition prohibited by technical specifications and a condition that resulted in a principal safety barrier being seriously degraded. As a long term corrective action, the licensee used a 2:1 fillet weld to reduce the likelihood of weld failure from vibration. Because the licensee identified the condition and corrected it, the inspectors concluded that the issue represents a licensee identified NCV which is documented in section 4OA7 of this report. No additional safety concerns were identified; this LER is closed.

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

.3 (Closed) Licensee Event Report 05000316/2013-001-00: Unit 2 Manual Reactor Trip Due to Lowering Steam Generator Level

a. Inspection Scope

The inspectors reviewed the events and circumstances surrounding the control room operators manually tripping the Unit 2 reactor on July 28, 2013, in response to lowering steam generator levels. The inspectors reviewed control room logs, completed work orders and the root cause evaluation that was documented in AR 2013-10851, "Unit 2 Reactor Trip," to verify that the event was accurately reported; that plant equipment operated as described; that the trip was uncomplicated; and that corrective actions were completed as described.

On July 28, 2013, while at 100 percent power a secondary plant transient was initiated when an air operated valve, 2-MRV-411, failed to the closed position, which resulted in a feedwater heater drain pump trip. Additional secondary plant transients subsequently resulted in tripping a second feedwater heater drain pump, which caused a main feedwater pump trip on low suction pressure. Control room operators started auxiliary feedwater pumps as required by plant procedures in response to the main feedwater pump trip. However, steam generator levels lowered to within a few percent of the automatic reactor trip setpoint and the control room operators preemptively manually tripped the reactor. The inspectors concluded that the corrective actions were reasonable and were completed as described in the event report. Corrective actions included: adjusted and tested limit switch settings for valve 2-FMO-211; and replaced the failed control air tubing supply line to 2-MRV-411.

The inspectors identified an error in the "Analysis of Event," section, in the fourth and fifth paragraphs. Specifically, the licensee referenced feedwater to #3 steam generator, in 3 separate locations when discussing the impact of 2-FMO-221, turbine driven auxiliary feedwater pump flow control valve, going full closed instead of to the designed throttled flow retention position. However, 2-FMO-221 is the flow control valve to #2 steam generator and not #3 steam generator.

The inspectors determined that the error was minor because 2-FMO-221 is correctly described as the flow control valve to #2 steam generator in the "Description of Event,"

section; and, because 2-FMO-221 going full closed instead of to the designed throttled flow retention position did not adversely impact plant trip response, referencing #3 steam generator instead of #2 steam generator in the "Analysis of Event," section was considered an administrative error. Licensee personnel initiated condition report AR 2014-3198 to enter this issue into the CAP.

This issue resulted in a finding of very low safety significance (Green), which was documented in NRC IR 05000315/316/2013004 as 05000316/2013004-04. No other issues of concern were identified. Documents reviewed are listed in the Attachment to this report. This LER is closed.

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

4OA5 Other Activities

a. (Closed) Unresolved Item (URI) 05000315/316/2013004-05: Unreliable Level Indications

In NRC IR 05000315/316/2013004, the inspectors opened an unresolved item regarding requirements pertaining to procedures used by the licensee to perform vacuum fill of the RCS from a mid-loop condition. During the Unit 1 outage in May 2013, the licensee made 5 attempts at vacuum fill. The inspectors opened the URI pending determination of a performance deficiency and understanding of any violation of regulatory requirements. Based on further review, the inspectors determined that the issues associated with level indication were within the licensee's ability to foresee and prevent. Generic Letter 88-17, discusses the importance of independent level indications during mid-loop operations. To ensure accurate level indications, the licensee installs two temporary level indications in addition to a site glass. The temporary indications use transducers at a high point (reference leg or dry leg) and a low point (variable leg or wet leg) to measure differential pressure and convert the difference to a level indication. The licensee has procedures describing the overall evolution including installation of the temporary level indications. The inspectors noted that these procedures did not include methods to ensure that the level detection system sensing lines were vacuum tight and to include provisions to normalize level indications. This was considered a finding and violation of TS 5.4.1. In addition, a similar issue occurring in the fall 2013 Unit 2 outage was also considered a finding. Based on these findings, this URI is considered closed.

Figure 2 shows the location of level indications.

resulted in additional duration in RCS mid-loop operations with an associated increase in plant risk during each entry. Specific issues include:

- During the Unit 1 refueling outage 25, the licensee made five attempts to vacuum fill the RCS before succeeding:
 - Attempt 1: A divergence between RCS level indications caused the licensee to terminate the evolution;
 - Attempt 2: Licensee terminated the vacuum fill attempt due to similar level indication issues observed in Attempt 1;
 - Attempt 3: Licensee checked level instrumentation fittings for tightness and then made a drain down attempt; instrument deltas again resulted in terminating the attempt;
 - Attempt 4: The licensee found a leak in a level instrument transducer box; the licensee replaced the transducer and tightened the fittings; the licensee terminated the attempt due to deviations between level indications;
 - Attempt 5: The licensee performed a zero adjust on the level indications instruments; the attempt succeeded.

The licensee performed a root cause analysis on the vacuum fill attempts described above and determined the root cause to be that the site did not have ownership of the level indicators. Based on review of the root cause analysis and observation of the licensee's performance during the vacuum fill evolution, the inspectors concluded that the licensee identified the root cause. The inspectors also noted that the root cause analysis included several examples where procedures were not appropriate to the circumstances. For example, procedures did not:

- provide direction for a vacuum leak test;
- provide detailed direction for calibration/protection of transducers from shock, or;
- include requirements to normalize readings between level indications.

The inspectors noted that including the above items into procedures would have reduced the time the licensee spent in a mid-loop condition as well as the number of drain downs needed to complete the RCS vacuum fills.

Analysis: The inspectors concluded that the licensee's failure to establish and maintain procedures for filling and venting the RCS was a performance deficiency that warranted a significance determination. Using IMC 0612, Appendix "Issue Screening", issued September 7, 2012, the inspectors concluded that traditional enforcement did not apply. The inspectors concluded that the finding was more than minor because it adversely impacted the Initiating Event cornerstone objective to limit the likelihood of events that upset plant stability during shutdowns. The performance deficiency adversely impacted the Procedure Quality attribute of this objective. The inspectors assessed the finding using IMC 0609, Attachment 4, "Initial Characterization of Findings," table 3, issued

June 19, 2012 and concluded that since the finding pertained to operations with the plant shut down, Appendix G applied.

The inspectors and the RIII Senior Reactor Analyst (SRA) used Inspection Manual Chapter (IMC) 0609 Appendix G, "Shutdown Operations Significance Determination Process" issued February 28, 2005 to initially evaluate the finding. Using Checklist 3 of IMC 0609, Appendix G, Attachment 1, issued May 25, 2004 the SRA determined that a Phase 2 or Phase 3 evaluation was required because the level instrumentation problems could increase the likelihood of a loss of Reactor Coolant System (RCS) level control such that the likelihood of losing suction to the residual heat removal (RHR) pumps due to air entrainment was increased.

A Phase 3 risk assessment was performed by the Office of Nuclear Reactor Regulation (NRR). No Low Power/Shutdown (LP/SD) Standardized Plant Analysis Risk (SPAR) model exists for D. C. Cook Unit 1. Therefore, the at-power D. C. Cook Unit 1 Standardized Plant Analysis Risk (SPAR) model was modified to allow analysis of the condition. The analysis added event trees for loss of inventory, loss of offsite power, loss of RHR, and overdrain events during shutdown.

To model the performance deficiency the analyst assumed that four additional RCS draining evolutions were conducted and an additional approximate 36 hours was spent in mid-loop conditions. Each additional RCS draining evolution posed some risk that operators overdrain the RCS which results in a loss of RHR cooling. The extra time spent in mid-loop also contributed to the risk because random initiating events could occur causing a loss of RHR cooling and there is less time available for operators to respond because of the low RCS level. For this finding, the additional draining evolutions and the additional time spent in mid-loop occurred after the reactor had been shutdown for 41 days and the decay heat was relatively low. All risk significant mitigating equipment was available during this period and the charging system was in service with flow to the reactor vessel available if a loss of shutdown cooling had occurred. The charging flow rate was adequate to remove decay heat without any operator intervention until the inventory in the refueling water storage tank was depleted, which would allow a long period of time to recover shutdown cooling.

The calculated conditional core damage probability for the four additional RCS draining evolutions was estimated to be $5.9E-7$. The result is a finding of very low safety significance (Green). The delta core damage frequency for the additional time spent in mid-loop was also estimated but was not a significant risk contributor. The dominant core damage sequence involved an overdrain event causing the loss of RHR, followed by the failure to recover RHR in the long term given successful charging pump operation. Due to the significant length of time after shutdown, the conditional large early release probability was determined to be negligible using IMC 0609, Appendix H, "Containment Integrity Significance Determination Process" issued May 6, 2004.

The inspectors concluded the finding included a cross-cutting aspect in Aspect H.9, Training. Specifically, the licensee's root cause determined the station had a poor understanding of the transducers susceptibility to shock, poor understanding of transducer calibration, and poor knowledge of operating experience of air in-leakage experienced at instrument fittings. In addition, weaknesses were noted by the inspectors in standards used by the vendor. These issues correlate to Common Language item 4, continuous learning example 2, "individual, including supplemental workers, are

adequately trained to ensure technical competency and an understanding of standards and work requirements.” Aspect H.9, Training, encompasses CL 4.

Enforcement: Technical Specification 5.4.1 states, in part, that “written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.” NRC Regulatory Guide 1.33, Appendix A, Section 3 addresses “Procedures for Startup, Operation, and Shutdown” and Section a, addresses “Reactor Coolant System.” The introductory paragraph for Section 3 addresses instructions for filling and venting. Contrary to the above, between May 7 and 9, 2013, the licensee failed to establish a procedure to address the requirements of Regulatory Guide 1.33, Appendix A, Section 3.a. Specifically, the licensee failed to provide instructions to verify the temporary instrument lines were vacuum tight and also failed to provide instruction on normalizing readings between instruments.

As an immediate corrective action, the licensee replaced the transducer with the internal leak with a transducer that did not have a leak and normalized readings between level instruments. As a longer term corrective action, the licensee added procedural requirements to test for leaks on the temporary instruments and to normalize readings between instruments.

Because this violation was of very low safety significance (Green) and it was entered into the CAP as AR 2013-6907, this issue is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000315/2014002-02; Failure to Establish Procedures for Vacuum Fill.)

- (1) Introduction: A finding with an associated NCV of TS 5.4.1, procedures, self-revealed on October 31, 2013, pertaining to establishing and maintaining procedures to ensure reliable indication of reactor vessel level during reduced RCS inventory and vacuum fill operations. Specifically, corrective actions to the issues in NCV 05000315/2014002-02 failed to establish procedures that validated leak tightness on fittings used for level instrumentation during vacuum fill.

Discussion: During the Unit 2 refueling outage, the licensee required two entries into a mid-loop condition to complete the vacuum fill process. During the first application of vacuum, level deviation between NLI-122, a temporary level indication, and two other level indications forced the licensee to terminate the evolution. Troubleshooting by the licensee revealed a leak connection at a fitting for NLI-122. After identifying and correcting the leak, the licensee proceeded with successful vacuum fill of the RCS.

As corrective actions from the vacuum fill issues experienced during the unit 1 outage, the licensee included the following:

- Revise 1-OHP-4021-002-013, Reactor Coolant System Vacuum Fill, to include verification that MTI has performed a vacuum test leak check on NLI-122 and NLI-1000.
- Before the U2C21 outage, revise 2-OHP-4021-002-013, Reactor Coolant System Vacuum Fill, to include verification that MTI has performed a vacuum test leak check on NLI-122 and NLI-1000.

- Before the U2C21 outage, update the U1 and U2 active and model work order for MTI to perform vacuum test and leak check of fittings for NLI-122 and NLI-1000 prior to vacuum fill evolution.

Although the licensee included instructions to perform vacuum and leak checks, the procedure did not include detailed guidance. In conducting the test, the licensee performed a vacuum test on the dry portion of the level indication and a leak test on the wet portion. As demonstrated during the test, the leak test was not able to detect the leak that caused inaccurate level indications. The licensee noted in AR 2013-16699 that a vacuum test would be better able to identify small leaks.

In addition, the licensee performed an apparent cause evaluation to understand why corrective actions were not effective. The licensee concluded that effectiveness reviews were not conducted prior to challenging the corrective actions. Therefore, licensee management did not perform a review of the corrective actions to ensure that corrective actions addressed the condition.

Analysis: The inspectors concluded that the licensee's failure to establish and maintain procedures for filling and venting the RCS was a performance deficiency that warranted a significance determination. Using IMC 0612, Appendix B, "Issue Screening", issued September 7, 2012, the inspectors concluded that traditional enforcement did not apply. The inspectors concluded that the finding was more than minor because it adversely impacted the Initiating Event cornerstone objective to limit the likelihood of event that upset plant stability during shutdowns. The performance deficiency adversely impacted the Procedure Quality attribute of this objective. The inspectors assessed the finding using IMC 0609, Appendix 4, Table 3 and concluded that since the finding pertained to operations with the plant shut down, Appendix G applied.

The inspectors, in consultation with the regional SRA, used Inspection Manual Chapter (IMC) 0609, Appendix G, "Shutdown Operations Significance Determination Process" issued February 25, 2005 to initially evaluate the finding. Using Checklist 3 of IMC 0609 Appendix G, Attachment 1, issued May 25 2004, the SRA determined that a Phase 2 or Phase 3 evaluation was required because the level instrumentation problems could increase the likelihood of a loss of Reactor Coolant System (RCS) level control such that the likelihood of losing suction to the residual heat removal (RHR) pumps due to air entrainment was increased.

Because a similar condition occurred on Unit 1 which included a Phase 3 risk assessment performed by the Office of Nuclear Reactor Regulation (NRR), the inspectors and SRA compared the Unit 2 finding to Unit 1. For Unit 2, the licensee conducted only 1 extra drain down to mid-loop. In addition Unit 2 spent about 10.5 hours in reduced inventory, compared with approximately 36 hours for Unit 1. At the time of the Unit 2 vacuum fill evolution, Unit 2 had been shut down 28 days and had completed refueling; therefore, decay heat was low. All risk significant mitigating equipment was available during this period and the charging system was in service with flow to the reactor vessel available if a loss of shutdown cooling had occurred. The charging flow rate was adequate to remove decay heat without any operator intervention until the inventory in the refueling water storage tank was depleted, which would allow a long period of time to recover shutdown cooling. The inspectors and SRA concluded that the Unit 1 PRA bounded the conditions experienced for Unit 2. Therefore, the inspectors concluded the finding was of very low safety significance,

Green.

The inspectors concluded that the finding included a cross-cutting aspect on P.3. Resolution, which states the organization takes effective corrective actions to address issues in a timely manner commensurate with their safety significance. Using the common language NUREG-2165, the inspectors determined example 3 “Corrective actions resolve and correct the identified issues, including causes and extent of condition” applied. Specifically, corrective actions associated with the issues experienced during the Unit 1 outage were not effective to preclude recurrence.

Enforcement: The licensee failed to establish and maintain procedures for the vacuum fill process that assured the level instrumentation used in mid-loop provided reliable indication of RCS level. The unreliable level indication led to multiple drains to mid loop to complete the vacuum fill evolution and additional time spent in the elevated risk associated with mid-loop.

Technical Specification, Section 5.4.1 states, in part, that “written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.” NRC Regulatory Guide 1.33, Appendix A, Section 3 addresses “Procedures for Startup, Operation, and Shutdown” and Section A, addresses “Reactor Coolant System.” Contrary to the above, on October 31, 2013, the licensee failed to establish a procedure to address the requirements of Regulatory Guide 1.33, Appendix A, Section 3.a. Specifically, the licensee failed to provide instructions to verify the temporary instrument lines were vacuum tight and also failed to provide instruction on normalizing readings between instruments.

As an immediate corrective action, the licensee reassembled the leaking fitting. The licensee determined the apparent cause was ineffective effectiveness reviews. The licensee developed corrective actions to improve the timeliness of effectiveness reviews and to validate implementation of interim corrective actions.

Because this violation was of very low safety significance (Green) and it was entered into the CAP as AR 2013-16699 and AR 2013-18146, this issue is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000315/2014002-03; Failure to establish Procedures for Vacuum Fill.)

.2 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment conducted in August 2013. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC followup.

b. Findings

No findings were identified.

.3 Translation of Old Cross-Cutting Aspects to New Cross-Cutting Aspects

The table below provides a cross-reference from the third and fourth quarter 2013 findings and associated cross-cutting aspects to the new cross-cutting aspects resulting from the common language initiative. These aspects and any others identified since January 2014, will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review.

Finding	Old Cross-Cutting Aspect	New Cross-Cutting Aspect
05000316/2013004-01	P.1(c)	P.2
05000315/2013004-02 05000316/2013004-02	P.2(b)	P.5
05000315/2013004-03	H.3(b)	H.5
05000316/2013004-04	H.2(c)	H.7
05000316/2013004-06	H.3(a)	H.5
05000315/2013009-04 05000316/2013009-04	H.3(b)	H.4

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 15, 2014, 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 areas of radiological hazard assessment and exposure controls; and occupational ALARA planning and controls with Mr. S. Partin, Plant Manager, on January 24, 2014;
- The inspection results for the areas of in-plant airborne radioactivity control and mitigation and occupational dose assessment with Mr. J. Gebbie, Site Vice President, on March 21, 2014;
- On March 21, 2014, the inspectors presented the results of the 2014 licensed operator requalification training biennial written examination and annual operating test results to Mr. J. Gebbie, Site Vice President and other members of the staff; and
- The 2014 licensed operator requalification training biennial written examination and annual operating test results with the Operations Training Manager, Mr. B. Evans, via telephone on April 9, 2014.

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) or Severity Level IV was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being disposed as an NCV.

- The licensee identified a finding and associated violation of TS 3.4.14 regarding operation of the plant in violation of TS. Specifically, the licensee identified a through wall flaw on an elbow upstream of NFP-222-V2. Per TS 3.4.14, no pressure boundary leakage is allowed. Condition D, required the plant to be in Mode 3 within 6 hours and Mode 5 in 36 hours. Contrary to this requirement, the licensee failed to enter Mode 3 and Mode 5 within the required completion time. At the time of discovery, the licensee was in Mode 5; the licensee was not aware of the pressure boundary leakage while the plant was in a mode of applicability. The licensee determined that the leakage exceeded the allowed outage time but could not determine when the leakage started.

The inspectors assessed significance of the finding using IMC 0612, Appendix B, issue screening. The inspectors concluded that the issue was more than minor because it is associated with the barrier integrity cornerstone objective and adversely affects the reactor coolant system barrier attribute in that pressure boundary leakage existed. In accordance with IMC 0609, Appendix A, reactor coolant system leakage is assessed as an initiating event. In accordance with IMC 0609, Appendix A, Exhibit 1, the inspectors concluded that the finding screened as Green because, the ¾" line could not have resulted in exceeding the small break loss-of-coolant accident leak rate nor could additional degradation have affected loss-of-coolant accident mitigation. The licensee has corrected the condition by replacing the affected elbow; entered the condition into the CAP.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Gebbie, Site Vice-President
L. Baun, Director, Performance Assurance
J. Beer, Radiation Protection
D. Bowman, Operations Training
D. Cantrell, Director, Operations
D. Emery, Training
B. Evans, Operations Training
R. Hite, Radiation Protection Manager
B. Hite, Director, Radiation Protection
S. Lies, Engineering Vice President
S. Partin, Plant Manager
L. Rodriguez, Fire Protection
B. Rogers, Radiation Protection
M. Scarpello, Manager, Regulatory Assurance
J. Turner, Manager, Fire Protection
C. Wohlgamuth, Supervisor, Compliance
R. Wynegar, Regulatory Affairs

Nuclear Regulatory Commission

M. Bielby, Senior Operator Licensing Inspector
L. Kozak, Senior Risk Analyst
D. Reeser, Operator Licensing Inspector
T. Wengert, Project Manager

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000315/2014002-01; 05000316/2014002-01	NCV	Degraded Latch Prevents Closure of Fire Door (1R05)
05000315/2014002-02	NCV	Failure to Establish Procedures for Vacuum Fill (4OA5)
05000315/2014002-03	NCV	Failure to Establish Procedures for Vacuum Fill (4OA5)

Closed

05000315/2014002-01; 05000316/2014002-01	NCV	Degraded Latch Prevents Closure of Fire Door (1R05)
05000315/2014002-02	NCV	Failure to Establish Procedures for Vacuum Fill (4OA5)
05000315/2014002-03	NCV	Failure to Establish Procedures for Vacuum Fill (4OA5)
05000315/2013-001-00	LER	Unit 1 Reactor Coolant System Weld Defect and Pressure Boundary Leakage (4OA3)
05000315/2013-002-00	LER	System Actuation of the Unit 1 CD Emergency Diesel Generator (4OA3)
05000316/2013-001-00	LER	Unit 2 Manual Reactor Trip Due to Lowering Steam Generator Levels (4OA3)
05000315/2013004-05; 05000316/2013004-05	URI	Unreliable Level Indications (4OA5)

Discussed

05000315/2013004-02.	FIN	Faulted 4KV Qualified Offsite Circuit (4OA3)
05000315/2013004-03	FIN	Improper Setting In Digital Control System(4OA2)
05000316/2013004-04	FIN	Reactor Trip Due to Improper Control Valve Setpoint(4OA3)

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

- 12-OHP-4021-030-001, Operation of the Reactor Nitrogen System, Revision 19
- 12-OHP-4021-033-001, Supplemental Diesel Generator Operations, Revision 11
- 1-OHP-4021-008-002, Placing Emergency Core Cooling System in Standby Readiness, Revision 29
- 2-OHP-4021-016-001, Filing and Venting the Component Cooling water System, Revision 30
- 2-OHP-4021-016-003, Component Cooling Water System Operation, Revision 35
- AR 2010-3050 SDG2 Rear Crankshaft Seal Leaking
- AR 2012-0622, Applicable Components Missed During PM
- AR 2012-2675, 12-OME-250-SDG1 Have Vendor Investigate Fault Codes
- AR 2013-17999, Water Leaking onto Batteries
- AR 2013-3192, Battery Electrolyte on 12-SDG2-24VDC-BATT Lid
- AR 2014-2024, Supplemental Diesel Generator Gauge Issue
- WO 55361685, SDG2 Rear Crankshaft Seal Leaking
- WO 55399959, Provide Oversight for Vendor Work
- WO 55409709, Roof Leak on SDG1 Enclosure
- WO 55417900, 12-SDG2-24VDC Battery Replacement

1R05 Fire Protection

- AR 2013-802, Degraded Door
- AR 2013-952, 1-DR-Aux 387 is Inoperable
- AR 2014-4766, Proposed NRC Finding re: Inoperable HELB Door
- ES-FIRE-0601-QCF, Fire Rated Seals, Revision 3
- FHA, Fire Hazards Analysis, Revision 16
- PMP-2291-WMP-001, Work Management Process Flow Chart, Revision 29
- WO 55427665, Fire Detection Channel Functional Test: 609 Aux Building, December 28, 2013
- 12-FPP-4030-066-026, Technical Requirements Manual Fire Door Inspection, Revision 16
- 12-FPP-2270-066-011, Fire Watch Patrols, Revision 9
- Systems Engineering Handbook, Revision 44

1R06 Flood Protection Measures

- AR 2014-3127, Transpositional Error in Historical Work Order Planning
- AR 2014-3132, Grayboot Connections for 2-WDS-703 Located Below Flood Level
- AR 2014-3259, Clarifications Required in MD-12-SCRN-001-N Revision 2
- AR 2014-3583, ESW Pump Room Electrical Drawing's Note on Seiche Concerns
- DIT-B-00305, Safety Significance of Flooding Auxiliary Essential Service Water Electrical Equipment on the 591' Elevation of the Screen House, Revision 0
- MD-12-SCRN-001-N, Screen House Internal Flood Levels, Revision 2
- SD-061206-001, Flooding Evaluation Report, Revision 0

- Updated Final Safety Analysis Report, Table 14.4.2-1, Equipment Required to Shutdown Reactor (Unit 2), Revision 25
- Updated Final Safety Analysis Report, Table 14.4.2-1A, Equipment Required to Shutdown Reactor (Unit 1), Revision 25.
- Work Order 55288807-01, Implement EC-MOD-ECC-0000046977, May 9, 2007
- Work Order 55288808-01, Implement EC-MOD-ECC-0000046978, April 19, 2007
- Work Order 55288809-01, Implement EC-MOD-ECC-0000046979, April 13, 2007
- Work Order 55288810-01, Implement EC-MOD-ECC-0000046980, April 26, 2007

1R11 Licensed Operator Regualification Program

- (Simulator) Plant Event Comparison Test, Manual Reactor Trip from 15% for U1C25 Refueling Outage of November 2, 2013, March 27, 2013
- 2014 Annual Operating Test, 18 JPMs, Crew A, Crew C, and Crew E
- 2014 Annual Operating Test, 6 Scenarios, Crew A, Crew C, and Crew E
- 2014 Biennial (Years 37-38) Licensed Operator Regualification Written Examination Sample Plan
- 2014 Biennial Licensed Operator Regualification Written Examinations, 2 SRO and RO Written Examinations, Crew A and Crew C
- 2014 Crew Periodic Simulator Evaluations (Year 38, Period 2), Crews B, C, D, and E
- 2014 Licensed Operator Regualification Annual Operating Test Sample Plan (Year 38)
- 2-OHP-SP-365, Operate HPT Left Outer Steam Stop/Control Valve "D" to Support Proximity Switch Replacement, Revision 0
- Appendix G Checklist for Evaluating Cook Plant Referenced Simulator Under 10 CFR 55.46 (c) and (d)
- AR 2013-11991, Inadvertent Unit 2 ESW Pump Start
- AR 2013-14877, Operations Procedure Use and Adherence Issue
- AR 2013-16570, Shutdown Risk Requirements Not Met for Containment Closure
- AR 2013-17042, Operations Procedure Use and Adherence Issue
- AR 2013-17681, Operations Procedure Use and Adherence Issue
- AR 2013-2439, Incomplete Unit 2 Reactivity Event Evaluation
- AR 2013-3053, Control Rod Automatic Movement
- AR 2013-3904, Inadequate Condition Evaluation
- AR 2013-6667, Audio Count Rate Malfunction Procedure Not Entered
- AR 2013-9425, Required Reactivity Plan Feedback Sheets Not Generated
- Corrected Simulator DRs Last 12 Months, March 11, 2014
- Curriculum Item Status Attendance (Regualification Year 38)
- Final LOR (Years 37-38) Exam Quality Checklists (RO and SRO), March 16, 2014
- LOR (Years 37-38) Biennial/Annual Examination Test Item Distribution
- OHI-2070, Operations Training and Qualification, Attachment 4, Active License Watchstanding Record (various), Revision 56
- OHI-2070, Operations Training and Qualification, Attachment 6, New or Inactive License/Shift Technical Advisor Upgrade Record (various), Revision 55
- Open Simulator DRs, March 14, 2014
- PA-12-03, Notification of Audit Closure Training, August 30, 2012
- PA-12-03, Performance Assurance Audit, Training (February 22 – March 9, 2012, April 13, 2012)
- PMP-2070-TRN-004, Training and Qualification, Data Sheet 9, Curriculum Development Committee Agenda/Minutes (Training Years 37 and 38, various), Revision 24
- RQ-S-3807-U12-T1, Period 3807 U12 Dual Unit Training Scenario 1, Revision 0

- Simulator Continuing Review Board Quarterly Meeting Minutes, March 2012 through March 2014
- Simulator Discrepancy Reports (DRs), February 8, 2014
- TPD-600-LOR, Licensed Operator Requalification (LOR) Training Program Description, Revision 2
- TRP-2070 SIM-003, Simulator Performance Testing, Revision 4
- TRP-2070-TAP-300-LOR, Licensed Operator Requalification Training Annual Operating Test and Biennial Written Examination Development, Revision 2
- TRP-2070-TAP-300-OPS, Operations Training Examination and Simulator Exercise Guide Development, Revision 011
- TRP-2070-TAP-400-LOR, Licensed Operator Requalification Training Annual Operating Test and Biennial Written Examination Implementation, Revision 2
- TRP-2070-TAP-400-OPS, Operations Training Implementation, Data Sheet 1, Removal From Watchstanding Duties (Years 37 and 38, Various), Revision 34
- TRP-2070-TAP-400-OPS, Operations Training Implementation, Data Sheet 17, Remediation (Years 37 and 38, Various), Revision 34
- TRP-2070-TAP-400-OPS, Operations Training Implementation, Data Sheet 8, Academic Review Board Results (Year 37, Various), Revision 34
- TRP-2070-TAP-400-SEC, Operations Training NRC Exam Security, Revision 2
- U2 MT DCS, SPC Selection Logic Sheet 4, No Revision Listed
- U2 MT DCS, Turbine Control sheets 58 and 69, No Revision Listed
- U2C20, (Simulator) Plant Event Comparison Test, Reactor Core, January 30, 2014
- U2C20, (Simulator) Plant Event Comparison Test, Reactor Core, March 31, 2012
- U2C51, (Simulator) Plant Event Comparison Test, Reactor Core, February 18, 2013
- 2-OHP-SP-365, Operate HPT Left Outer Stop/Control Valve 'D' to Support Proximity Switch Replacement, Revision 0

1R12 Maintenance Effectiveness

- AR 2013-19082, Multiple Alarms Associated with SSPS, No Evolutions in Progress, December 13, 2013
- AR 2014-0160, Ann System Trouble Alarm in Unit 1 Control Room
- AR 2014-0682, Inoperable Annunciator Due to Disconnected Wiring
- AR 2014-0852, Unit 1 Annunciator Server A Offline
- AR 2014-2221, Annunciator #117 and 119 Became Unreliable for a Short Time
- AR 2014-2311, Unit 1 and Unit 2 Annunciator Database Error

1R13 Maintenance Risk Assessments and Emergent Work Control

- 1-IHP-6030-IMP-145, Pressurizer Level and Charging Flow Control Calibration, Revision 19
- AR 2014-1663, 1-HV-SGBR-2, CD Battery Room Fire Damper is Closed
- AR 2014-2639, Stop and Control Valve D Proximity Switch not Making Up
- AR- 2014-3270, Unit 1 Pressurizer Level Control Problem
- PMI-4090, Criteria for Conducting Infrequently Performed Tests or Evolutions, Revision 20
- Unit 1 and Unit 2 Configuration Risk Assessment, Cycle 89 week 6, Revision 4
- WO 55442653, 1-XL-182, Replace and PMT

1R15 Operability Determinations and Functionality Assessments

- 12-TM-13-35, Temporary Modification for Annunciator/PPC Servers, Revision 0
- AR 2013-13297, Evaluate PM's Associated with TSC Computer Room Ventilation

- AR 2014-1663, 1-HV-SGBR-2, CD Battery Room Fire Damper is Closed
- AR 2014-3370, 12-HV-TSC-ACT-1, Ventilation for the PPC and Annunciator Server
- DWG OP-1-98033-38, Diesel Generator 1CD Excitation and Regulation and Miscellaneous Elementary Diagram, Revision 0
- DWG OP-1-98033-47, Diesel Generator 1CD Excitation and Regulations and Miscellaneous Elementary Diagram, Revision 47
- DWG OP-1-98035-36, Diesel Generator 1CD Control Elementary Diagram, Revision 36

1R18 Plant Modifications

- 1-TM-14-01-R0, Unit 1 Temporary Power to Annunciator, Revision 0
- PMP-2291-PLN-001, Work Control Activity Planning Process, Revision 56
- Temporary Modification 1-TM-14-17-R0, Online Leak Seal of 1-MRV-223
- WO 55435914, Perform Furmanite Injection on Valve Body to Bonnet Leak, 1-MRV-223

1R19 Post-Maintenance Testing

- 1-OHP-4030-119-022W, West ESW Train Group A and Comprehensive Pump Test, Revision 28
- 1-PP-&W, Check and Adjust Coupling, February 19, 2014
- 2-OHP-4030-216-020W, West Component Cooling Water Loop Surveillance Test, Revision 22
- 2-OHP-SP-365, Operate HPT Left Outer Steam Stop/Control Valve 'D' to Support Proximity Switch Replacement, Revision 0
- AR 2014-0641, West CCW Maintenance Window not Scheduled Correctly WW8903, January 15, 2014
- Namco Proximity Sensors, Reference Information, No Reference Given
- System Engineering Critical Maintenance and Testing Look Ahead, 2
- WO 55354630, EC-52678, 2-HV-ACRA-2-MTR Replace Motor

1R22 Surveillance Testing

- 12-MHP-4030-010-008, Ice Condenser Intermediate Deck Door Weekly Surveillance, Revision 5
- 1-IHP-4030-102-013A, Pressurizer Pressure Protection Set 1 Channel Operational Test and Calibration, Revision 13
- 1-IHP-4030-134-001, Unit 1 DIS Surveillance and Baseline Testing, Revision 22
- 2-OHP-4030-203-052W, West Centrifugal Charging Pump Operability Test, Revision 17
- MHI-5090, Safe Work Practices for Working on 50V and Above Electrical Equipment and Establishing Grounds, Revision 17

1EP6 Drill Evaluation

- D. C. Cook Emergency Plan, Revision 33
- D. C. Cook Training Drill (Team 4) Drill Report, April 3, 2014
- D. C. Cook Training Drill (Team 4) Scenario, March 5, 2014
- EMD-32a, Nuclear Plant Event Notification, Drill Messages, March 5, 2014
- EMD-32b, Nuclear Plant Event Technical Data, Drill Messages, March 5, 2014
- RMT-2080-EOF-001, Activation and Operation of the EOF, Revision 27
- RMT-2080-TSC-001, Activation and Operation of the TSC, Revision 20

2RS1 Radiological Hazard Assessment and Exposure Controls

- AR 2013-15973, ACAD Number 21088 Received an Accumulated Dose ALARM
- AR 2013-16805, Electronic Dosimeter Alarm Received During Rigging Activities
- AR 2014-01188, Active Boric Acid Leak on 2-SF-154
- AR 2014-01220, Housekeeping in Unit 1 and Unit 2 Vestibules

2RS2 Occupational As-Low-As-Reasonably-Achievable Planning and Controls

- AR 2013-04533, Dose Rate Alarms on ACAD Numbers 9598 and 19957
- AR 2013-05088, Reactor Coolant Motor Had to be Set and Re-lifted Due to Interference
- AR 2013-05234, Radiation Work Permit Electronic Dose Alarm
- AR 2013-05240, U1C25 Nozzle Dam Installation
- AR 2013-05833, Actions to Resolve ALARA Lessons Learned During U1C25 Refueling Outage
- AR 2013-05965, Steam Generator Water Level Remained Drained Longer than Original Schedule
- AR 2013-07040, Unit 1 Reactor Coolant Pump Number 1 Seal Leak-off Rate was 60 Gallons per Minute
- AR 2013-15641, Incorrect Dose Estimate Due to Improper Planning
- AR 2013-16309, Higher Dose Rates Due to Reactor Cooling System Clean-up Not in Service
- AR 2013-16836, Lack of Readiness for Certain Major Plant Evolutions-U2C21
- AR 2013-17172, Dose Rate Alarm on ACAD Number 16630
- CNP-1303-0316, Lower Containment Radiological Survey, March 27, 2013
- CNP-1303-0358, Lower Containment Radiological Survey, March 28, 2013
- CNP-1303-0400, Lower Containment Radiological Survey, March 29, 2013
- D. C. Cook Nuclear Power Plant 2013 Long Term ALARA Dose Initiatives, August 22, 2013
- D. C. Cook U1C25 Outage Report March 2013
- D. C. Cook U2C21 Outage Report October 2013
- RWP 131069, Containment At-Power Entries, Revision 4

2RS3 In-Plant Airborne Radioactivity Control and Mitigation

- 12-EHP-4030-128-230, Spent Fuel Pool Exhaust Ventilation System Surveillance, Revision 016
- 12-THP-6010-RPC-515, Calibration of the Eberline Model AMS-4, Revision 5
- 12-THP-6010-RPP-315, HEPA Equipment Issue, Control and Maintenance, Revision 016
- 12-THP-6010-RPP-405, Analysis of Airborne Radioactivity, Revision 018
- 1-OHP-4025-001-001, Emergency Remote Shutdown, Revision 009
- 2-EHP-4030-228-228B, 2-HV-AES-2 Engineered Safety Feature Ventilation Surveillance, Revision 020
- 2-EHP-6040-228-111, Unit 2 Containment Pressure Relief System Performance Test, Revision 000
- AR 2014-3774, Evaluate SCBAA Bottle Change Out for Operators During IDLH, March 20, 2014
- AR 2014-3810, Enhance FPP-2281-RES-203, Breathing Air Systems
- AR 2014-3811, Document Spent Fuel Pit Exhaust Fan Test Methodology
- EPP-2080-ERO-001, Emergency Response Resource Readiness, Revision 010
- FPP-2281-RES-201, Maintenance and Repair of Respiratory Devices, Revision 011
- GP-C-3005, Self-Contained Breathing Apparatus Task Evaluation Checklist, Revision 2
- PMP-2281-RES-001, Control and Use of Respiratory Protection Devices, Revision 011

- Technical Specifications 3.7.10, Control Room Emergency Ventilation (CREV) System, Amendment 307
- Updated Final Safety Analysis Report, Section 5 & 9, Revision 25
- WO 55391311-01, 12-EHP-4030-128-230, Spent Fuel Pool Exhaust Ventilation System Surveillance, July 9, 2012
- WO55393381-01, 1-HV-CPR-1, Perform Procedure 12-EHP-6040-028-111, Containment Pressure Relief System Performance Test, March 23, 2012

2RS4 Occupational Dose Assessment

- 12-THP-6010-RPP-014, Total Effective Dose Equivalent (TEDE) Evaluation, Revision 009
- 12-THP-6010-RPP-101, Preparation and Control of Exposure Records and Reports, Revision 013
- 12-THP-6010-RPP-104, Personnel Dosimetry Use in Varying Radiation Fields, Revision 013
- 12-THP-6010-RPP-107, Comparison of Electronic Dosimeter And Thermoluminescent Dosimeter Results, Revision 008
- 12-THP-6010-RPP-121, Dose Monitoring for Declared Pregnant Woman (DPW), Revision 4
- 12-THP-6010-RPP-206, Internal Dose Assessment and Calculation, Revision 010
- 12-THP-6010-RPP-212, Operation of the ORTEC FastScan Whole Body Counter, Revision 6
- 12-THP-6010-RPP-400, Radiological Protection Job Coverage, Revision 016
- 12-THP-6010-RPP-401, Performance of Radiation and Contamination Surveys, Revision 034
- 12-THP-6010-RPP-701, Response to Dosimeter Use Problems, Revision 16
- 12-THP-6010-RPP-703, Monitor Alarm Response and Personnel Decontamination, Revision 032
- ANSI/HPS N13.11-2009, American National Standard for Dosimetry- Personnel Dosimetry Performance-Criteria for Testing, December 12, 2008
- GEL-WO 287298, Urinalysis, September 29, 2011
- NVLAP Lab Code 100555-0, Miron Technologies (GDS), Inc. NAVLAP Accreditation, July 1, 2013 through June 30, 2014
- PMP-6010-RPP-100, Radiation Exposure Monitoring, Reporting and Dose Control, Revision 013
- RP-11-02, Passive Monitor Sensitivity Examination 12-THP-6010-RPP-007, Radiation Protection Calculations and Technical Bases Documents, Revision 8, July 21, 2011
- RP-12-02, Cook Dry Cask Storage Neutron Evaluation-12-THP-6010-RPP-007, Radiation Protection Calculations and Technical Bases Documents, Revision 8, October 3, 2012

4OA1 Performance Indicator Verification

- LER 315/2013-001, Unit 1 Reactor Coolant System Weld Defect and Pressure Boundary Leakage
- LER 315/2013-002, System Actuation of the Unit 1 CD Emergency Diesel Generator
- LER 316/2013-001, Unit 2 Manual Reactor Trip due to Lowering Steam Generator Water Level
- NEI-99-02, Regulatory Assessment Performance Indicator Guideline, Revision 7
- Various Control Room Logs, Unit 1 and Unit 2, 2013
- Various Unit 2 Control Room Logs, July 28, 2013

4OA2 Problem Identification and Resolution

- AR 2013-16699, Delays During Vacuum Fill Preparation
- AR 2013-18146, NSRB Recommendation on Corrective Action Effectiveness

- GT 2013-11019, No MW load Picked Up on Unit 2 Parallel Following U2F13A
- AR 2013-11065, 2008 Missed Opportunity Lead to 2013 Reactivity Management Event

4OA3 Followup of Events and Notices of Enforcement Discretion

- AR 2013-10851, Unit 2 Reactor Trip
- AR 2013-4548, Potential Throughwall Leak Upstream of 1-NFP-222-V2
- AR 2013-6194, Transformer 101CD Reserve Feed Tripped Due to a Fault
- AR 2014-3198, Error Contained in Information Submitted to NRC in LER
- Control Room Logs
- Work Order 55417808-01, 2-LPD-320N Disassemble Inspect and Replace, July 29, 2013
- Work Order 55429087-11, 2-MRV-411 Replace Cracked Sensing Tubing, July 29, 2013
- Work Order 55429088-01, 2-FMO-221 Went Full Closed on Flow Retention Signal, July 29, 2013

4OA5 Other Activities

- Wano Peer Review of Donald C. Cook Nuclear Plant, August 2013
- AR 2013-6907, RCS Vacuum Fill Instrumentation Issues ICP-01244, nit 1 Mansell Mid-loop Monitoring System Accuracy and GL 88-017, Revision 0
- 1-OHP-4021-002-013, Reactor Coolant System Vacuum Fill, Revision 21
- WO 55406211, Install and Remove Mid-loop Monitoring, October 24, 2013
- 1-OHP-4021-002-015, Filling and Venting the Reactor Coolant System with Steam Generator Tubes Filled, Revision 6
- 2-OHP-4021-002-013, Reactor Coolant System Vacuum Fill, Revision 25

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Reasonably-Achievable
AR	Action Request
CAP	Corrective Action Program
CFR	Code of Federal Regulations
HELB	High Energy Line Break
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IR	Inspection Report
IST	Inservice Test
JPM	Job Performance Measure
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LORT	Licensed Operator Requalification Training
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
PI	Performance Indicator
SAT	Systems Approach to Training
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order

L. Weber

-2-

Additionally, as we informed you in the most recent NRC integrated inspection report, cross-cutting aspects identified in the last six months of 2013 using the previous terminology were being converted in accordance with the cross-reference in Inspection Manual Chapter (IMC) 0310. Section 4OA5 of the enclosed report documents the conversion of these cross-cutting aspects which will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the 2014 mid-cycle assessment review. If you disagree with the cross-cutting aspect assigned, 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 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), 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 05000315/2014002; 05000316/2014002
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

DISTRIBUTION:
See next page

DOCUMENT NAME: DC Cook IR 2014002

Publicly Available Non-Publicly Available Sensitive Non-Sensitive

To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII		RIII		RIII		RIII
NAME	NShah:rj		KRiemer				
DATE	05/08/14		05/08/14				

OFFICIAL RECORD COPY

Letter to Larry Weber from Kenneth Riemer dated May 8, 2014

SUBJECT: DONALD C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000315/2014002;
05000316/2014002

DISTRIBUTION w/encl:

Joseph Nick

RidsNrrDorLp13-1 Resource

RidsNrrPMDCCook Resource

RidsNrrDirslrib Resource

Cynthia Pederson

Darrell Roberts

Steven Orth

Allan Barker

Carole Ariano

Linda Linn

DRPIII

DRSIII

Patricia Buckley

Carmen Olteanu

ROPreports.Resource@nrc.gov