



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

April 19, 2012

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

**SUBJECT: D.C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2 – NRC INTEGRATED  
INSPECTION REPORT 05000315/2012002 AND 05000316/2012002**

Dear Mr. Weber:

On March 31, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your D.C. Cook Nuclear Power Plant, Units 1 and 2. The enclosed report documents the results of this inspection, which were discussed on April 2, 2012, 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.

One self-revealing finding of very low safety significance (Green) was identified during this inspection. The finding did not involve a violation of NRC requirements.

If you contest this finding, 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 D.C. Cook Nuclear Power Plant.

If you disagree with the cross-cutting aspect assigned to the finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the D.C. Cook Nuclear Power Plant.

L. Weber

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

Sincerely,

*/RA/*

John B. Giessner, Chief  
Branch 4  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000315/2012002 and 05000316/2012002  
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: 05000315/2012002; 05000316/2012002

Licensee: Indiana Michigan Power Company

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

Location: Bridgman, MI

Dates: January 1 through March 31, 2012

Inspectors: J. Lennartz, Senior Resident Inspector  
J. Ellegood, Senior Resident Inspector  
P. LaFlamme, Resident Inspector  
R. Jickling, Senior Emergency Preparedness Inspector  
M. Mitchell, Health Physicist  
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Approved by: John B. Giessner, Chief  
Branch 4  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

Inspection Report 05000315/2012002, 05000316/2012002; 01/01/2012 - 03/31/2012;  
D.C. Cook Nuclear Power Plant, Units 1 & 2; Identification and Resolution of Problems

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Green finding was identified by the inspectors. The finding was associated with nonsafety-related equipment and therefore no violation of NRC regulations occurred. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Cross-cutting aspects were determined using IMC 0310, "Components Within the Cross-cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. 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. One self-revealed finding of very low safety significance was identified for the failure to install a grommet seal on the main turbine thrust bearing probes as required by a site design standard, VTD-SKFI-0001, "Eddy Probe Systems Technical Manual," during the Unit 1 2009 turbine failure restoration project. Consequently, oil migrated into the thrust bearing probe conduit, which contributed to a main turbine trip and resultant automatic reactor trip on September 7, 2011. For corrective actions, the licensee separated the main turbine thrust bearing probe cables into separate conduits; wrapped the cables in additional shielding and insulation to prevent signal coupling; and installed sealing glands on the main turbine thrust housing to eliminate oil intrusion into the conduits. This issue was entered into the licensee's corrective action program (CAP) as Action Request (AR) 2011-10107.

This finding was related to the Initiating Events Cornerstone and was more than minor because it adversely affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding is associated with the attribute of human performance. Specifically, the failure to install a grommet seal on the main turbine thrust bearing probes contributed to a main turbine trip and resultant automatic reactor trip. This finding was of very low safety significance because the finding does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment will not be available. This finding is associated with a cross-cutting aspect in the resources component of the human performance cross-cutting area. Specifically, the work order associated with installing the main turbine thrust bearing probes did not include sufficient guidance to ensure that the grommet seal was installed (H.2 (c)). (Section 4OA2.3)

### B. Licensee-Identified Violations

No violations of significance were identified.

## REPORT DETAILS

### Summary of Plant Status

Unit 1 operated at or near full power during the entire inspection period.

Unit 2 was at full power when the inspection period started. On March 19, 2012, Unit 2 power was reduced to 70 percent to conduct planned steam generator safety-valve setpoint testing prior to the scheduled refueling outage. On March 21, 2012, Unit 2 was shut down to commence Cycle 20 refueling outage, which was ongoing when the inspection period ended.

#### 1. REACTOR SAFETY

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

#### 1R04 Equipment Alignment (71111.04)

##### .1 Quarterly Partial System Walkdowns

##### a. Inspection Scope

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

- Unit 1 east motor driven auxiliary feedwater system;
- Unit 2 AB emergency diesel generator; and
- Unit 2 east residual heat removal system.

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 Corrective Action Program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted three partial system walkdown samples as defined in Inspection Procedure (IP) 71111.04-05.

##### b. Findings

No findings were identified.

.2 Semiannual Complete System Walkdown

a. Inspection Scope

During the week of February 6, 2012, the inspectors performed a complete system alignment inspection of the Unit 1 safety injection system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. Past and outstanding WOs were reviewed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Fire Zone 73, Unit 2 control room heating, ventilation and air conditioning equipment;
- Fire Zone 12, Unit 1 quadrant 2 piping tunnel;
- Fire Zone 49, Unit 1 heating, ventilation and air conditioning auxiliary building vestibule;
- Fire Zone 54, Unit 2 control room; and
- Fire Zone 59, Unit 2 auxiliary cable vault.

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, 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 five quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On March 14, 2012, the inspectors observed an unannounced drill for a simulated fire in the Unit 2 west essential service water pump room. Based on this observation, the inspectors evaluated the plant fire brigade's readiness to fight fires. The inspectors verified that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief; and took appropriate corrective actions. Specific attributes evaluated were:

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

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On January 24, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

On February 17, 2012, the inspectors observed activities in the Unit 1 control room during power range nuclear instrument channel operational test and calibrations. Problems during the test and calibrations rendered two power range nuclear instruments inoperable and control room operators entered TS limiting condition for operation 3.0.3. Entry into TS limiting condition for operation 3.0.3 required operators to prepare to commence a plant shutdown within 1 hour if an additional nuclear instrument channel was not returned to operable status. However, an additional power range nuclear instrument was returned to operable status, which satisfied the required actions and TS 3.0.3 was exited before commencing a shutdown was required. 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 procedures;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and notifications.

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 Annual Operating Test Results (71111.11A)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the Annual Operating Test, administered by the licensee from February 13 to March 16, 2012, required by 10 CFR 55.59(a). The results were compared to the thresholds established in Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)," to assess the overall adequacy of the licensee's Licensed Operator Requalification Training (LORT) program to meet the requirements of 10 CFR 55.59.

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

b. Findings

No findings were identified.

.4 Biennial Review (71111.11B)

a. Inspection Scope

The following inspection activities were conducted during the week of February 27, 2012, 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.

Problem Identification and Resolution (10 CFR 55.59(c); SAT Element 5 as defined in 10 CFR 55.4): The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions to maintain its LORT Program up to date. The inspectors reviewed documents

related to the plant's corrective action program and associated responses (e.g., plant issue matrix and performance review reports; recent examination and inspection reports; licensee event reports (LERs)). The inspectors reviewed the use of operating experience from plant events and industry information. The inspectors reviewed the licensee's quality assurance oversight activities.

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

- The inspectors reviewed the methodology used to construct the examination including content, level of difficulty, and general quality of the examination/test materials. The inspectors also assessed the level of examination material duplication from week-to-week for both, the operating tests conducted during the current year, as well as the written examinations administered in 2011. The inspectors reviewed a sample of the written examinations.
- The inspectors observed the administration of the annual operating test to assess the licensee's effectiveness in conducting the examinations, including the conduct of pre-examination briefings, evaluations of individual operator and crew performance, and post-examination analysis. The inspectors evaluated the performance of two crews in parallel with the facility evaluators during performance of four dynamic simulator scenarios, and evaluated various licensed crew members concurrently with facility evaluators during the administration of several Job Performance Measures.
- The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the last requalification examinations and the training planned for the current examination cycle to ensure that 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.
- The inspectors conducted an assessment of the licensee's processes related to examination physical security and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of Examinations and Tests." The inspectors reviewed the facility licensee's examination security procedure, and observed the implementation of physical security controls (e.g., access restrictions and simulator I/O controls) and integrity measures (e.g., sampling criteria, bank use, and test item repetition) throughout the inspection period.

Conformance with Simulator Requirements Specified in 10 CFR 55.46: The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements. The inspectors reviewed a sample of simulator performance test records (e.g., transient tests, malfunction tests, 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.

The inspectors completed IP 71111.11B, Section 03.03, 03.04, 03.06 through Section 03.10. However, IP 71111.11B, Section 03.05, "Licensee Administration of Annual Requalification Operating Test" to date has not been completed, but completion is expected before the end of the biennial period (December 31, 2013).

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 auxiliary feed water systems; and
- supplemental diesel generators.

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

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- emergent work to replace Unit 1 control-air dryer heater element and planned work on Unit 2 east essential service water train during the week of January 18, 2012;
- emergent work to replace Unit 1 CD emergency diesel generator starting air compressor on February 2-3, 2012, and planned work on the supplemental diesel generators on February 4, 2012;
- planned work during the week of March 12, 2012, that included: refurbish Unit 2 west motor driven auxiliary feedwater pump discharge valve to steam generator 4; Unit 1 south safety injection pump surveillance test; Unit 1 AB emergency diesel generator surveillance test; and 345 kilo-volt switchyard breaker operational checks; and
- emergent work on March 20, 2012, to repair a control-air leak on Unit 1 AB emergency diesel generator throttle control cylinder; and, planned work on March 22-23, 2012, in the 765 kilo-volt switchyard that removed reserve feed Transformer 4 from service.

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.

Specific 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 component cooling water flow balance excessive leak by evaluation;

- Unit 1 east containment spray essential service water outlet valve maximum unseating torque evaluation;
- Unit 2 subcritical rod worth measurement methodology evaluation;
- rosemount pressure transmitters with nonzero based calibrations; and
- Unit 1 non-essential service water containment isolation valve diaphragm evaluation for missing support plate.

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 five 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 temporary modification:

- advanced scale conditioning agent application to Unit 2 steam generators

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

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

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- Unit 2 east essential service water 2-year preventative maintenance overhaul;
- Unit 2 west coolant charging pump lube oil modification and maintenance overhaul;
- technical support center ventilation filtration system damper preventive maintenance; and
- Unit 2 power range nuclear instrument channel 43 drawer 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 TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted four post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

On March 21, 2012, Unit 2 was shut down to commence Cycle 20 refueling outage. The inspectors began refueling outage inspection activities, which are expected to be completed and documented during the next inspection period. An inspection sample was not completed this inspection period.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- Unit 2 east essential service water system surveillance (inservice test);
- Unit 2 west centrifugal charging pump system surveillance (inservice test);
- Unit 1/2 emergency off-site power voltage regulator surveillance (routine);
- Unit 2 pressurizer pressure protection set 1 channel operational test and calibration surveillance (routine);
- Unit 1 west motor driven auxiliary feedwater system surveillance (inservice test); and
- Unit 2 steam generator stop valve operability test (inservice test).

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

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and 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, and four inservice testing samples as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

**Cornerstone: Emergency Preparedness**

1EP2 Alert and Notification System Evaluation (71114.02)

a. Inspection Scope

The inspectors reviewed documents and conducted discussions with Emergency Preparedness (EP) staff and management regarding the operation, maintenance, and periodic testing of the Alert and Notification System (ANS) in the D.C. Cook Plant's plume pathway Emergency Planning Zone. The inspectors reviewed monthly trend reports and the monthly operability records from September 2010 through December 2011. Information gathered during document reviews and interviews was used to determine whether the ANS equipment was maintained and tested in accordance with Emergency Plan commitments and procedures. Documents reviewed are listed in the Attachment to this report.

This alert and notification system inspection constituted one sample as defined in IP 71114.02-05.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed and discussed with plant EP management and staff the emergency plan commitments and procedures that addressed the primary and alternate methods of initiating an Emergency Response Organization (ERO) activation to augment the on shift staff, as well as the provisions for maintaining the station's ERO qualification and team lists. The inspectors reviewed reports and a sample of corrective action program records of unannounced off-hour augmentation tests and drills, which were conducted between December 2010 and December 2011, to determine the adequacy of the drill critiques and associated corrective actions. The inspectors also reviewed a sample of the EP training records of approximately 12 ERO personnel, who were assigned to key and support positions, to determine the status of their training as it related to their assigned ERO positions. Documents reviewed are listed in the Attachment to this report.

This emergency response organization augmentation testing inspection constituted one sample as defined in IP 71114.03-05.

b. Findings

No findings were identified.

1EP5 Correction of Emergency Preparedness Weaknesses (71114.05)

a. Inspection Scope

The inspectors reviewed the Performance Assurance staff's 2011 audit of the D.C. Cook Plant's Emergency Preparedness Program to determine that the independent assessments met the requirements of 10 CFR 50.54(t). The inspectors also reviewed samples of corrective action program records associated with the 2010 biennial exercise, as well as various EP drills conducted in 2010 and 2011 in order to determine whether the licensee fulfilled drill commitments and to evaluate the licensee's efforts to identify and resolve identified issues. The inspectors reviewed a sample of EP items and corrective actions related to the station's EP program and activities to determine whether corrective actions were completed in accordance with the site's corrective action program. Documents reviewed are listed in the Attachment to this report.

This correction of emergency preparedness weaknesses and deficiencies inspection constituted one sample as defined in IP 71114.05-05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on January 24, 2012, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator (PI) data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also reviewed the post-evolution critique for the scenario. The inspectors noted any weaknesses and deficiencies in the crew's performance and ensured that the licensee evaluators noted the same issues and entered them into the CAP. The inspectors also reviewed the scenario package and other documents listed in the Attachment to this report.

This inspection of the licensee's training evolution with emergency preparedness drill aspects 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 followup. 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 determined if there have been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors evaluated whether the licensee assessed the

potential impact of these changes and has implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

The inspectors reviewed the last two radiological surveys from selected plant areas and evaluated whether the thoroughness and frequency of the surveys were appropriate for the given radiological hazard.

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.

The inspectors selected the following radiologically risk-significant work activities that involved exposure to radiation.

- refuel cavity decontamination activities;
- steam generator platform activities; and
- containment work activities.

For these work activities, the inspectors assessed whether the pre-work surveys performed were appropriate to identify and quantify the radiological hazard and to establish adequate protective measures. The inspectors evaluated the radiological survey program to determine if hazards were properly identified, including the following:

- identification of hot particles;
- the presence of alpha emitters;
- the potential for airborne radioactive materials, including the potential presence of transuranics and/or other hard-to-detect radioactive materials (This evaluation may include licensee planned entry into non-routinely entered areas subject to previous contamination from failed fuel.);
- the hazards associated with work activities that could suddenly and severely increase radiological conditions and that the licensee has established a means to inform workers of changes that could significantly impact their occupational dose; and
- severe radiation field dose gradients that can result in non-uniform exposures of the body.

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 the following radiation work permits used to access high radiation areas and evaluated the specified work control instructions or control barriers.

- Radiation Work Permit (RWP) 122100; U2C20 Refuel Cavity Decontamination Activities; Revision 0;
- RWP 122148; U2C20 Steam Generator Platform Activities; Revision 0;
- RWP 122149; U2C20 Steam Generator Secondary Side Work; Revision 0; and
- RWP 122162; Containment Work Activities; Revision 0.

For these RWPs, the inspectors assessed whether allowable stay times or permissible dose (including from the intake of radioactive material) for radiologically significant work under each radiation work permit were clearly identified. The inspectors evaluated whether electronic personal dosimeter alarm set-points were in conformance with survey indications and plant policy.

For work activities that could suddenly and severely increase radiological conditions, the inspectors assessed the licensee's means to inform workers of changes that could significantly impact their occupational dose.

b. Findings

No findings were identified.

.4 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitors potentially contaminated material leaving the radiological control area and inspected the methods used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use and evaluated whether the work was performed in accordance with plant procedures and whether the procedures were sufficient to control the spread of contamination and prevent unintended release of radioactive materials from the site. The inspectors assessed whether the radiation monitoring instrumentation had appropriate sensitivity for the type(s) of radiation present.

The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material. The inspectors evaluated whether there was guidance on how to respond to an alarm that indicates the presence of licensed radioactive material.

The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspectors assessed whether or not the licensee has established a de facto "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high-radiation background area.

b. Findings

No findings were identified.

.5 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors evaluated ambient radiological conditions (e.g., radiation levels or potential radiation levels) during tours of the facility. The inspectors assessed whether the conditions were consistent with applicable posted surveys, radiation work permits, and worker briefings.

The inspectors evaluated the adequacy of radiological controls, such as required surveys, radiation protection job coverage (including audio and visual surveillance for remote job coverage), and contamination controls. The inspectors evaluated the licensee's use of electronic personal dosimeters in high-noise areas as high-radiation area monitoring devices.

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.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in high-radiation work areas with significant dose rate gradients.

The inspectors reviewed the following radiation work permits for work within airborne radioactivity areas with the potential for individual worker internal exposures.

- steam generator platform activities

For these radiation work permits, the inspectors evaluated airborne radioactive controls and monitoring, including potential for significant airborne levels (e.g., grinding, grit blasting, system breaches, entry into tanks, cubicles, and reactor cavities). The inspectors assessed barrier (e.g., tent or glove box) integrity and temporary high-efficiency particulate air ventilation system operation.

b. Findings

No findings were identified.

.6 Risk-Significant High-Radiation Area and Very-High Radiation Area Controls (02.06)

a. Inspection Scope

The inspectors discussed with the radiation protection manager the controls and procedures for high-risk high radiation areas and very-high radiation areas. The inspectors discussed methods employed by the licensee to provide stricter control of very-high radiation area access as specified in 10 CFR 20.1602, "Control of Access to Very-High Radiation Areas," and Regulatory Guide 8.38, "Control of Access to High and Very-High Radiation Areas of Nuclear Plants." The inspectors assessed whether any changes to licensee procedures substantially reduce the effectiveness and level of worker protection.

The inspectors evaluated licensee controls for very-high radiation areas and areas with the potential to become a very-high radiation area to ensure that an individual was not able to gain unauthorized access to the very-high radiation area.

b. Findings

No findings were identified.

.7 Radiation Worker Performance (02.07)

a. Inspection Scope

The inspectors observed radiation worker performance with respect to stated radiation protection work requirements. The inspectors assessed whether workers were aware of the radiological conditions in their workplace and the radiation work permit controls/limits in place, and whether their performance reflected the level of radiological hazards present.

b. Findings

No findings were identified.

.8 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors observed the performance of the radiation protection technicians with respect to all radiation protection work requirements. The inspectors evaluated whether technicians were aware of the radiological conditions in their workplace and the radiation work permit controls/limits, and whether their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

b. Findings

No findings were identified.

2RS2 Occupational As-Low-As-Is-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 site-specific procedures associated with maintaining occupational exposures as-low-as-is-reasonably-achievable (ALARA), which included a review of processes used to estimate and track exposures from specific work activities.

b. Findings

No findings were identified.

## .2 Radiological Work Planning (02.02)

### a. Inspection Scope

The inspectors selected the following work activities of the highest exposure significance.

- refuel cavity decontamination activities;
- steam generator platform activities;
- steam generator secondary side work; and
- RWP 122162; containment work activities.

The inspectors reviewed the 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 had 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.

### b. Findings

No findings were identified.

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

### a. Inspection Scope

The inspectors reviewed the assumptions and basis (including dose rate and man-hour estimates) for the current annual collective exposure estimate for reasonable accuracy for select ALARA work packages. The inspectors reviewed applicable procedures to determine the methodology for estimating exposures from specific work activities and the intended dose outcome.

The inspectors evaluated whether the licensee had established measures to track, trend, and if necessary, to reduce occupational doses for ongoing work activities. The inspectors assessed whether trigger points or criteria were established to prompt additional reviews and/or additional ALARA planning and controls.

The inspectors evaluated the licensee's method of adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered. The inspectors assessed whether adjustments to exposure estimates (intended dose) were based on sound radiation protection and ALARA principles or if they were just adjusted to account for failures to control the work. The inspectors

evaluated whether the frequency of these adjustments called into question the adequacy of the original ALARA planning process.

b. Findings

No findings were identified.

.4 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.

.5 Radiation Worker Performance (02.05)

a. Inspection Scope

The inspectors observed radiation worker and radiation protection technician performance during work activities being performed in radiation areas, airborne radioactivity areas, or high radiation areas. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice (e.g., workers are familiar with the work activity scope and tools to be used, workers used ALARA low-dose waiting areas) and whether there were any procedure compliance issues (e.g., workers are not complying with work activity controls). The inspectors observed radiation worker performance to assess whether the training and skill level was sufficient with respect to the radiological hazards and the work involved.

b. Findings

No findings were identified.

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

This inspection constituted a partial sample as defined in IP 71124.03-05.

.1 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 (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 licensee procedural guidance and ALARA concept.

b. Findings

No findings were identified.

.2 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 had established means (such as routine bioassay) to determine if the level of protection (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.

b. Findings

No findings were identified.

3. **OTHER ACTIVITIES**

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

40A1 Performance Indicator Verification (71151)

.1 Emergency Response Organization Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill/Exercise Performance (DEP) Performance Indicator (PI) for the period from the first quarter 2011 through fourth quarter 2011. To determine the accuracy of the PI data reported during those

periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the DEP indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; assessments of PI opportunities during pre-designated control room simulator training sessions, performance during the 2011 biennial exercise, and performance during other drills. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes one drill/exercise performance sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Emergency Response Organization Readiness

a. Inspection Scope

The inspectors sampled licensee submittals for the ERO Drill Participation PI for the period from the first quarter 2011 through fourth quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; performance during the 2011 biennial exercise and other drills; and revisions of the roster of personnel assigned to key emergency response organization positions. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes one ERO drill participation sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Alert and Notification System Reliability

a. Inspection Scope

The inspectors sampled licensee submittals for the ANS PI for the period from the first quarter 2011 through fourth quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing

opportunities for the PI and results of periodic ANS operability tests. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes one alert and notification system sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Unplanned Scrams per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours PI for D.C. Cook Nuclear Power Plant Units 1 and 2 from the first quarter of 2011 through the fourth quarter of 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Inspection Reports for the period of January 1, 2011, through December 31, 2011, 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.

.5 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI for D.C. Cook Nuclear Power Plant Units 1 and 2 from the first quarter of 2011 through the fourth quarter of 2011. 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 6, dated October 2009, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for the period of January 1, 2011, through December 31, 2011, 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.

.6 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours PI for the D.C. Cook Nuclear Power Plant Units 1 and 2 from the first quarter of 2011 through the fourth quarter of 2011. 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 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports and NRC Integrated Inspection Reports for the period of January 1, 2011, through December 31, 2011, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two unplanned transients per 7000 critical hours samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.7 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures PI for D.C. Cook Nuclear Power Plant Units 1 and 2 from the first quarter of 2011 through the fourth quarter of 2011. 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 6, dated October 2009, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" definitions and guidance, were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, issue reports, event reports and NRC Integrated Inspection Reports for the period of January 1, 2011, through December 31, 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two safety system functional failures samples as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.3 Selected Issue Follow-up Inspection: Unit 1 Main Turbine Trip From Indicated High Thrust Bearing Wear Position Root Cause Evaluation

a. Inspection Scope

The inspectors selected the following equipment root cause evaluation for an in-depth review:

- AR 2011-10107, "Unit 1 Main Turbine Trip From Indicated High Thrust Bearing Wear Position"

The inspectors discussed the evaluation and associated corrective actions with licensee personnel and verified the following attributes while reviewing the root cause evaluation:

- complete and accurate problem identification in a timely manner commensurate with its safety significance and ease of discovery;
- extent of condition, generic implications, common cause and previous occurrences were considered;
- problem resolution was classified and prioritized commensurate with safety significance;
- root and contributing causes were identified; and
- appropriately focused corrective actions were identified.

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

b. Findings

Introduction:

One self-revealed finding of very low safety significance (Green) was identified for the failure to install a grommet seal on the main turbine thrust bearing probes per design during the Unit 1 turbine failure restoration project in 2009, as required by VTD-SKFI-0001, "Eddy Probe Systems Technical Manual". Consequently, oil migrated into the thrust bearing probe conduit, which contributed to a main turbine trip and resultant automatic reactor trip.

Description:

On September 7, 2011, while at 100 percent power, the Unit 1 main turbine automatically tripped on high thrust bearing wear position indication, which caused an automatic reactor trip. Licensee personnel investigation concluded that the trip was due to erroneous indication on both thrust position channels concurrently exceeding the trip set point. The thrust bearing wear indication system was installed as one of several modifications included in the Digital Control System installed on Unit 1 in 2006, which included installing grommet seals in accordance with VTD-SKFI-0001, "Eddy Probe Systems Technical Manual," that were designed to prevent oil intrusion into the conduit. During the Unit 1 turbine failure restoration project in 2009, both thrust bearing wear probes were replaced. The WO associated with reinstalling the probes did not include detailed instruction to install a grommet seal as previously installed in 2006. Specifically, WO 55329763-01, "1-TSI, Replace MT TSI Probes," directed instrument technicians to re-assemble the main turbine thrust bearing probes using an oil resistant sealant per

vendor or balance-of-plant engineer support. The inspectors noted that the WO did not specify use of a grommet seal as required by VTD-SKFI-0001. Consequently, the grommet seal was not installed, which allowed oil to migrate into the conduit.

The inspectors interviewed licensee personnel, reviewed the work package, procedures, control room logs and the root cause evaluation. The inspectors noted that the presence of oil in the conduit, which contained both thrust bearing probe cables as designed, contributed to a cross coupling of cable signals that satisfied a 2 of 2 coincidence logic circuit causing a main turbine trip and resultant reactor trip.

#### Analysis:

The inspectors determined that failure to install the grommet seal on the main turbine thrust bearing probes in accordance with site design standards was a performance deficiency that warranted an evaluation in accordance with the SDP. The inspectors reviewed the samples of minor issues in Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and determined that there were no examples related to this issue. Consistent with the guidance in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," the inspectors determined that this issue was associated with the Initiating Events cornerstone attribute of human performance and that the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations was adversely affected. Specifically, the failure to install a grommet seal on the main turbine thrust bearing probes allowed oil to migrate into the associated conduit, which contributed to causing a main turbine trip and resultant automatic reactor trip. The inspectors performed a Phase 1 SDP review using the guidance provided in IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," and determined that this finding was of very low safety significance because the finding does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment will not be available.

The inspectors concluded that this finding was associated with a cross-cutting aspect in the resources component of the human performance cross-cutting area. Specifically, the work order associated with installing the main turbine thrust bearing probes did not include sufficient guidance to ensure the grommet seal was installed as designed.  
(H.2 (c))

#### Enforcement

Enforcement action does not apply because the performance deficiency was associated with work on non safety-related equipment and did not involve a violation of a regulatory requirement. The issue was entered into the licensee's corrective action program as AR 2011-10107. For corrective actions, the licensee separated the main turbine thrust bearing probe cables into separate conduits; wrapped the cables in additional shielding and insulation to prevent signal coupling; and installed sealing glands on the main turbine thrust housing to eliminate oil intrusion into the conduits.

Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as a finding (FIN 05000315/2012002-01, Failure to Install a Grommet Seal on the Main Turbine Thrust Bearing Probe.)

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

.1 Unit 2 Loss of Containment Cooling

a. Inspection Scope

The inspectors reviewed the control room operator response to a loss of containment cooling on Unit 2 on January 23, 2012. Operators had to immediately place the non-essential service water plate heat exchanger in service to stop the resultant rise in containment pressure and temperature to prevent exceeding TS limits. The inspectors reviewed plant procedures and control room logs, and interviewed operators to verify that the operators responded in accordance with plant procedures and that the containment temperature and pressure TS limits were not exceeded.

The inspectors also reviewed action requests to verify that identified problems pertaining to the loss of containment cooling were entered into the CAP with the appropriate significance characterization. Documents reviewed in this inspection are listed in the Attachment.

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

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report 05000315/2011-001-00

a. Inspection Scope

The inspectors reviewed the events and circumstances surrounding the September 7, 2011, Unit 1 automatic reactor trip that occurred in response to a main turbine trip. The inspectors reviewed control room logs and the root cause evaluation that was documented in AR 2011-10107, Unit 1 Main Turbine Trip from Indicated High Thrust Bearing Trip, to verify that the event was accurately reported.

On September 7, 2011, the Unit 1 main turbine automatically tripped due to a signal generated by the main turbine thrust bearing wear detection system that resulted in an automatic reactor trip from 100 percent power. The initial licensee's failure investigation process team concluded that there was no actual thrust bearing wear condition. The licensee's root cause evaluation determined that the inadvertent trip signal was a result of inadequately installing the sensing equipment in 2009. This issue resulted in a finding of very low safety significance (Green), which is documented in Section 4OA2.3 in this report.

The inspectors verified that the reactor trip was uncomplicated, all major components functioned as designed, and that operator actions were appropriate. This Licensee Event Report (LER) is closed.

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

b. Findings

No findings were identified.

4OA5 Other Activities

.1 Review of Institute on Nuclear Power Operations Report

The inspectors reviewed the Institute of Nuclear Power Operations final report dated February 2, 2012, regarding the D.C. Cook Nuclear Plant 2011 evaluation. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify that no significant safety issues were identified that required further NRC follow-up. No issues of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 2, 2012, 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 the potential report input discussed was not considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The Emergency Preparedness program inspection with Mr. L. Weber, and other members of the licensee staff on February 17, 2012.
- The Licensed Operator Requalification Program inspection results, which were discussed with Mr. J Gebbie and other members of the licensee staff on March 2, 2012.
- The inspection results for the areas of radiological hazard assessment and exposure controls; occupational ALARA planning and controls; and in-plant airborne radioactivity control and mitigation, which were discussed with Mr. Q. Lies and other members of the licensee staff on March 30, 2012.

The inspectors confirmed that the potential report input discussed was not considered proprietary. Proprietary material received during the inspection was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

L. Weber, Senior Vice President and Chief Nuclear Officer  
M. Carlson, Site Support Services Vice President  
J. Chambers, Emergency Preparedness Manager  
J. Gebbie, Site Vice President  
B. Hite, Radiation Protection Manager  
C. Hutchinson, Nuclear Site Services Director  
Q. Lies, Plant Manager  
J. Nimtz, Regulatory Affairs Senior Licensing Activities Coordinator  
S. Mitchell, Regulatory Affairs  
K. O'Conner, Compliance Manager  
J. Ross, Engineering Director  
M. Scarpello, Regulatory Affairs Manager  
R. Sieber, Training Manager  
B. Evans, Operations Training Manager  
T. Johanson, Operations Requalification Training  
T. Vriezema, Simulator Supervisor

#### Nuclear Regulatory Commission

J. Giessner, Chief, Reactor Projects Branch 4  
J. Lennartz, Senior Resident Inspector  
P. LaFlamme, Resident Inspector

**LIST OF ITEMS OPENED, CLOSED AND DISCUSSED**

Opened

05000315/2012002-01	FIN	Failure to Install a Grommet Seal on the Main Turbine Thrust Bearing Probe
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Closed

05000315/2012002-01	FIN	Failure to Install a Grommet Seal on the Main Turbine Thrust Bearing Probe
05000315/2011-001-00	LER	Unit 1 Reactor Trip Due to Main Turbine Trip

Discussed

NONE

## LIST OF DOCUMENTS REVIEWED

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

### 1R04 Equipment Alignment

- 02-EHP-4030-234-203, Unit 2 LLRT, Revision 11
- 1-OHP-4021-008-002, Placing Emergency Core Cooling System in Standby, Revision 27
- 1-OHP-4030-156-017E, East Motor Driven Auxiliary Feedwater System Test, Revision 7
- 2-OHP-4021-032-008AB, Operating DG2AB Subsystems, Revision 017
- AR 00817754, 2-GRH-L-37, Missing Jam Nut on Pipe Side of Sway Strut
- AR 2010-12391, Body to Bonnet Leak on 2-RH-104E
- AR 2010-12912, Leakage at Various Components during RHR VT-2 Inspections
- AR 2011-12581, Nonsafety Related Piping Between 1-NRV-104 and 1-RC-125
- AR 2011-13167, Boric Acid Deposits 2-PP-9E
- AR 2011-14046, Drive Belt on North Control Room Air Conditioner is Loose
- AR 2011-1677, 2E-RHR Pump Mechanical Seat Leakage
- AR 2011-2186, 2-HV-ACRA-1 North CRAC Has an Abnormal Squeal
- AR 2011-9909, 1-PP-3W West Motor Driven Auxiliary Feedwater Pump
- AR 2012-0671, 12-OME-250-SDG1 Battery Has Suspected Acid Seeping From Vent
- AR 2012-0864, CNP Personnel Failed to Identify Boric Acid Leak
- AR 2012-1512, Condensation Build Up On Ceiling Above CRAC Duct Work
- AR 2012-1704, 1-SI-111n Has Dry Boric Acid @ Packing Gland
- OP-1-5142, Unit 1 Flow Diagram Emergency Core Cooling, Revision 45
- OP-2-5142, Unit 2 Flow Diagram Emergency Core Cooling, Revision 51
- WO 55361961, Dry Boric Acid on 1-SI-194, December 24, 2011

### 1R05 Fire Protection

- 01-OHP-4025-R-2, Restore Pressurizer PORVs, Revision 1
- 112-008-E, West Essential Service Water Pump Annual Fire Drill Scenario, Revision 0
- 112-008-E, West Essential Service Water Pump Fire Drill, March 20, 2012
- 12-FPP-2270-066-011, Fire Watch Activities, Revision 7
- 1-OHP-4024-101, Annunciator #101 Response Plant Fire System, Revision 26
- 2-IHP-5040-IMP-007, Installation of Alternate Power Source and Control for Pressurizer Power Operated Relief Valve, Revision 2
- AR 2010-1257, Clearance Has Been Hanging for >90 days
- AR 2010-1359, Resolve Longstanding Issue With PORV Backup Power Supply 2-TBV-7A
- AR 2011-4162, Abandoned Equipment Controlled By Clearance Permits
- AR 2012-3470, Revise TRP-2070-TAP-400-FPP, Fire Drills
- AR 2012-3471, Revise Fire Drill 008
- AR 2012-3492, Fire Drill Pre Plan Documentation
- FHA, Fire Hazards Analysis, Revision 15
- Fire Pre-Plan, Revision 9

## 1R11 Licensed Operator Regualification Program

- 12-OHP-4050-FHP-001; Refueling Procedure Guidelines; Revision 24
- 1-IHP-4030-113-131Q, Nuclear Instrumentation Power Range Channel Operational Test and Calibration With New Flux Data Equivalent Voltages, February 17, 2012
- AR 2010-10606, Unexpected Transfer of Water From BAST
- AR 2010-6811, Poor Preparation Leads to Untimely Delays
- AR 2010-6876, Inadequate Process/Eqpt for Obtaining Battery Room H2 Concentration
- AR 2010-7918, Initial Conditions Not Met For MTC Testing
- AR 2011-11151, Review and Walk-Down of Loss of Spent Fuel Pit Cooling
- AR 2011-1251, Revision Checks Were Incorrectly Performed
- AR 2011-2870, Exceeded 100 percent Thermal Power (U0601DL)
- AR 2011-9439, Document the Assessment of the 4.2 min vs. 4.0 min SGTR Timed Manual Action
- AR 2012-1629, Procedure Violation
- AR 2012-2189, U1 Power Range Drawer Cal Came Into Question
- AR 2012-2274, Critical Parameters Found Out of Tolerance
- DR 2010158, Change RPI Indication for H-8 Rod Bottom Set-Point, October 21, 2010
- DR 2010211, Modify PZR Heater Power Per EC50992, 12/20/2010
- OHI-2071, Reporting, Reassignment Termination and Conditions Potentially Affecting Performance of License Duties, Revision 12
- Placing Excess Letdown In-Service for Unit 1 and Unit 2, June 27, 2011
- PMP-4075-TCA-001, Time Critical Action Validation and Verification, Revision 1
- Reviewed Exams RQ3503-2 (2010 Remediation Exam) and RQ3503-1 (Failed 2010 Regualification Exam) for Appropriateness and Duplication of Test Items
- Reviewed exams RQ3507-4 (2011 Remediation Exam) and RQ3507-5 (Failed 2011 Regualification Exam) for Appropriateness and Duplication of Test Items.
- RO-0-A083, Plot Main Transformer Hydrogen Rise, Revision 1
- RO-0-A084-U2, Simulator JPM, Respond to High Control Room Radiation, Revision 0
- RO-0-ADM012, Administrative JPM Perform the Initial Offsite Notification, Revision 0
- RO-0-AEO-E005, In-Plant JPM Local Main Steam Line Isolation, Revision 0
- RO-0-AEO-E221, Locally Control Charging Flow Using Control Valve QRV-251, Revision 0
- RO-0-AEO-E282, Local Actions for ATWS, Revision 0
- RO-0-E003, Depressurize RCS after a SGTR, Revision 8
- RO-0-E269-U1, Transfer CCP and SI Pump Suctions During Transfer to Cold Leg Recirculation, Revision 0
- RO-0-E271-U1, Simulator JPM Transfer to Recirculation/Sump Blockage, Revision 0
- RQ-E-3607-U2-A, Cycle 3607 As-Found Simulator Evaluation, Revision 0
- RQ-E-ANN-12, LOR Annual Operating Examination Simulator Scenario 12, Revision 1
- RQ-E-ANN-13, LOR Annual Operating Examination Simulator Scenario 13, Revision 2
- RQ-E-ANN-16, LOR Annual Operating Examination Simulator Scenario 16, Revision 1
- RQ-E-ANN-24, LOR Annual Operating Examination Simulator Scenario 24, Revision 1
- Simulator Discrepancy Record (DR) 2010018, January 19, 2010
- Simulator Discrepancy Record (DR) 2010035, February 24, 2010
- Simulator Discrepancy Record (DR) 2010042, March 8, 2010
- Simulator Discrepancy Record (DR) 2010047, March 18, 2010
- Simulator Discrepancy Record (DR) 2010082, April 20, 2010
- Simulator Discrepancy Record (DR) 2010115, July 20, 2010
- Simulator Discrepancy Record (DR) 2010163, November 1, 2010
- Simulator Discrepancy Record (DR) 2010196, December 10, 2010
- Simulator Discrepancy Record (DR) 2010205, December 10, 2010

- Simulator Discrepancy Record (DR) 2011058, March 25, 2011
- Simulator Discrepancy Record (DR) 2011118, May 5, 2011
- Simulator Discrepancy Record (DR) 2011146, June 6, 2011
- Simulator Discrepancy Record (DR) 2011233, October 25, 2011
- Simulator Discrepancy Record (DR) 2011265, December 15, 2011
- Simulator Discrepancy Record (DR) 2012050, February 8, 2012
- SRO-0-ADM011A, Administrative JPM, Determine Administrative Requirements for Inoperable Tech Spec Equipment, Revision 1
- SRO-0-E015, Administrative JPM Perform the Duties of the Site Emergency Director, Revision 0
- TRP-2070-LIC-001, Administrative Requirements for NRC License and Medical Requirements, Revision 6
- TRP-2070-TAP-300-LOR, Licensed Operator Requalification Training Annual Operating Test and Biennial Written Exam Development, Revision 1
- TRP-2070-TAP-400-OPS, Operations Training Implementation, Revision 29
- TRP-2070-TAP-400-SEC, Operations Training Exam Security, Revision 1
- Unit 1 Control Room Logs, February 17, 2012
- Unit 1 Cycle 23, April 12, 2011
- Unit 1 Cycle 23, December, 2010
- Unit 1 Cycle 24, January, 2012
- Unit 1 Cycle 24, November 2, 2011
- Unit 1 Main FW Pump Trip Events, November 2, 2011
- Unit 1 Manual Trip from 17 percent Power for Forced Outage, October 20, 2011
- Unit 1 RQ-E-ANN15, January 10, 2012
- Unit 1 RQ-E-ANN8, January 3, 2012
- Unit 1 Rx Trip from 100 percent Power (Spurious Thrust Bearing Trip), October 19, 2011
- Unit 1 SBT Data for RO-S-NOP1, June 1, 2011
- Unit 1 SBT Data for RO-S-NOP6, November 18, 2010
- Unit 2 Cycle 19, December, 2010
- Unit 2 Cycle 19, November 3, 2011
- Unit 2 Manual Rx Trip on 10/6/10 (Start U2C19 Refueling), October 14, 2010
- Unit 2 SBT Data for 2-OHP-4021-001-003, May 17, 2011
- Unit 2 SBT Data for RO-S-NOP7, November 11, 2010
- Various Operations Training and Qualification Packages, OHI-2070, Attachment 4, Revision 49
- Various Reactivation Packages, OHI-2070, Attachment 6, Revision 45
- Various Remediation Packages for 2010 through January 2012.
- WO 55365687-04, 1-NRI-42A-DWR Nuclear Instrument Channel Testing, February 17, 2012

#### 1R12 Maintenance Effectiveness

- 01-OHP-4023-E-2, Faulted Steam Generator Isolation, Revision 6
- 01-OHP-4023-FR-H.2, Response to Steam Generator Overpressure, Revision 4
- 01-OHP-4023-FR-H.3, Response to Steam Generator High Level, Revision 7
- 1-OHP-4021-056-002, Auxiliary Feed Pump Operation, Revision 30
- AR 2010-8269, Missed Surveillance of 2-FW-128
- AR 2010-9131, Misposition of 2-FMO-231 While Performing PM on 2-FMO-232
- AR 2011-0017, The NESW Cooing Lines to the AFW Pump Bearings is Plugged
- AR 2011-11329, 1-QT-506 stripped 3/8" Pipe Nipple for Balance Chamber
- AR 2011-12090, Out of Tolerance Measurements and Failed Blue-Check on T&TV
- AR 2011-12319, 1-FMO-211, TDAFP to #1 SG Feed Valve Will Not Close

- AR 2011-12362, 1-FMO-211 Dirty Torque Switch Contact Found
- AR 2011-13560, High Resistance Reading Across Jumper on 12-SDG2-24vdc-batt
- AR 2011-13580, SDG2 Momentary Low Battery Voltage Alarm
- AR 2011-14406, SDG 1 Failed to Start Due to Over Cranking
- AR 2011-14838, SDG 1 Started 5 Minutes After Intended
- AR 2011-5278, 1-QT-506 C.O.F. Exceeds Calculation Basis
- AR 2011-7410, Potential Issue with MOV PM on 2-FMO-222
- AR 2012-0871, SDG Switchgear Enclosure Has Water Leaks
- AR 2012-0873, The Handle on HMI Cabinet in SDG Does Not Latch Securely
- AR 2012-0875, Phone in SDG Enclosure Does Not Work
- AR 2012-4305, Evaluate AFW MRE Function 12 for Issue in AR 2011-12319
- Auxiliary Feedwater Maintenance Rule Scoping Document, April 26, 2001
- DB-12-AFWS, Auxiliary Feedwater System, Revision 4
- OP-1-5106A, Unit Flow Diagram Aux-Feedwater, Revision 60
- Unit 1/2 Auxiliary Feedwater System 2-year Unavailability Report 2010-2011
- Unit 1/2 Auxiliary Feedwater System Health Reports 2010-2011
- Unit 1/2 Supplemental Diesel Generator Maintenance Rule Scoping Document, May 24, 2007
- Unit 1/2 Supplemental Diesel Generator System Unavailability Report 2010-2011
- WO 55361102-01, Perform Non-Intrusive Testing of 2-FW-159, April 7, 2010
- WO 55382321-09, Vent ESW Line to U1 West MDAFW Pump, September 13, 2011
- WO 55392062-01, 1-FMO-211 Not Closing, October 21, 2011
- WO 55393491-01, East MDAFW Pump Oil Sample Identified Water in Oil, November 18, 2011

#### 1R13 Maintenance Risk Assessments and Emergent Work Control

- AR 2012-1542, Failure of 1-QT-142-CD2 Starting Air Compressor for 1CD EDG
- AR 2012-3353, Unit 1 Plant Air Compressor Tripped on Startup
- Control Room Logs, January 8-13, February 2-4, March 12-15, March 22-23
- Daily work activity schedule, January 8-13, February 2-4, March 12-15, March 22-23
- PMP-2291-OLR-001, Online Risk Management, Part 1, Configuration Risk Assessment, January 8-13, February 2-4, March 12-15, March 22-23
- PMP-2291-WAR-001, Work Activity Risk Management Process, Revision 30
- PMP-4100-SDR-001, Plant Shutdown Safety and Risk Management, Revision 25

#### 1R15 Operability Determinations and Functionality Assessments

- 12-EHP-5074-MOV-002, Motor Operated Valve Setpoint Control, Revision 4
- 1-DCP-4894, Modify "Standby Readiness" Position of TDAFP Discharge Valves, December 11, 2000
- 1-EHP-4030-116-248, CCW Flow Balance, November 15, 2000
- AR 2001-12920, 1-CRV-485, Leaks By at a Rate of 200 Gallons per Minute
- AR 2011-12859, 1-CRV-486 Leaks By at 600 Gallons Per Minute
- AR 2012-0099, Support Sheet Was Not Installed in Diaphragm Valve
- AR 2012-0167, Support Sheet Not Installed in 1-WCR-906
- AR 2012-1380, Revise 1-WMO-713 Weak Link Calculation
- AR 2012-1455, 1-WMO-713 AF/AL Open Torque Greater Than Acceptance Criteria
- AR 2012-2349, Evaluate Westinghouse TB-12-3 for Applicability/Action
- AR 2012-2349, Evaluate Westinghouse TB-12-3 for applicability/action
- AR 2012-2545, 10 CFR 21 Report – Rosemount Pressure Transmitters
- AR 2012-2626, Revised Capability Determination Information For 1-WMO-713

- AR 2012-2961, 10 CFR 21 Report – Rosemount Pressure Transmitters
- AR 2012-4171, Admin Error on OPS Flow Diagrams 1-OP-5114 and 2-OP-5114
- AR 2012-4173, Aspect of Condition Not Considered in Evaluation
- DB-12-CCW, Design Basis Document for the Component Cooling Water System , Revision 9
- DC-10686, 6" Nuclear Diaphragm Valve W/#32130 Air Motor, Revision 1
- DIT-B-00802-10, CCW Flow Balance Criteria, September 23, 2003
- MD-O1-ESW-081-N, Torque Setup Calculation for 1-WMO-713, Revision 3
- OP-1-5135, Flow Diagram CCW Pumps and CCW Heat Exchangers, Revision 41
- OP-2-5114, Flow Diagram Non-essential Service Water Unit 2, Revision 80
- SD-990825-019, Seismic Weak Link Torque Summary for 1-WMO-713, Revision 4

#### 1R18 Plant Modifications

- 2012-0089-00, Full Bundle ASCA 50.59 Screen, Revision 0
- EVAL-11-65, D.C. Cook Unit 2 Steam Generator Full Bundle ASCA Iron and Copper Removal Application, Revision 0
- R-8813-03-01, DC Cook 2 Final ASCA Test #1 Results, Final Results, Revision 1

#### 1R19 Post-Maintenance Testing

- 12-IMP-5021-003-009, Upgraded Centrifugal Charging Pump with SS Casing Maintenance, January 19, 2012
- 12-OHP-5030-028-007, TSC Ventilation Filtration System Functional Test, January 3, 2012
- 2-IHP-4030-213-231Q, Nuclear Instrumentation Power Range Channel Operational Test and Calibration with New Flux Data Equivalent Voltages, March 8, 2012
- 2-OHP-4030-208-053B, E.C.C.S. Valve Operability Test – Train B, January 19, 2012
- AR 2011-14514, Upcoming U-2 East CMP for January 11th, 2012
- AR 2012-0063, 12-HV-TSC-SD-6 did not Reposition during Surveillance
- AR 2012-0113, Issues Discovered During TSC Ventilation Maintenance Outage
- TDB-2-Figure-19.1, Power Operated Valve Stroke Time Limits, Revision 101
- WO 55274742-02, U2 E ESW 2-WRV-768 Refurbishment PMT, January 12, 2012
- WO 55305576-05, U2 Oil Sample Port PMT, January 19, 2012
- WO 55306139-02, U2 West CCP Oil Line Replacement PMT, January 19, 2012
- WO 55330542-02, U2 E ESW Visual Leak PMT, January 12, 2012
- WO 55360862-08, U2 E ESW 2-QR-3588 Air Flex Hose PMT, January 12, 2012
- WO 55376412-01, 12-HV-TSC-SD-1 (2-7) Inspect, Clean, Lubricate and Tighten Linkage, January 3, 2012
- WO 55377703-02, U2 West CCP PMT Leak Inspection, January 19, 2012
- WO 55391315-01, 12-HV-TSC-AC-1, Perform Preventive Maintenance, January 3, 2012

#### 1R22 Surveillance Testing

- 1-IHP-4030-134-001, Unit 1 DIS Surveillance and Baseline Testing, Revision 15
- 1-OHP-4030-109-007E, East Containment Spray System Test, Revision 34
- 1-OHP-4030-114-021, Event Initiated Surveillances: Loss/Unavailability of Cook-Derby Section of the 69kV Bridgman-Derby Circuit, January 13, 2012
- 1-OHP-4030-134-033, IST Valve Operability Test – Cold Shutdown, Revision 6
- 1-OHP-4030-156-017CS, Main and Auxiliary Feedwater Shutdown Testing, Revision 13
- 1-OHP-4030-156-017W, West Motor Driven Auxiliary Feedwater System Test, February 16, 2012
- 2-IHP-4030-202-013A, Pressurizer Pressure Protection Set 1 Channel Operational Test and Calibration, January 31, 2012

- 2-OHP-4030-203-052W, West Centrifugal Charging Pump Operability Test, January 19, 2012
- 2-OHP-4030-219-022E, East Essential Service Water System Test, January 12, 2012
- 2-OHP-4030-251-019F, Steam Generator Stop Valve Operability Test, March 21, 2012
- AR 00862425, CTS IST Pump Testing Does Not Meet NRC Guidance in NUREG 1482
- AR 2010-10292, 12-HV-AFX Fan Inspection Revealed Discrepancies
- AR 2010-10724, Evaluate MFRV's for Potential Preconditioning
- AR 2010-9754, TS Surveillances Require Decisions Without Adequate Guidance
- AR 2011-4895, DIT-B-01864-06 Contains Mathematical Errors
- AR 2012, West MDAFP Inboard Pump Bearing Oil Loss
- AR 2012-3522, 2-MRV-210 Hydraulic System Failure
- TDB-2-Figure-15.1, Safety-related Pump Inservice Test Hydraulic Reference, Revision 108
- TDB-2-Figure-15.2, Safety-related Pump Inservice Test Vibration Reference, Revision 89
- WO 55349983-01, Spent Fuel Pool Ventilation Surveillance, October 11, 2010

#### 1EP2 Alert and Notification System Evaluation

- AR 2011-0024, Siren Activates Due To Lightning Strike
- AR 2011-14412, Replace Amplifier #1 in Siren #821 From Silent Test
- AR 2011-9935, Siren Grounding Wires Severed, Berrien County Sheriff Notified
- Donald C. Cook Nuclear Plant Emergency Plan-Section E, Notification Methods and Procedures, Revision 29
- EPP-2080-ANS-001, Alert and Notification System Operation Records, September 2010 – December 2011
- FEMA Approved Design Report for DC Cook Nuclear Plant Early Warning System, December 20, 2007
- PMP-2080-EPE-001, Emergency Preparedness Annual Equipment Inspection and Maintenance, September 2010 – October 2010
- PMP-2080-EPE-001, Emergency Preparedness Annual Equipment Inspection and Maintenance, August 2011 – September 2011

#### 1EP3 Emergency Response Organization Staffing and Augmentation System

- AR 2011-14513, During EP Unannounced Drill, Procedure Attachments in Control Room Not Current Revisions
- AR 2011-14533, Enhance ERO Knowledge of Dialogic Callout System
- AR 2011-14600, Individual Responded to Dialogic But Did Not Report for Drill
- AR 2011-7614, During 6/23/11 Unannounced Call-Out Drill, Only 5 of 8 Required Responded
- December 16, 2010, Unannounced Augmentation Drill Report
- Donald C. Cook Nuclear Plant Emergency Plan-Sections E and O, Notification Methods and Procedures, Revision 29
- Donald C. Cook Nuclear Power Plant ERO Unannounced Augmentation Call-In Test, June 23, 2011
- Donald C. Cook Nuclear Power Plant ERO Unannounced Augmentation Drill, December 15, 2011

#### 1EP5 Correction of Emergency Preparedness Weaknesses

- AR 2011-12122, Seismic Values As-Found Out of Tolerance
- AR 2011-12250, MIDAS Precipitation Monitor Not Indicating Properly
- AR 2011-13506, SFP Demin Water Fill Hose Was Removed From Storage Location
- AR 2011-14652, Determine EAL Thresholds Are Readable For Effluent Radiation Monitors
- AR 2011-2722, Exercise Issue, Dose Assessment Capabilities Need Enhancement

- AR 2011-2727, Exercise Issue, Incorrect Classification of Fire as Unusual Event
- AR 2011-2729, Exercise Issue, Controller Prompted Alert Classification
- AR 2011-2730, Exercise Issue, OSC Manager Provided Incorrect Information
- AR 2011-2778, Exercise Issue, Evaluate Notification Timeliness Process for DEP
- AR 2011-2876, Exercise Issue, Evaluate EAL H-4 Alert Basis
- AR 2011-4027, SAMG B.5.b Training Not Conducted as Required
- AR 2011-7135, OSC Drill Participants Not Wearing Adequate Anti-Cs
- AR 2011-7241, Performance Assessment Identified an Incorrect Notification Form
- AR 2011-7245, Specialized Training for Line Management
- AR 2011-7361, Emergency Plan Accountability Card Reader Not Working
- AR 2011-7472, During EAL Training Recognition of EAL Threshold for SFP Level
- AR 2011-9655, August 23, 2011, Seismic Unusual Event Michigan State Police Could Not Call-back
- AR 2012-0063, TSC HVAC Damper Did Not Reposition during Surveillance
- AR 2012-0628, Tabletop Drill Initial Notification Wind Direction Error
- AR 2012-2180, Precipitation Monitor Used for Dose Assessment Was Inoperable and Not Identified in Procedure for Equipment Important to Emergency Preparedness
- AR-2011-10448, Primary 60 Meter Wind Direction Sensor Found Out of Tolerance
- AR-2011-12119, Plant Address Speaker Not Working
- Donald C. Cook Nuclear Plant Emergency Plan-Section O, Radiological Emergency Response Training, Revisions 28 and 29
- Donald C. Cook Nuclear Power Plant August 23, 2011, Unusual Event Report, August 26, 2011
- Donald C. Cook Nuclear Power Plant ERO Evaluated Exercise Report and Critique, March 1, 2011
- GT-2011-11440-3, Readiness Assessment for the 2012 NRC Baseline EP Program Inspection, January 6, 2012
- PA-11-05, Performance Assurance Emergency Preparedness Audit, July 15, 2011

#### 1EP6 Drill Evaluation

- EMD-32a, Michigan State Police, Nuclear Plant Event Notification, January 24, 2012
- PMP-2080-EPP-101, Emergency Classification, Revision 15

#### 2RS1 Radiological Hazard Assessment and Exposure Controls

- 12-OHP-4050-FHP-005, Core Unload/Reload and Incore Shuffle, Revision 16
- 12-THP-6010-RPP-400, Radiological Protection Job Coverage, Revision 013
- AR 2012-0084, Elevated Dose Rates in the 617 Demineralizer Valve Gallery
- AR 2012-0639, Contamination in a Clean Area
- AR 2012-3600, Unit 2 Containment Ventilation Outage
- AR 2012-3782, Personnel Safety and Station ALARA Need Greater Focus
- AR 2012-3815, Shoe Contamination from Offsite Source
- AR 2012-3898, NPS Iron Worker Lost Electronic Dosimeter While Working in Auxiliary Building
- AR 2012-4006, Locked High Radiation Area Keys Not Logged Out in a Timely Manner
- AR 2012-4072, Received Radioactive Shipment in Excess of Limits, March
- GT 2012-4003, Procedure Change Request Related Action per PMP 2010 PRC-002, Procedure Alteration, Review and Approval, March 28, 2012
- PMP-6010-RPP-003, High, Locked High and Very-High-Radiation Area Access, Revision 21
- Survey CNP-1001-0010, 014J 617 Demineralizer Hall, January 4, 2010

- Survey CNP-1201-0077, 160J U2 Lower Containment 598, January 12, 2012
- Survey CNP-1201-0083, 163J TEDA/HTC, January 13, 2012

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

- ALARA Committee A-12-12F, Steam Generator Activities, February 15, 2012
- ALARA Committee A-12-12S, Steam Generator Activities, February 3, 2012
- AR 2011-11319, Inadequate Information to Perform Required Work
- AR 2011-11940, Job in Locked High Radiation Area Took Longer Than Estimated
- AR 2011-13788 Outage Radiation Dose Exceeded Estimate
- AR 2011-15037, Perform Additional Consideration of Completed CE 2011-11870
- AR 2012 0950, Dose Rates in Unit 2 Lower Cavity Higher Than Anticipated
- AR 2012-3788, Scaffold Activities Exceeded Dose Estimate
- PMP-6010-RPP-006, Radiation Work Permit Program, Revision 15
- RWP 122100, U2C20Refuel Cavity Decontamination Activities, Revision 0
- RWP 122148, U2C20 Steam Generator Platform Activities, Revision 0
- RWP 122149, U2C20 Steam Generator Secondary Side Work, Revision 0
- RWP 122162, Containment Work Activities, Revision 0

#### 40A1 Performance Indicator Verification

- Licensee Event Reports, January 1, 2011 through December 31, 2011
- PMP-7110-PIP-001, Reactor Oversight Program Performance Indicators and Monthly Operating Report Data, Unplanned Scrams per 7000 Critical Hours, Unplanned Scrams with Complications, Unplanned Power Changes per 7000 Critical Hours, Safety System Functional Failures, Quarters 1, 2, 3, and 4, 2011, Units 1 and 2

#### 40A2 Problem Identification and Resolution

- AR 2011-10107, U1 Main Turbine Trip From Indicated High Thrust Bearing Trip
- AR 2011-10113, U-1 Audio Count Rate Drawer Not Functioning
- September 7, 2011 Main Turbine Trip Root Cause Outage Investigation, Revision 0
- VTD-SKFI-0001, Eddy Probe Systems Technical Manual, Revision F
- WO 55329763-01, Replacement of Unit 1 Main Turbine DCS, December 12, 2009
- WO 55389945-34, U1 MT Replace Thrust Probe Drivers and Perform Calibrations, October 18, 2011
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#### 40A3 Followup of Events and Notices of Enforcement Discretion

- AR 2012-1165, Containment Cooling Plate Heat Exchanger Malfunction
- AR 2012-1102, Loss of Unit 2 Containment Cooling
- AR 2011-14296, Unexpected Loss of Containment Chill Water Head Tank Level
- AR 2011-0979, 2-HV-CCWC-A Tripped, Investigate and/or Repair
- WO 55389945-43, Thrust Probe Installation, October 12, 2011
- WO 55389945-58, Thrust Probe Cable Wrap Installation, October 21, 2011
- 2-OHP-4021-028-018, Operation of the Containment Chilled Water System, January 24, 2012

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ALARA	As-Low-As-Is-Reasonably-Achievable
ANS	Alert and Notification System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
DEP	Drill/Exercise Performance
EP	Emergency Preparedness
ERO	Emergency Response Organization
IMC	Inspection Manual Chapter
IP	Inspection Procedure
LER	Licensee Event Report
LORT	Licensed Operator Requalification Training
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
PI	Performance Indicator
RWP	Radiation Work Permit
SAT	Systems Approach to Training
SDP	Significance Determination Process
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WO	Work Order

L. Weber

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Sincerely,

*/RA/*

John B. Giessner, Chief  
Branch 4  
Division of Reactor Projects

Docket Nos. 50-315 and 50-316  
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