

May 5, 2006

EA 05-171

Mr. M. Nazar
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 05000315/2006003;
05000316/2006003

Dear Mr. Nazar:

On March 31, 2006, the U. S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your D. C. Cook Nuclear Power Plant, Units 1 and 2. The enclosed report documents the inspection results, which were discussed on April 6, 2006, with Mr. L. Weber and other members of your staff.

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

Based on the results of this inspection, one finding of very low safety significance was identified. The finding was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because the issue was entered into your corrective action program, the NRC is treating this issue as a Non-Cited Violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

If you contest the subject or severity of a Non-Cited Violation, 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's Office at the D.C. Cook Nuclear Power Plant.

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Sincerely,

/RA/

Christine A. Lipa, Chief
Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000315/2006003; 05000316/2006003
w/Attachment: Supplemental Information

cc w/encl: J. Jensen, Site Vice President
L. Weber, Plant Manager
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Waste and Hazardous Materials Division
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No.: 05000315/2006003 and 05000316/2006003

Licensee: Indiana Michigan Power Company

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

Location: Bridgman, MI 49106

Dates: January 1 through March 31, 2006

Inspectors: B. Kemker, Senior Resident Inspector
J. Lennartz, Resident Inspector
F. Ramírez, Reactor Engineer
A. Garmoe, Reactor Engineer
S. Orth, Health Physics Program Manager
W. Slawinski, Senior Radiation Specialist
M. Phalen, Radiation Specialist
B. Palagi, Senior Operations Engineer
C. Moore, Operations Engineer

Approved by: C. Lipa, Chief
Projects Branch 4
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000315/2006-003, IR 05000316/2006-003; 01/01/2006-03/31/2006; D. C. Cook Nuclear Power Plant, Units 1 and 2, Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems.

The report covered a 13-week period of inspection by the resident inspectors and announced inspections by regional inspectors. One Green finding with an associated Non-Cited Violation (NCV) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). 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 3, dated July 2000.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Public Radiation Safety

- Green. An inspector-identified finding of very low safety significance and an associated violation of NRC requirements were identified for the failure to perform adequate daily checks for the in-service oxygen monitor channel of the automatic gas analyzer system, as required by Technical Specifications.

The issue was more than minor because if left uncorrected the issue could become a more significant safety concern, since this monitor provides early indication of a potential explosive gas mixture in the waste gas decay system. The issue represents a finding of very low safety significance because alternate methods were available to assess the potential for an explosive gas mixture in the waste decay system, and, therefore, there was minimal actual risk to the public. A Non-Cited Violation of Technical Specification Surveillance Requirement 4.3.3.9 was identified for the failure to perform adequate daily checks for the in service oxygen monitor channel of the automatic gas analyzer system. Corrective actions planned by the licensee for this finding include enhancing the applicable procedure that governs the daily check of the oxygen monitor channel of the automatic gas analyzer to provide more specific direction to plant staff on equipment acceptance criteria. (Section 2PS1.1)

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

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

Unit 2 was operated at or near full power during the inspection period until March 15, 2006, when the licensee began a gradual power reduction (i.e., a coast down) to 70 percent on March 23, 2006. The unit was maintained at about 70 percent power to perform steam generator safety valve testing until March 25, 2006, when the licensee conducted a reactor shutdown for the Cycle 16 refueling outage (U2C16). Unit 2 was shut down in Mode 5 (Cold Shutdown) at the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Extended Freezing Period Walkdown

a. Inspection Scope

During post-winterization walkdowns conducted on February 19, 2006, the inspectors toured plant areas to monitor the physical condition of cold weather protection features following a period of extended freezing temperatures. The inspectors observed insulation, heat trace circuits, space heater operation, and weatherized enclosures to ensure operability of affected systems. This activity represented one inspection sample.

The inspectors also reviewed selected condition reports to verify that identified problems associated with cold weather preparation activities were entered into the licensee's corrective action program with the appropriate significance characterization and that corrective actions were appropriate.

b. Findings

No findings of significance were identified.

.2 High Winds/Rough Lake Conditions

a. Inspection Scope

The inspectors reviewed the licensee's procedures and preparations for forecasted high winds/rough lake water conditions on February 16, 2006. The inspectors reviewed severe weather procedures, the operations decision making process for coping with rough lake conditions, and performed general area walkdowns. During walkdowns of the plant perimeter and plant transformer areas, the inspectors observed housekeeping conditions and verified that material capable of becoming an airborne missile hazard

during high winds and severe weather was appropriately restrained. During walkdowns of the Lake Screen House, the inspectors verified that appropriate materials were staged and the plant staff was ready to handle a large influx of debris at the traveling water screens. This activity represented one inspection sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors completed three partial equipment alignment inspection samples by conducting walkdowns of the following risk significant systems:

- C Unit 2 CD Emergency Diesel Generator (EDG)
- C Unit 1 North Safety Injection Train
- C Unit 2 West Residual Heat Removal Train

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones. The inspectors reviewed operating procedures, system diagrams, Technical Specification (TS) requirements, and the impact of ongoing work activities on redundant trains of equipment. The inspectors verified that conditions did not exist 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 were aligned correctly. The Unit 2 west residual heat removal train was selected as a risk significant system that was recently aligned for shutdown cooling operation.

In addition, the inspectors verified that equipment alignment problems were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected condition reports were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed one complete system walkdown inspection sample of the following risk significant system:

- Unit 1 Charging and Letdown System

The inspectors reviewed ongoing system maintenance, open job orders, and design issues for potential effects on the ability of the system to perform its design functions. The inspectors reviewed operating procedures, system diagrams, TS requirements, and applicable sections of the Updated Final Safety Analysis Report (UFSAR) to ensure the correct system lineup. The inspectors verified acceptable material condition of system components, availability of electrical power to system components, and that ancillary equipment or debris did not interfere with system performance.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours

a. Inspection Scope

The inspectors performed nine fire protection walkdown inspection samples of the following plant areas:

- C Unit 1 West Containment Spray Pump Room (Fire Zone 1B)
- C Unit 1 and 2 Drumming Area (Fire Zone 31)
- C Unit 1 and 2 Cask Handling Area (Fire Zone 32)
- C Unit 2 Main Steam Line Area East (Fire Zone 34A)
- C Unit 1 Welding Shop (Fire Zone 77)
- C Unit 1 Plant Heating Boiler (Fire Zone 78)
- C Unit 1 Main Steam Accessway (Fire Zone 110)
- C Unit 2 Containment Accumulator Enclosure West (Zone 102)
- C Unit 2 Containment Instrumentation Room (Zone 123)

The inspectors verified that fire zone conditions were consistent with assumptions in the licensee's Fire Hazards Analysis. The inspectors reviewed the pre-fire plans and walked down fire detection and suppression equipment, assessed the material condition of fire fighting equipment, and evaluated the control of transient combustible materials.

In addition, the inspectors verified that fire protection related problems were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected condition reports were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R06 Flood Protection (71111.06)

.1 External Flood Protection

a. Inspection Scope

The inspectors performed one inspection activity related to the licensee's precautions to mitigate the risk from external flooding events. The following inspection activities were performed:

- C The inspectors reviewed the Unit 1 and Unit 2 Flooding Evaluation reports, the UFSAR, and other selected design basis documents to identify those areas susceptible to external flooding.
- C The inspectors reviewed the licensee's status of resolving inspector identified issues during a previous flood protection inspection in the second quarter of 2005, which were documented in Unresolved Item 05000315/316/2005004-01.
- C The inspectors interviewed plant engineering staff to understand which plant areas were susceptible to external flooding and what actions the licensee has taken to assure that the impact to plant equipment is minimized.
- C The inspectors performed a walkdown of the lower elevations of the Turbine Building to assess the adequacy of watertight doors and to verify that drains and sumps were clear of debris and were operable.
- C The inspectors performed a walkdown of the Lake Screen House to assess the adequacy of flood protection features, specifically the location of safety-related components relative to the plant's design flood level, to verify that the installation of components was consistent with the assumptions in the licensee's design basis and that the components would be operable in the event of flooding.
- C The inspectors reviewed selected operating procedures used to identify and mitigate external flooding events and reviewed preparations for possible flooding of susceptible plant areas due to a design basis seiche event on Lake Michigan.

In addition, the inspectors reviewed the issues that the licensee entered into its corrective action program to verify that identified problems were being entered into the program with the appropriate characterization and significance. The inspectors also reviewed the licensee's corrective actions for external flood protection related issues documented in selected condition reports.

b. Findings

b.1. Potential External and Internal Flooding Impact on Safe Shutdown Equipment

Introduction

The inspectors reviewed the licensee's progress in evaluating and resolving issues identified by the inspectors during a previous inspection of external and internal flood protection. The inspectors identified an additional issue during this inspection period. Unresolved Item 05000315/316/2005004-01 remains open pending additional review.

Discussion

The inspectors reviewed the licensee's flooding analysis and its design features to prevent/mitigate the consequences of internal and external flooding events during the second quarter of 2005 and identified a potential breach in the plant's flood protection barrier. The Turbine Building sump has an overflow box with a 30" overflow pipe that leads to the lake by way of the Lake Screen House. This line has a 30" flapper type check valve, 12-DR-129, located in the sump overflow box to prevent backflow from the lake. Failure of this non safety-related component, specifically during a design basis seiche event on Lake Michigan, could cause the Turbine Building sump to overflow and back up into to safe shutdown plant equipment rooms. All four of the Unit 1 and Unit 2 EDGs are located on the 587' elevation, with the lowest of the EDG room floor drains at the 584' elevation. The auxiliary feedwater (AFW) pumps for both Unit 1 and Unit 2 are located on the 591' elevation of the Turbine Building. All of these rooms are connected to the Turbine Building sump via floor drains and there are no check valves in the individual equipment room drain lines to prevent back-flow into the floor drain system.

The Turbine Building sump overflow check valve was not previously included in the licensee's check valve preventative maintenance program. It was coded as a "run-to-fail" component. Review of the valve's history identified that this valve has been subject to a harsh environment and had previously failed on at least two occasions. In November of 2002, the valve was found broken with a piece of the disc in the overflow box pit. In February 2004, the valve was found further degraded with a broken hinge pin, preventing the valve from operating. The hinge pin was replaced in 2004; however, the licensee was unable to complete repairs to the valve disc due to excessive corrosion. The licensee replaced the check valve in August 2005 in response to concerns the inspectors raised with the valve's condition. The valve had been in a degraded state for almost 3 years before it was replaced.

As a result of the loss of this flood protection feature for protection from both external and internal flooding, high water level in the Turbine Building could flow into the AFW pump and the EDG equipment rooms. During this inspection period, the inspectors identified that the licensee did not adequately evaluate the functionality of the check valve for the "as-found" condition in February 2004, when the valve was in a significantly degraded condition such that it would not function to mitigate the consequences of a design basis seiche event. In February 2004, the check valve was found in what was described in the licensee's condition report (CR 04048044) as a "non-functional position," because the valve disc appeared to have fallen off due to a pin failure. The

condition report did not receive a condition evaluation; however, the Operations Department review concluded that the valve was not functional due to the valve disc being detached. Photographs show the valve disc detached, hanging, and rotated away from the open ended pipe. The Operations Department review dismissed the potential impact on safe shutdown equipment using "engineering judgement," stating that water backing up into the floor drains on the Turbine Building 591' elevation and flooding the EDG rooms was unlikely to ever happen. The inspectors challenged several of the assumptions from the Operations Department review of CR 04048044 and requested that the licensee further evaluate the condition, considering the past functionality of 12-DR-129 for an appropriate time period before the broken hinge pin was discovered and replaced in February 2004. In response to the inspectors' questions, the licensee wrote CR 06065008 to document the need for a more thorough evaluation of the condition.

Also, in the second quarter of 2005, the inspectors identified several discrepancies regarding the external flood protection elevation for the plant. In reviewing the inspectors' questions, the licensee discovered that the Lake Screen House was not protected to the 595' elevation as described in Section 10.6 of the UFSAR. Although the essential service water (ESW) pump motors were above the 595' elevation, there were 124 safety-related support components for the ESW pumps that were found during the licensee's review that were located below the 595' elevation. The licensee was completing its evaluation of the components and was formulating corrective actions to address the discrepancies at the end of this inspection period.

Unresolved Item 05000315/316/2005004-01 remains open pending further review.

.2 Internal Flood Protection

a. Inspection Scope

The inspectors performed one inspection activity related to the licensee's precautions to mitigate the risk from internal flooding events. Specifically, the inspectors verified the adequacy of internal flood protection features for the AFW pump and the EDG rooms. The following inspection activities were performed:

- C The inspectors reviewed the Unit 1 and Unit 2 Flooding Evaluation reports, the UFSAR and other selected design basis documents to identify those areas susceptible to internal flooding.
- C The inspectors reviewed the licensee's status of resolving inspector identified issues during a previous flood protection inspection in the second quarter of 2005, which were documented in Unresolved Item 05000315/316/2005004-01.
- C The inspectors performed a walkdown of the lower elevations of the Turbine Building to assess the adequacy of watertight doors and verify that drains and sumps were clear of debris and were operable.

- C The inspectors reviewed selected operating procedures used to identify and mitigate internal flooding events and verified that these procedures were adequate.

In addition, the inspectors reviewed the issues that the licensee entered into its corrective action program to verify that identified problems were being entered into the program with the appropriate characterization and significance. The inspectors also reviewed the licensee's corrective actions for internal flood protection related issues documented in selected condition reports.

- b. Findings

No findings of significance were identified. Section 1R06.1 discusses Unresolved Item 05000315/316/2005004-01, which remains open pending further review.

- 1R11 Licensed Operator Requalification Program (71111.11)

- .1 Resident Inspector Quarterly Review

- a. Inspection Scope

The inspectors assessed licensed operator performance and the training evaluators' critique during a licensed operator requalification evaluation in the D. C. Cook plant operations training simulator on January 31, 2006. The inspectors focused on alarm response, command and control of crew activities, communication practices, procedural adherence, and implementation of emergency plan requirements. This activity represented one inspection sample.

- b. Findings

No findings of significance were identified.

- .2 Facility Operating History

- a. Inspection Scope

The inspectors reviewed the plant's operating history from January 2004 through January 2006 to identify operating experience that was expected to be addressed by the Licensed Operator Requalification Training (LORT) program. Then it was verified that the identified operating experience had been addressed by the facility licensee in accordance with the station's approved Systems Approach to Training (SAT) program to satisfy the requirements of 10 CFR 55.59(c), "Requalification Program Requirements."

- b. Findings

No findings of significance were identified.

.3 Licensee Requalification Examinations

a. Inspection Scope

The inspectors performed a biennial inspection of the licensee's LORT test/examination program for compliance with the station's SAT program which would satisfy the requirements of 10 CFR 55.59(c)(4), "Evaluation." The operating examination material reviewed consisted of four operating tests, each containing two dynamic simulator scenarios and five job performance measures (JPMs). The written examinations reviewed consisted of four written examinations, each containing 37 questions. The inspectors reviewed the annual requalification operating test and biennial written examination material to evaluate general quality, construction, and difficulty level. The inspectors assessed the level of examination material duplication from week-to-week during the current year operating test and written examinations. The inspectors reviewed the methodology for developing the examinations, including the LORT program 2-year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications.

b. Findings

No findings of significance were identified.

.4 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed the administration of a requalification operating test to assess the licensee's effectiveness in conducting the test to ensure compliance with 10 CFR 55.59(c)(4), "Evaluation." The inspectors evaluated the performance of three crews in parallel with the facility evaluators during six dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility evaluators during the administration of several JPMs. The inspectors assessed the facility evaluators' ability to determine adequate crew and individual performance using objective, measurable standards. The inspectors observed the training staff personnel administer the operating test, including conducting pre-examination briefings, evaluations of operator performance, and individual and crew evaluations upon completion of the operating test. The inspectors evaluated the ability of the simulator to support the examinations. A specific evaluation of simulator performance was conducted and documented under Section 1R11.8, "Conformance With Simulator Requirements Specified in 10 CFR 55.46," of this report.

b. Findings

No findings of significance were identified.

.5 Examination Security

a. Inspection Scope

The inspectors observed and reviewed the licensee's overall licensed operator requalification examination security program related to examination physical security (e.g., access restrictions and simulator considerations) and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of examinations and tests." The inspectors also reviewed the facility licensee's examination security procedure, any corrective actions related to past or present examination security problems at the facility, and the implementation of security and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the examination process.

b. Findings

No findings of significance were identified.

.6 Licensee Training Feedback System

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee's processes for revising and maintaining its LORT Program up to date, including the use of feedback from plant events and industry experience information. The inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions. This evaluation was performed to verify compliance with 10 CFR 55.59 (c) "Requalification program requirements" and the licensee's SAT program.

b. Findings

No findings of significance were identified.

.7 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous biennial requalification examinations and the training from 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. This evaluation was performed in accordance with 10 CFR 55.59 (c) "Requalification program requirements" and with respect to the licensee's SAT program.

b. Findings

No findings of significance were identified.

8. Conformance With Operator License Conditions

a. Inspection Scope

The inspectors reviewed the facility and individual operator licensees' conformance with the requirements of 10 CFR Part 55. The inspectors reviewed the facility licensee's program for maintaining active operator licenses and to assess compliance with 10 CFR 55.53 (e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators and which control room positions were granted watch-standing credit for maintaining active operator licenses. The inspectors reviewed the facility licensee's LORT program to assess compliance with the requalification program requirements as described by 10 CFR 55.59 (c). Additionally, medical records for 14 licensed operators were reviewed for compliance with 10 CFR 55.53 (I).

b. Findings

No findings of significance were identified.

9. Conformance With Simulator Requirements Specified in 10 CFR 55.46

a. Inspection Scope

The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements as prescribed in 10 CFR 55.46, "Simulation Facilities." The inspectors also reviewed a sample of simulator performance test records (i.e., transient tests, scenario test and discrepancy resolution validation test), simulator discrepancy and modification records, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy process to ensure that simulator fidelity was 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 conducted interviews with members of the licensee's simulator staff about the configuration control process and completed the IP 71111.11, Appendix C, checklist to evaluate whether or not the licensee's plant-referenced simulator was operating adequately as required by 10 CFR 55.46 (c) and (d).

b. Findings

No findings of significance were identified.

.10 Annual Operating Test Results

a. Inspection Scope

The inspectors reviewed the pass/fail results of individual written tests, and the operating and simulator tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee during calendar year 2006. The overall written examination and operating test results were compared with the significance determination process in accordance with NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process."

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors completed one maintenance effectiveness inspection sample by evaluating the licensee's handling of selected degraded performance issues involving the following risk-significant structure, system, or component (SSC):

C Unit 1 and 2 EDG Fuel Injector Pump Failures

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the SSC. Specifically, the inspectors independently verified the licensee's handling of SSC performance or condition problems in terms of:

- C appropriate work practices,
- C identifying and addressing common cause failures,
- C scoping of SSC in accordance with 10 CFR 50.65(b),
- C characterizing SSC reliability issues,
- C tracking SSC unavailability,
- C trending key parameters (condition monitoring),
- C 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification, and
- C appropriateness of performance criteria for SSC/functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSC/functions classified (a)(1).

In addition, the inspectors verified that problems associated with the effectiveness of plant maintenance were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected condition reports were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors completed four inspection samples regarding maintenance risk assessments and emergent work evaluations for the following maintenance activities:

- C Concurrent planned maintenance activities on the Unit 1 west component cooling water pump and Unit 2 AB EDG, and emergent maintenance on the #4 steam generator stop valve dump valve during the week of January 23, 2006
- C 345 kilovolt breaker N2 repair during the week of February 6, 2006
- C Emergent maintenance activity to repair the Unit 1 north electro-hydraulic control pump on February 8, 2006
- C Emergent maintenance activity to restore Unit 2 motor control center 2-ABD-C, coincident with planned work on Unit 2 west charging pump on January 17, 2006

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. As applicable for each of the above activities, the inspectors reviewed the scope of maintenance work in the plant's daily schedule, verified that plant risk assessments were completed as required by 10 CFR 50.65(a)(4) prior to commencing maintenance activities, discussed the results of the assessment with the licensee's probabilistic risk analyst and/or shift technical advisor, and verified that plant conditions were consistent with the risk assessment assumptions. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify that risk analysis assumptions were valid, that redundant safety-related plant equipment necessary to minimize risk was available for use, and that applicable requirements were met.

In addition, the inspectors verified that maintenance risk related problems were entered into the licensee's corrective action program with the appropriate significance characterization. Selected condition reports were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions (71111.14)

.1 Operator Response to Degraded Reactor Coolant Pump (RCP) Seal Performance

a. Inspection Scope

On February 28, 2006, the inspectors observed plant operators respond to degrading seal leak-off flow for the Unit 2 number 21 RCP and entry into Abnormal Operating

Procedure 2-OHP-4022-002-001, "Malfunction of a RCP." The inspectors observed that the shift manager and unit supervisor demonstrated strong command and control throughout the non-routine evolution, while operators stabilized the RCP seal and restored seal leak-off flow to an acceptable level. The cause of the seal perturbation was a sudden drop in lower containment air temperature of about 7EF. The cause for the air temperature drop was attributed to operators altering the lower containment ventilation system lineup.

The inspectors noted that the licensee was challenged with signs of deteriorating RCP seal performance for the Unit 2 number 21 RCP as evidenced by low number 1 seal leak-off flow. This was a long standing concern for plant operators since the plant started up from the last refueling outage in November 2004 and the problem worsened in January 2006. As a result, operators had to restrict normal plant operations that could potentially affect RCP seal performance (e.g., shifting operating charging pumps, changing component cooling water system temperature, shifting seal water injection filters). In addition, operators had to take other actions to compensate for lowering seal leak-off flow to help improve seal leak-off flow and to prevent it from degrading further. These actions included reducing letdown flow from 120 gallons-per-minute (gpm) to 75 gpm by removing the 45 gpm orifice from service, performing dilutions of the reactor coolant system by adding primary water to the volume control tank instead of the charging pump suction, and making smaller more frequent dilutions instead of larger less frequent dilutions to minimize thermal shock to the RCP seals. The licensee scheduled a seal replacement for the current refueling outage.

The inspectors evaluated the operational decision-making involved with this non-routine evolution. In addition, the inspectors evaluated the operators' communications during the transient and the operators' application and adherence to the operating procedures. This activity represented one inspection sample.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors completed five inspection samples associated with operability evaluations by reviewing the following condition reports:

- C CR 06013029, "Leakage Past 2W-CCP Inboard Mechanical Seal Shaft Sleeve"
- C CR 06017004, "Unit 2 Experienced a Loss of MCC 2-ABD-C Due to Electrical Component Failure"
- C CR 06012063, "Containment High Range Rad Monitors Have Not Been Tested to Verify They Are Capable of Monitoring Up to 10 E7 Roentgen/Hour per TS"
- C CR 05326062, "Inspection Found Five Tubes Blocked with Sand/Silt in West Motor Driven Auxiliary Feedwater Pump Room Cooler"
- C CR 05343073, "Past and Current Operability Call in CR 04232032 Lacks Sufficient Basis"

The inspectors verified that the conditions did not render the associated equipment inoperable or result in an unrecognized increase in plant risk. When applicable, the inspectors verified that the licensee appropriately applied TS limitations and appropriately returned the affected equipment to an operable status.

In addition, the inspectors verified that problems related to the operability of safety-related plant equipment were entered into the licensee's corrective action program with the appropriate characterization and significance.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors completed one inspection sample pertaining to post maintenance testing by assessing testing activities that were conducted on the following plant equipment:

C Unit 2 West Component Cooling Water Pump 4 Kilovolt Breaker Replacement

The inspectors reviewed the scope of the work performed and evaluated the adequacy of the specified post maintenance testing. The inspectors verified that the post maintenance testing was performed in accordance with approved procedures, that the procedures clearly stated the acceptance criteria, and that the acceptance criteria were met. The inspectors interviewed operations, maintenance, and engineering department personnel and reviewed the completed post maintenance testing documentation.

b. Findings

No findings of significance identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

On March 25, 2006, the licensee started the Cycle 16 refueling outage on Unit 2. 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 during this inspection period.

b. Findings

No findings of significance identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors completed six inspection samples regarding surveillance testing by reviewing the following activities:

- C 1-IHP-4030-SMP-126, "Lower Containment Pressure Protection Set IV Channel Operational Test"
- C 1-OHP-4030-116-020W, "West Component Cooling Water Loop Surveillance Test"
- C 1/2-OHP-4030-102-016, "Reactor Coolant System Leak Rate Test"
- C 2-OHP-4030-STP-011, "Containment Isolation and ISI Valve Operability Test," Attachment 9, "Ice Condenser Valves Test"
- C 12-MHP-4030-010-002, "Ice Condenser Flow Channel Surveillance"
- C 12-MHP-4030-010-003, "Ice Condenser Lower Inlet Door Surveillance," Section 4.1, "As Found Tests"

The inspectors observed portions of test activities to verify that testing was accomplished in accordance with plant procedures. The inspectors reviewed the test methodology and documentation to verify that equipment performance was consistent with safety analysis and design basis assumptions, and that testing acceptance criteria were satisfied. In addition, the inspectors verified that surveillance testing problems were being entered into the corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

1R23 Temporary Modifications (71111.23)

a. Inspection Scope

The inspectors completed one inspection sample by reviewing the following temporary modification that was utilized on plant equipment:

- C 12-TM-06-10-R0, "Install a Rigid Plastic Pipe Cap Cover on the Outlet End Overflow/Vent Pipe of the 1(2)-TK-33, Unit 1 and Unit 2 Refueling Water Storage Tank that Extends Inside the Auxiliary Building"

The inspectors interviewed engineering, operations and maintenance department personnel, and reviewed the design documents and applicable 10 CFR 50.59 evaluation to verify that TSs and the UFSAR requirements were satisfied. The inspectors reviewed documentation and conducted plant walkdowns to verify that the modification was implemented as designed and that the modification did not adversely impact system operability or availability.

The inspectors reviewed a sample of condition reports pertaining to temporary modifications to verify that problems were entered into the corrective action program with the appropriate significance characterization and that corrective actions were appropriate.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the D.C. Cook Nuclear Power Plant UFSAR to identify applicable radiation monitors associated with measuring transient high and very high radiation areas including those used in remote emergency assessment. The inspectors identified the types of portable radiation detection instrumentation used for job coverage of high radiation area work including instruments used for underwater surveys, fixed area radiation monitors used to provide radiological information in various plant areas, and continuous air monitors used to assess airborne radiological conditions and work areas with the potential for workers to receive a 50 millirem or greater committed effective dose equivalent. Contamination monitors, whole body counters, and those radiation detection instruments utilized for the release of personnel and equipment from the radiologically controlled area (RCA) were also identified.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.2 Walkdowns of Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors conducted walkdowns of selected area radiation monitors (ARMs) in the Unit 1 and 2 Auxiliary Buildings to verify that they were located as described in the UFSAR and were adequately positioned relative to the potential source(s) of radiation they were intended to monitor. Walkdowns were also conducted of those areas where portable survey instruments were calibrated/repared and maintained for radiation protection (RP) staff use to determine if those instruments designated "ready for use" were sufficient in number to support the radiation protection program, had

current calibration stickers, were operable, and were in adequate physical condition. Additionally, the inspectors observed the licensee's instrument calibration units and the radiation sources used for instrument checks to assess their material condition and discussed their use with RP staff to determine if they were used appropriately. Licensee personnel demonstrated the methods for performing source checks of portable survey instruments and for source checking personnel contamination and portal monitors used at the egress to the RCA.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Calibration and Testing of Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors selectively reviewed calibration data for radiological instrumentation associated with monitoring transient high and/or very high radiation areas, instruments used for remote emergency assessment, and radiation monitors used to identify personnel contamination and for assessment of internal exposures to verify that the instruments had been calibrated as required by the licensee's procedures, consistent with industry and regulatory standards. The inspectors also reviewed alarm setpoints for selected ARMs, for personnel contamination monitors, and for portal (egress) monitors to verify that they were established consistent with the UFSAR or TSs, as applicable, and were consistent with industry practices and regulatory guidance. Specifically, the inspectors reviewed calibration procedures and the most recent calibration records and/or source output verification documents for the following radiation monitoring instrumentation and instrument calibration equipment:

- Containment High Range Radiation Monitors (two monitors each for Units 1 and 2);
- Unit 2 In-Core Instrument Room ARM;
- Unit 2 Containment Building Continuous Air (particulate) Monitor (trains A & B);
- Unit 1 Reactor Coolant System Filter Cubicle ARM;
- Unit 1 West Residual Heat Removal Cubicle ARM;
- Common 609' Elevation Auxiliary Building Passageway ARM;
- Portal Monitors used at the RCA and Protected Area Egress (6 monitors);
- Personnel Contamination Monitors used at the RCA Egress (5 monitors);
- Calibrators used to Calibrate Portable Survey Instruments and ARMs (two calibrators) and the associated instruments used to measure calibrator output; and
- Whole Body Counters (two units).

The inspectors determined what actions were taken when, during calibration or source checks, an instrument was found out of calibration or exceeded as-found acceptance criteria. Should that occur, the inspectors verified that the licensee's actions would include a determination of the instruments's previous usages and the possible

consequences of that use since the prior calibration. The inspectors also discussed with radiation protection staff the plant's 10 CFR Part 61 source term (radionuclide mix) to determine if the calibration sources used were representative of the plant source term and to verify that difficult to detect nuclides were scaled into whole body count dose determinations.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program (CAP) documents including condition reports and any special reports that involved personnel contamination monitor alarms due to personnel internal exposures to verify that identified problems were entered into the corrective action program for resolution. Licensee self-assessments, audits, condition reports and associated CAP records were also reviewed to verify that problems with radiological instrumentation or self-contained breathing apparatus were identified, characterized, prioritized, and resolved effectively using the corrective action program.

The inspectors reviewed CAP reports related to exposure significant radiological incidents that involved radiation monitoring instrument deficiencies since the last inspection in this area, as applicable. Members of the radiation protection staff were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes; and
- Identification and implementation of effective corrective actions.

The inspectors determined if the licensee's self-assessment and audit activities completed for the 2-year period that preceded the inspection were identifying and addressing repetitive deficiencies or significant individual deficiencies in problem identification and resolution, as applicable.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.5 Radiation Protection Technician Instrument Use

a. Inspection Scope

The inspectors selectively verified that calibrations for those radiation survey instruments recently used by the licensee and for those currently designated for use had not lapsed. The inspectors selectively reviewed instrument issue logs for several months in 2005 to verify that response checks of portable survey instruments and checks of instruments used for unconditional release of materials and workers from the RCA were completed prior to instrument use or daily, as required by the licensee's procedure. The inspectors also discussed instrument calibration methods and source response check practices with radiation protection staff and observed staff complete instrument source checks prior to use.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.6 Self-Contained Breathing Apparatus (SCBA) Maintenance/Inspection and User Training

a. Inspection Scope

The inspectors reviewed aspects of the licensee's respiratory protection program for compliance with the requirements of Subpart H of 10 CFR Part 20 and to determine if self-contained breathing apparatus (SCBA) were properly maintained and ready for emergency use. The inspectors reviewed records of inspection and functional tests for all SCBAs staged in the plant that were required by the licensee's emergency plan. The inspectors verified the licensee's capabilities for refilling and transporting SCBA air bottles to and from the control room during emergency conditions. The inspectors verified that all control room staff designated for the active on-shift duty roster including those individuals on the station's fire brigade were trained, respirator fit tested, and medically certified to use SCBAs. Additionally, the inspectors reviewed SCBA qualification records for all members of the licensee's radiological emergency teams including the radiation protection, chemistry, and maintenance staffs to determine if a sufficient number of staff were qualified to fulfill emergency response positions consistent with the licensee's emergency plan and the requirements of 10 CFR 50.47. The inspectors also reviewed the respiratory protection training lesson plan to assess its overall adequacy relative to Subpart H of 10 CFR Part 20 and to verify that personal SCBA air bottle change-out was adequately covered as part of the lesson plan.

The inspectors walked down spare SCBA air bottle stations located outside the main control room and in the operations support center and inspected SCBA equipment maintained in the control room and staged for emergency use in various other areas of the plant. During the walkdowns, the inspectors examined several SCBA units to assess their material condition, to verify that air bottle hydrostatic tests were current, and to verify that bottles were pressurized to meet procedural requirements. The inspectors reviewed records of SCBA equipment inspection and testing and observed a

member of the licensee's staff demonstrate the methods used to conduct the inspections and functional tests to determine if these activities were performed consistent with procedure and the equipment manufacturer's recommendations. The inspectors also ensured through record reviews that the required air cylinder hydrostatic testing was documented and current, that the Department of Transportation required retest air cylinder markings were in place for numerous randomly selected SCBA units and spare air bottles, and that the air quality for the compressor used to fill SCBA air bottles was routinely tested to verify Grade-D quality. Additionally, the inspectors reviewed Mine Safety Appliance certified training certificates for those licensee staff that performed repairs of SCBA pressure regulators to determine if those personnel that performed maintenance on components vital to equipment function were qualified.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

.1 Surveillance Program for the Waste Gas Holdup Explosive Gas Monitoring System

a. Inspection Scope

The inspectors reviewed the quality control program for the Automatic Gas Analyzer (AGA) system (a.k.a. Waste Gas Holdup Explosive Gas Monitoring System) to assess compliance with station TSs. Specific areas of focus included review of 2005 daily channel check records, equipment functional tests and annual equipment calibrations, and compliance with Limiting Condition of Operation action statements during periods of equipment inoperability.

b. Findings

Introduction

An inspector-identified finding of very low safety significance and an associated violation of NRC requirements were identified for the failure to perform an adequate "channel check" of the automatic gas analyzer oxygen channel on several occasions in 2005, as required by TS.

Description

Licensee procedure 12-THP-4030-023-516 "AGA Daily, Monthly and Quarterly Requirements" requires, in part, that the in-service oxygen monitor of the AGA be assessed to ensure that the oxygen concentrations in the waste gas system are consistent with normal system trends. This procedure ensures compliance with the TS

surveillance requirement for a channel check once every 24 hours. A "channel check" is defined by TS as a "...qualitative assessment of channel behavior during operation by observation."

The inspectors identified instances in March 2005 and between July 25th to August 8th 2005, when the in-service oxygen channel was reading zero or negative values on all four modules; however, the licensee declared channel performance satisfactory and did not investigate the anomalous readings. Consequently, the licensee failed to adequately assess actual channel performance.

Analysis

The failure to perform an adequate "channel check" once every 24 hours for the automatic gas analyzer oxygen channel as required by TS represented a performance deficiency as defined in NRC Inspection Manual Chapter (IMC) 0612 "Power Reactor Inspection Reports," Appendix B, "Issue Screening." The inspectors determined that if left uncorrected the issue could become a more significant safety concern, because this monitor provides early indication of a potential explosive gas mixture in the waste gas decay system. Therefore, the issue was more than minor and represented a finding, which was evaluated using the Significance Determination Process (SDP).

The finding involved a problem with the licensee's operability assessment for equipment used to determine oxygen concentrations in the waste decay system. This condition had the potential to adversely impact the control of radioactive gaseous effluents. Therefore, the inspectors utilized IMC 0609, Appendix D, "Public Radiation Safety SDP," to assess its significance. This issue represented a finding of very low safety significance because alternate methods were available to assess the potential for an explosive gas mixture in the waste decay system and therefore there was minimal actual risk to the public.

Enforcement

Technical Specification Surveillance Requirement 4.3.3.9 requires each explosive gas monitoring instrumentation channel be demonstrated operable by performance of the channel check, daily. Technical Specification 1.10 defines "channel check" as a qualitative assessment of channel behavior during operation by observation. Contrary to these requirements, there were several instances in March 2005 and between July 25th to August 8th 2005, when the in-service oxygen channel exhibited anomalous readings, yet the licensee declared channel performance satisfactory, without an adequate assessment of actual channel performance.

Corrective actions planned by the licensee included enhancing the applicable procedure that governs the daily channel check of the oxygen monitor channel of the automatic gas analyzer to include more specific direction to plant staff on equipment acceptance criteria. Since the licensee documented this issue in its corrective action program (CR 06012095) and because the violation is of very low safety significance, it is being treated as a Non-Cited Violation (NCV 50-315/2006003-01; 50-316/2006003-01).

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Cornerstone: Initiating Events

.1 Unplanned Scrams per 7000 Critical Hours and Unplanned Scrams with Loss of Normal Heat Removal

a. Inspection Scope

The inspectors verified the Unplanned Scrams per 7000 Critical Hours and the Unplanned Scrams with Loss of Normal Heat Removal performance indicators for both units. The inspectors reviewed each Licensee Event Report (LER) from January 1, 2004, through December 31, 2005, determined the number of scrams that occurred, evaluated each of the scrams against the performance indicator definitions, and verified the licensee's calculation of critical hours for both units.

b. Findings

No findings of significance were identified.

.2 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors verified the Unplanned Transients per 7000 Critical Hours performance indicator for both units. The inspectors reviewed power history data for both operating units from January 1, 2004, through December 31, 2005, determined the number of power changes greater than 20 percent full power that occurred, evaluated each of those power changes against the performance indicator definition, and verified the licensee's calculation of critical hours for both units.

b. Findings

No findings of significance were identified.

Cornerstone: Mitigating Systems

.3 Safety System Functional Failures

a. Inspection Scope

The inspectors verified the Safety System Functional Failures Performance Indicator for both units. The inspectors reviewed each LER from July 1, 2004 through December 31, 2005, determined the number of safety system functional failures that occurred, evaluated each LER against the performance indicator definitions, and verified the number of safety system functional failures reported.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action system at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Some minor issues were entered into the licensee's corrective action system as a result of inspectors' observations, which are not discussed in this report.

b. Findings

No findings of significance were identified.

.2 Annual Sample Review

a. Inspection Scope

The inspectors completed two inspection annual review samples by selecting the following condition reports for in-depth review:

- C CR 05312013, "D. C. Cook Unit 2 Experienced an Automatic Reactor Trip Due to Reactor Coolant Pump Bus Undervoltage"
- C CR 06033056, "Steam Generator 2-2 Level Transient During Transmitter Calibration"

The inspectors verified the following attributes during their review of the licensee's corrective actions for the above condition reports and other related condition reports:

- C complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- C consideration of the extent of condition, generic implications, common cause and previous occurrences;
- C evaluation and disposition of operability/reportability issues;
- C classification and prioritization of the resolution of the problem, commensurate with safety significance;
- C identification of the root and contributing causes of the problem; and
- C identification of corrective actions which were appropriately focused to correct the problem.

The inspectors discussed the corrective actions and associated condition report evaluations with licensee personnel.

b. Assessment and Observations

b.1 Root Cause Evaluation for the Unit 2 Automatic Reactor Trip Due to Reactor Coolant Pump Undervoltage

No findings of significance were identified. However, the inspectors found that the root cause evaluation did not correctly evaluate the cause for an EDG output breaker malfunction and did not identify appropriate corrective actions to prevent recurrence for the condition.

On November 8, 2005, the Unit 2 reactor automatically tripped due to reactor coolant pump bus undervoltage. The undervoltage condition resulted from a rapid loss of excitation on the main generator field, caused by poor brush contact with the exciter slip rings. Following the reactor trip, reactor coolant pump bus power was automatically transferred to off-site power via the reserve auxiliary transformers as expected. The Unit 2 AB EDG ('B' Train) started as a result of the undervoltage condition and energized bus T21A; however, the EDG output breaker supplying bus T21B (breaker T21B4) failed to close. A second breaker malfunction occurred about 1 hour and 10 minutes after the reactor trip when the Unit 2 AB EDG output breaker to bus T21A (breaker T21A11) tripped open and then re-closed 23 seconds later. The NRC dispatched a Special Inspection Team to evaluate the facts and circumstances surrounding the event. The results of that inspection were documented in NRC Inspection Report 05000316/2005013.

The licensee took immediate measures to evaluate the event and initiated appropriate immediate corrective actions. Those actions included the replacement of brushes and brush holders on the Unit 2 main generator exciter, repairs to the Unit 2 main generator exciter slip rings, and verification of proper brush installation on both the Unit 1 and Unit 2 main generators and main generator exciters. Actions to address the two breaker malfunctions included replacing an incorrectly installed wire lug on a breaker test switch connection for the T21B4 breaker and additional wiring inspections, replacing a failed relay in the breaker closing circuit for the T21A11 breaker, and functionally testing the currently installed T21B4 breaker. The licensee had not yet completed its root cause evaluation at the conclusion of the special inspection and had not yet formulated other corrective actions in response to the event. The root cause evaluation was subsequently completed and the inspectors reviewed it during this inspection period.

The inspectors had the following observations regarding the root cause evaluation:

- (1) The licensee's Corrective Action Review Board (CARB) rejected the root cause evaluation several times and provided direction to the evaluation team and management co-sponsors before the evaluation was approved. The CARB approved Revision 3 of the root cause evaluation on January 27, 2006.
- (2) The root cause evaluation collectively reviewed the cause for the reactor trip and the causes for each of the two Unit 2 AB EDG output breaker malfunctions. The

root cause evaluation identified one root cause and one significant condition adverse to quality. The root cause and significant condition adverse to quality were associated with the cause for the reactor trip and involved inadequate preventive maintenance on the main generator exciter brushes. The inspectors noted that the two EDG output breaker malfunctions were not considered by the licensee to be significant conditions adverse to quality even though the breaker malfunctions rendered important safety-related equipment inoperable, challenged operators, and complicated the event response.

- (3) During the special inspection, the inspectors identified a Non-Cited Violation of TS 3.8.1, because the licensee had failed to perform adequate post maintenance testing after installing a design modification that resulted in the failure of EDG output breaker T21B4 to automatically close on demand. The Unit 2 AB EDG was rendered inoperable due to the breaker malfunction and this resulted in two examples of exceeding TS allowed outage times.

However, during review of the root cause evaluation the inspectors noted that the T21B4 breaker malfunction was not considered by the licensee to be a significant condition adverse to quality and while appropriate immediate corrective actions for the breaker malfunction were implemented, no corrective actions to prevent recurrence for the inadequate post maintenance testing were identified in the root cause evaluation and entered into the licensee's corrective action program. The inspectors also found a statement in the root cause evaluation that appeared to refute the violation. The statement read: "While the modification work revealed the defect, this event does not support the need for additional programmatic controls related to the potential impact of modification activities on installed plant equipment." The defect referred to in the root cause evaluation was a pre-existing incorrectly installed wire lug that was disturbed during installation of the modification.

The inspectors discussed the above observations with the licensee's regulatory affairs staff. In response to the inspectors' questions, the regulatory affairs staff reviewed the root cause evaluation and related condition reports with respect to the inadequate post maintenance testing finding and concurred that the finding was not adequately addressed in the root cause evaluation or in the corrective action program. The licensee wrote CR 06047031 to enter this issue into its corrective action program. The inspectors noted that the licensee had previously written a condition report (CR 05322007) to document the observations and findings resulting from the special inspection. The inspectors concluded that, given sufficient time, the regulatory affairs staff could reasonably have identified this issue independently during its review of CR 05322007. For this reason, the inspectors considered the licensee's failure to correctly evaluate the cause for the EDG output breaker malfunction and to identify appropriate corrective actions to prevent recurrence for the condition to be a minor issue. However, the inspectors noted that the CARB's review of the root cause evaluation did not identify this issue and the regulatory affairs review was to be performed after the root cause evaluation was approved by the CARB.

4OA3 Event Followup (71153)

- .1 (Closed) LER 50-316/2005-001-00: "Reactor Trip From RCP Bus Undervoltage Signal Complicated by Diesel Generator Output Breaker Failure." On November 8, 2005, the Unit 2 reactor automatically tripped and both of the Unit 2 AB ('B' Train) EDG output breakers malfunctioned. The reactor tripped due to reactor coolant pump bus undervoltage. The undervoltage condition resulted from a rapid loss of excitation on the main generator field, caused by poor brush contact with the exciter slip rings. Following the reactor trip, reactor coolant pump bus power was automatically transferred to off-site power via the reserve auxiliary transformers as expected. The Unit 2 AB EDG started as a result of the undervoltage condition and energized bus T21A; however, the EDG output breaker supplying bus T21B failed to close. A second breaker malfunction occurred about 1 hour and 10 minutes after the reactor trip when the Unit 2 AB EDG output breaker to bus T21A tripped open and then re-closed 23 seconds later. The Unit 2 CD ('A' Train) EDG had been removed from service for scheduled maintenance just before the event. On November 18, 2005, the NRC completed a Special Inspection at the D. C. Cook Nuclear Plant to evaluate the facts and circumstances surrounding this event. Two Green findings, one of which had an associated Non-Cited Violation, were documented in NRC Inspection Report 05000316/2005013. The inspectors determined that the information provided in LER 50-316/2005-001-00 did not raise any new issues or change the conclusion of the initial review. The inspectors' review of the root cause evaluation for the reactor trip is discussed above in Section 4OA2.2. This LER is closed.

4OA5 Other

- .1 Review of Institute of Nuclear Power Operations (INPO) Assessment Report

The inspectors completed a review of the final INPO evaluation for the D.C. Cook Nuclear Plant assessment conducted in July 2005. During this review, the inspectors did not identify any new safety significant issues.
- .2 Temporary Instruction 2515/161 - Transportation of Reactor Control Rod Drives In Type A Packages
 - a. Inspection Scope

The inspectors conducted interviews and reviewed shipment logs to verify that: (1) the licensee had undergone refueling activities since calendar year 2002; and (2) did not ship irradiated control rod drive mechanisms in Department of Transportation Specification 7A, Type A packages during the time frame 2002 to the present.
 - b. Findings

No findings of significance were identified.

.3 Implementation of Temporary Instruction (TI) 2515/165 - Operational Readiness of Offsite Power and Impact on Plant Risk

a. Inspection Scope

The objective of TI 2515/165, "Operational Readiness of Offsite Power and Impact on Plant Risk," was to confirm, through inspections and interviews, the operational readiness of offsite power systems in accordance with NRC requirements. On March 7 through 21, 2006, the inspectors reviewed licensee procedures and discussed the attributes identified in TI 2515/165 with licensee personnel. In accordance with the requirements of TI 2515/165, the inspectors evaluated the licensee's operating procedures used to assure the functionality/operability of the offsite power system, as well as, the risk assessment, emergent work, and/or grid reliability procedures used to assess the operability and readiness of the offsite power system. The information gathered while completing this TI was forwarded to the Office of Nuclear Reactor Regulation for further review and evaluation.

b. Findings

No findings of significance were identified.

.4 (Closed) Violations 05000315/316/2005)06-01, 02, and 03: "Failure to Accurately Report Completion of Corrective Actions from a Previous Severity Level III Violation," "Failure to Provide Complete and Accurate Information about Operators' Health Status", and "Failure to Report a Change in Operator Medical Status."

Corrective actions associated with NRC issued Notice of Violation (NOV) EA-05-171 were reviewed. On November 23, 2005, the NRC issued a Notice of Violation EA-05-171 and proposed a Civil Penalty of \$60,000 to the Indiana Michigan Power Company associated with two violations of 10 CFR 50.9, "Completeness and Accuracy of Information," and one violation of 10 CFR 50.74, "Notification of Change in Operator or Senior Operator Status". The violations were identified during an NRC inspection (NRC Inspection Report 05000315/2005006) conducted at D. C. Cook in the spring and summer of 2005 to review the plant's reactor operator licensing program. NRC inspectors identified three violations: (1) the utility had provided the NRC with incomplete and inaccurate information. The utility stated that a complete review of all operator medical records had been conducted and that no records that would require restrictions to operator licenses for medical reasons had been found. However, NRC inspectors identified three licensed operators who had medical conditions that would require their licenses to be restricted; (2) the utility had failed to notify the NRC about licensed operators experiencing a permanent illness within 30 days. Two NRC-licensed operators at the plant were diagnosed with potentially disqualifying medical conditions in 1998 and 2003. However, the NRC was not notified of these facts until 2005; and (3) the utility also failed to provide the NRC with complete and accurate information on NRC reactor license applications. Applications submitted to the NRC for new, renewed and amended NRC licenses did not describe the individuals' recently diagnosed medical conditions that would affect the conditions of these licenses. The licensee has implemented corrective actions and the NRC evaluated the effectiveness of those corrective actions during this inspection. The corrective action were evaluated as

having been effective based on a review of current operator training material, medical records, and reporting practices. Therefore, violations VIO 05000315/316/2005006-01 (Failure of the licensee to accurately report the completion of corrective actions from a previous SLIII violation in 2004.); VIO 05000315/316/2005006-02 (Failure to provide accurate and complete information about operators' health prior to the NRC performing a licensing action.); and VIO 05000315/316/2005006-03 (Failure of the licensee to report the change in operator medical status.) will be closed.

4OA6 Meetings

.1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. L. Weber and other members of licensee management at the conclusion of the inspection on April 6, 2006. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. Proprietary information was examined during this inspection, but is not specifically discussed in this report.

.2 Interim Exit Meetings

Interim exits were conducted for:

- C Occupational radiation safety program for radiation monitoring instrumentation and protective equipment and aspects of the effluent monitoring program with Mr. J. Jensen on January 13, 2006.
- C Biennial operator requalification program inspection with Mr. J. Jensen on March 10, 2006.
- C Annual operator requalification examination results inspection with Mr. T. Vriezema on March 20, 2006.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

D. Burgoyne, Regulatory Affairs Specialist
R. Crane, Acting Regulatory Affairs Supervisor
H. Etheridge, Regulatory Affairs Specialist
D. Fadel, Engineering Vice President
R. Gillespie, Operations Training Manager
W. Hart, Radiation Protection General Supervisor
J. Jensen, Site Vice President
L. Johns, Acting Chemistry Manager
R. Lingle, Assistant Plant Manager/Operations Director
B. Mammoser, Design Engineering
R. Meister, Regulatory Affairs Specialist
M. Scarpello, Regulatory Affairs Supervisor
R. Serocke, Radiation Protection Superintendent
S. Simpson, Safety Assurance Director
S. Vazquez, Engineering Programs Manager
T. Vriezema, Operations Requalification Training Supervisor
B. Wallace, Learning Organization Manager
L. Weber, Plant Manager
V. Woods, Performance Assurance Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000315/2006003-01 05000316/2006003-01	NCV	Failure to Perform Adequate Checks of the Automatic Gas Analyzer System Oxygen Monitor Channel (Section 2PS1.1)
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Closed

05000315/2006003-01 05000316/2006003-01	NCV	Failure to Perform Adequate Checks of the Automatic Gas Analyzer System Oxygen Monitor Channel (Section 2PS1.1)
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50-316/2005-001-00	LER	Reactor Trip From RCP Bus Undervoltage Signal Complicated by Diesel Generator Output Breaker Failure (Section 4OA3.1)
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05000315/2005006-01 05000316/2005006-01	VIO	Failure to Accurately Report Completion of Corrective Actions from a Previous Severity Level III Violation (Section 4OA5.4)
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05000315/2005006-02 05000316/2005006-02	VIO	Failure to Provide Complete and Accurate Information about Operators' Health Status (Section 4OA5.4)
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05000315/2005006-03 05000316/2005006-03	VIO	Failure to Report a Change in Operator Medical Status (Section 4OA5.4)
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Discussed

05000315/2005004-01 05000316/2005004-01	URI	Potential External and Internal Flooding Impact on Safe Shutdown Equipment (Section 1R06.1)
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LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors 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 in this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R01 Adverse Weather Protection

- C PMP-5055-SWM-001, "Severe Weather Guidelines," Revision 1
- C 12-OHP-4022-001-010, "Severe Weather," Revision 4
- C PMP-4010-ODM-001, "Operational Decision Making," Data Sheet 1, "Operational Decision Making Checklist: High Winds/Rough Lake Conditions," February 12, 2006

1R04 Equipment Alignment

- C D. C. Cook Updated Final Safety Analysis Report, Revision 20
- C 2-OHP-4021-032-008CD, "Operating DG2CD Subsystems," Revision 8
- C OP-2-5151D, "Flow Diagram Emergency Diesel Generator 'CD' Unit No. 2," Revision 61
- C OP-2-5151C, "Flow Diagram Emergency Diesel Generator 'CD' Unit No. 2," Revision 47
- C CR 05248002, "Hanger for Tubing Tray Is Not Made Up," September 9, 2005
- C OP-1-5142, "Flow Diagram Emergency Core Cooling (SIS)," Revision 43
- C OP-1-5129, "Flow Diagram CVCS - Reactor Letdown and Charging Unit No. 1," Revision 53
- C OP-1-5129A, "Flow Diagram CVCS - Reactor Letdown and Charging, Sheet 2 of 2," Revision 33
- C Statistics for the CVCS System, Corrective, Preventive and Elective Maintenance, February 2, 2006
- C CR 03237027, "Valve 1-QMO-200 Unit 1 CVCS Charging to Regenerative Heat Exchanger Train A Isolation Valve Has Dry Boric Acid on the Stem from a Packing Leak," August 8, 2003
- C CR 04172015, "Surveillance Test for 1-QMO-226 (W' Charging Pump Mini-flow Valve) Not Performed," June 20, 2004
- C SD-003000, Chemical and Volume Control System Description, Revision 4
- C 01-OHP-4021-003-001, "Letdown, Charging and Seal Water Operation," Revision 36
- C 01-OHP-4021-008-002, "Placing Emergency Core Cooling System in Standby Readiness," Revision 17
- C 02-OHP-4021-017-002, "Placing In Service the Residual Heat Removal System," Revision 17
- C 02-OHP-4021-017-001, "Operation of the Residual Heat Removal System," Revision 15
- C OP-2-5143, "Flow Diagram Emergency Core Cooling (RHR)," Revision 62

1R05 Fire Protection

- C D. C. Cook Fire Hazards Analysis, Units 1 and 2, Revision 12
- C PMP-2160-CWM-002, "Chemical Waste Management, Data Sheet 1: Waste Storage Permit," Revision 6

- C Fire Pre-Plan, Units 1 and 2, (Fire Zones 1B, 31, 32, 34A, 77, 78, 102, 110, 123), Revision 2

1R06 Flood Protection

- C D. C. Cook Updated Final Safety Analysis Report, Revision 20
- C OP-12-5125-49, "Flow Diagram Station Drainage - Turbine Room, Unit 1 & 2," Revision 49
- C Calculation MD-12-CW-005-N, "Flooding Due to Circulating Water Expansion Joint Failure," Revision 1
- C Job Order 04048044-01, "12-DR-129 - Investigate and Repair Flap Valve," February 19, 2004
- C CR 03234074, "CR 99-29555 Is Back-Log CAT.X CR that Should Potentially Be Considered a Condition Adverse to Quality," August 22, 2003
- C CR 04048044, "During Inspection of 12-DR-129, the Valve Was Found Out of Position," February 16, 2004
- C CR 04321007, "The Preventive Maintenance Program for the Turbine Sump Structure Needs to Be Revised to Include the 12-DR 129 Flapper Valve," November 16, 2004
- C CR 05158029, "Determine if a Functional Test Needs to Be Created," June 7, 2005
- C CR 05179011, "NRC Identified that CR 04321007 Was Closed Without the Action Taken That Was Documented as Taken, Which Was Create a PM Task for 12-DR-129," June 28, 2005
- C CR 05181220, "NRC Resident Identified Incorrect Information in Condition Report 03234074 Operability Determination," June 30, 2005
- C CR 05210173, "There are Apparent Discrepancies Regarding the Flood Protection Elevation for the Plant," July 29, 2005
- C CR 05210173, "Discrepancies Regarding the Flood Protection Elevation for the Plant," July 29, 2005
- C CR 05228056, "During Job Order 02309012 Activity 2, the as found Visual Inspection of 12-DR-129 Identified a Slight Gap Between the Flapper Valve and the Valve Set," August 4, 2005
- C CR 05308066, "Contrary to Section 10.6 of the UFSAR the Screen House is not Flood Protected to Elevation 595.0," November 4, 2005
- C CR 06065008, "Engineering Gave the Operations Department Incorrect Information for the Operations Reviewer Comments for the Operability Call Documented in CR 04048044," March 6, 2006

1R11 Licensed Operator Requalification Program

- C Lesson Plan RQ-C-3040, "LOR Period 3004 Ops Review"
- C TI-TROP-02, "Administrative Requirements for NRC License and Medical Requirements," Revision 8
- C OHI-2071, "Reporting Reassignment, Termination, and Conditions Potentially Affecting Performance of Licensed Duties," Revision 9
- C TPD-600-LOR, "Licensed Operator Requalification Training Program Description," Revision 11
- C CR 05109063, The NRC was on site to review actions, to closeout a non-cited violation related to reporting licensed operator medical conditions. The NRC raised a concern regarding a licensed operator medical condition, April 19, 2005

- C CR 05111059, A review of medical records identified that a currently licensed SRO has a medical condition which may be a disqualifying condition, April 20, 2005
- C CR 05112049, During review of medical records for licensed operators on April 20 and April 21, 2005, it has been determined that CNP needs to provide some additional information to the NRC, April 21, 2005
- C CR 05112045, During review of medical records for licensed operators on April 21, 2005, its has been determined that a currently licensed SRO has a medical condition requiring a license restriction which was not reported at the time of his initial license, April 21, 2005
- C CR 05342076, Donald C. Cook Nuclear Power Plant, Units 1 and 2 NRC Inspection Report 05000315/2005006(DRS); 05000316/2005006(DRS) and Notice of Violation and Proposed Imposition of Civil Penalty - \$60,000, EA-05-171, December 8, 2005
- C CR 05216067, Conduct effectiveness review for the CATPRS from IDACE CR 05109063, August 4, 2005
- C CR 05224028, A potential contributing cause may have been left out of 05109063 "the NRC raised a concern regarding a licensed operator medical condition," August 11, 2005

1R12 Maintenance Effectiveness

- C Maintenance Rule Scoping, Emergency Diesel Generators (EDG), Revision 2
- C Maintenance Rule Evaluation Desktop Guide, Revision 1
- C System Health and Status Report for the Unit 1 Emergency Diesel Generator System, 4th Quarter 2005
- C System Health and Status Report for the Unit 2 Emergency Diesel Generator System, 4th Quarter 2005
- C CR 00316034, "Recurring Incidents of Fuel Injection Pumps Sticking Open when Engine Shutdowns are Attempted Resulting in Failure of the Engines to Shutdown," November 11, 2000
- C CR 02103011, "Unit 1 CD EDG #6 Rear Fuel Injector Appears to be Mechanically Bound," April 13, 2002
- C CR 02147015, "CD Diesel Stuck Open Fuel Injector on the 1 Front Cylinder Upon Unloading the Diesel Following a 16 Hour Maintenance Run," May 27, 2002
- C CR 03341015, "Removed the Unit 2 AB ED from Service by Tripping the HEA Due a Loss of Load and Rapid Load Oscillations of Approximately 200-300 KW," December 7, 2003
- C CR 03342040, "#3 Rear Cylinder Assembly Had Low Temperatures. Investigation Showed Possible Problem with the 3F Fuel Pump," December 8, 2003
- C CR 04124082, "Replace EDG High Pressure Fuel Injection Pumps," May 3, 2004
- C CR 05090019, "AB EDG Fuel Injector 2 Rear Fuel Oil Leak," March 31, 2005
- C CR 05091019, " During Performance of Procedure 1-MOD-35181-TP-1AB EDG 1 AB Governor Replacement Modification Test, the Diesel Was Shutdown Due to Noise Coming from 2R Cylinder," April 1, 2005
- C CR 05095005, "Foreign Material Noted in New Fuel Oil Supply Hose to #2R Cylinder High Pressure Fuel Injection Pump," April 5, 2005
- C CR 05159062, "1AB EDG: Condition Report to Document Maintenance Rule Evaluation," June 8, 2005
- C CR 05173002, "Shutdown DG 2 AB, AB EDG, During PMT Run Due to Leaking Fuel Injector 3F," June 22, 2005

- C CR 05174003, " 30-013250, New Fuel Injection Pumps Were Not Serviceable," June 22, 2005
- C CR 05186001, "Fuel Line Appears to Be Leaking from Weep Hole Associated with 1-PP-163-1R-CD EDG Rear Bank Cylinder #1 Fuel Injection Pump," July 4, 2005
- C CR 05229004, "U1 AB Diesel Has Fuel Oil Weeping Out Weep Hole on Discharge of Injector Pump on 6 Front Bank," August 17, 2005
- C CR 05259058, "Tracking CR to Discuss with the EDG Fuel Injection Pump Vendor (ESI/Haynes) Potential Enhancements to the Fuel Pump Delivery Valve Holder to Provide Additional Margin Against Cracking," September 16, 2005
- C CR 05300006, "Subject: OE21536 - EDG High Pressure Fuel Injection Pump Failure. This Condition Was Identified at Another Facility," October 27, 2005
- C CR 06065008, Engineering Gave the Operation Department Incorrect Information for the Operations Reviewer Comments for the Operability Call Documented in CR 04048044, March 6, 2006

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

- C PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 57, Week 6, February 5 through 11, 2006
- C PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 57, Week 7, February 12 through 18, 2006
- C PMP-4010-ODM-001, "Operational Decision Making," Data Sheet 1, "Operational Decision Making Checklist: Unit 2 #21 RCP Seal Issue," January 20, 2006
- C Infrequently Performed Test Evolution Briefing Guide for Switching and Repair of 345KV Breaker N2 Bus Side Disconnect Switch, February 7, 2006
- C PRA-STUDY-007, "D.C. Cook Nuclear Plant PRA Study - Proposed 345kV Bus 2 Repair Risk Assessment," January 2006

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1R14 Personnel Performance During Non-Routine Plant Evolutions

- C CR 06021008, "CR for Documenting/Tracking of #21 RCP Seal Issue," January 21, 2006
- C CR 06060003, "AOP 2-OHP-4022-001/DIT-S-01396-00 Contradiction," March 1, 2006
- C CR 06059031, "RCP 21 Seal Leakoff < 1.0 gpm," February 28, 2006
- C Shift Manager's Logs, February 28, 2006
- C PMP-4010-ODM-001, "Operational Decision Making," Data Sheet 1, "Operational Decision Making Checklist: Unit 2 #21 RCP Seal Issue," January 20, 2006

1R15 Operability Evaluations

- C D. C. Cook Technical Requirements Manual (TRM), Section 8.7.10, "Fire Rated Assemblies," Revision 1
- C 12-PPP-4030-066-017, "Inspection of Fire Barrier Penetration Seals," Revisions 0 through 4
- C CR 05343073, "Past and Current Operability Call in CR 04232032 Lacks Sufficient Basis and Does Not Demonstrate Literal Compliance with TRM," December 8, 2005

- C CR 05343009, "Corrective Action CR 02221018-11 Inappropriately Revised Procedure 12-PPP-4030-066-017, 'Inspection of Fire Barrier Penetration Seals,' Which Results in a Conflict Between the Technical Requirements Manual and the Procedure," December 9, 2005
- C CR 04232032, "Fire Penetration Seals Have Not Been Inspected by Penetration Type as Required by Surveillance Requirement 1-FP-7.1.d, Although the Inspection Approach Used Has Been More Conservative," August 19, 2004
- C CR 05326062, "Inspection Found 5 tubes Blocked with Sand/Silt," November 22, 2005
- C CR 06013029, "Leakage Past 2W-CCP Inboard Mechanical Seal Shaft Sleeve," January 13, 2006
- C CR 06017004, "Unit 2 Experienced a Loss of MCC 2-ABD-C Due to Electrical Component Failure," January 17, 2006

1R19 Post Maintenance Testing

- C CR 05336046, NRC Resident Inspector Questioned SDG Surveillance Testing Criteria, December 2, 2005
- C Job Order 05136082, Replace 4KV Breaker 2-T21A7, January 18, 2006
- C 12-IHP-5021-EMP-080, Eaton/Cutler-Hammer 4KV Circuit Breaker Maintenance, Revision 3

1R20 Refueling and Outage Activities

- C Infrequently Performed Test Evolution Briefing Guide for U2C16 Movement of New Fuel from New Fuel Vault to Spent Fuel Pool, February 9, 2006

1R22 Surveillance Testing

- C 1-IHP-4030-SMP-126, "Lower Containment Pressure Protection Set IV Chanel Operational Test," Revision 5
- C 1-OHP-4030-116-020W, "West Component Cooling Water Loop Surveillance Test," Revision 2
- C OP-1-5135, "Flow Diagram CCW Pumps and CCW Heat Exchangers," Revision 41
- C CR 05154012, "2-VCR-20 Stroked Too Slowly on the Initial Stroke Closed. Immediate Retest Was Satisfactory," June 3, 2005
- C CR 05335041, "2-VCR-20 Failed Stroke Time During 2-OHP-4030-STP-011, Attachment 9," December 1, 2005
- C Job Order 05335041-01, "2-VCR-20, Investigate/Repair Failed Stroke Time," December 1, 2005
- C 2-OHP-4030-STP-011, "Containment Isolation and ISI Valve Operability Test," Attachment 9, "Ice Condenser Test Valves," Revision 23
- C Shift Manager's Logs, December 1, 2005

1R23 Temporary Modifications

- 12-TM-06-10-R0, "Install a Rigid Plastic Pipe Cap Cover on the Outlet End Overflow/Vent Pipe of the 1(2)-TK-33, Unit 1 and Unit 2 RWST that Extends Inside the Auxiliary Building," February 22, 2006

- 12-TM-04-03-R0 & 2-TM-04-02-R0, "Unit 2 RWST 10" Overflow Piping Temporary Modification Extensions", April 22, 2004
- Job Order 06049003-03, "2-TK-33 Install Cover on 10" Overflow Line Per Temporary Modification," February 24, 2006
- Job Order 060490003-06, "1-TK-33 Install Cover on 10" Overflow Line Per Temporary Modification," February 24, 2006
- CR 04006004, "Received Annunciator 221 Drop 89 (RWST Piping Temperature Low)," January 6, 2004
- CR 04176026, "Install Insulation on the Remaining Portion of the Unit 1 and Unit 2 RWST Overflow Vent Piping That Is Not Insulated to Reduce the Conduction of Cold Temperatures to the Top of the Vent," June 24, 2004
- CR 06049003, "Received Annunciator 221 Drop 89 RWST Piping Temperature Low. All Outside Heat Trace Circuits Are Currently Double Trained and In Service. Lowest Temperature Is 75f Which Is at Setpoint. Outside Temperature Is 5.4F," February 18, 2006
- CR 05062047, "Annunciator 221 Drop 89, Unit 2 RWST Pipe Temperature Low, Has Been Inoperable Since January 28, 2005. Work Control Currently Has no Direction to Restore this Alarm to an Operable Status," March 3, 2005

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

- C 12-THP-6010-RPC-810, Eberline Radiation Monitoring System Channel Restoration; Revision 8
- C 12-THP-6010-RPC-818, Eberline Radiation Monitoring System DA1-8 Area Monitor Calibration; Revision 2
- C Calibration Record for Channel 2-ERA-8402, Unit 2 In-Core Instrument Room Area Radiation Monitor; May 27, 2005
- C Calibration Record for Channels 2-ERS-2301/2401, Unit 1/2 Containment Building Continuous Air Monitor Beta Detectors; dated December 13 2004/November 18, 2005
- C Calibration Record for Channel 1-ERA-7309, Unit 1 Reactor Coolant Filter Cubicle Radiation Monitor; November 11, 2004
- C Calibration Record for Channel 1-ERA-7306, Unit 1 West Residual Heat Removal Area Radiation Monitor; August 18, 2005
- C Calibration Record for Channel 8403, Auxiliary Building 609' Elevation Common Passageway; May 16, 2005
- C 12-THP-6010-RPC-566, Source Characterization and Verification for the J. L. Shepherd Models M89 and M142; Revision 7
- C Global Calibration Laboratory Calibration Record; Ion Chamber/Electrometer used for Instrument Calibrator Output Verifications; March 14, 2005
- C 12-THP-6010-RPC-572, Calibration of the Gamma-40 and Gamma-60 Portal Monitors; Revision 3
- C Shepherd Model 89 Exposure Rate Verification Data Sheet, February 8, 2005
- C 12-THP-6010-RPC-590, Calibration of the APTEC PMW-3 Personnel Monitor; Revision 3
- C 12-THP-6010-RPC-593, Calibration of the Eberline PM-7 Portal Monitor; Revision 01
- C Eberline PM-7 Calibration Data Sheets for PM7-1 (dated April 7, 2005), PM7-2 (dated June 7, 2005), PM7-3 (dated September 28, 2005), PM7-4 (dated September 28, 2005), and PM7-5 (dated December 11, 2005)

- C APTEC PMW-3 Personnel Monitor Calibration Data Sheets for PMW -1 (dated January 25, 2005), PMW-2 (dated May 23, 2005), PMW-3 (dated August 30, 2005), PMW-4 (dated March 14, 2005), PMW-5 (dated October 22, 2005), and PMW-6 (dated April 29, 2005)
- C Gamma-60 Portal Monitor Calibration Data Sheet for Monitor POR-454 (dated August 16, 2005), and POR-492 (dated March 4, 2005)
- C 12-THP-6010-RPI-500, Instrument Issue and Operational Testing; Revision 21
- C 12-THP-6010-RPC-534, Calibration of the Canberra Fastscan Whole Body Counter; Revision 2
- C Calibration Data Sheets for Fastscan Whole Body Counter (FS-2); March 31, 2005
- C Canberra Report of the Fastscan (FS-1) Whole Body Count System Calibration, December 16, 2005
- C 1-THP-6030-IMP-311, Calibration Record for the High Range Containment Radiation Monitor VRA-1310; September 22, 2004
- C 1-THP-6030-IMP-312, Calibration Record for the High Range Containment Radiation Monitor VRA-1410; September 15, 2004
- C 2-THP-6030-IMP-411, Calibration Record for the High Range Containment Radiation Monitor VRA-2310; December 15, 2004
- C 2-THP-6030-IMP-412, Calibration Record for the High Range Containment Radiation Monitor VRA-2410, June 17, 2004
- C SPP-2281-RES-201, Maintenance and Repair of Respiratory Devices; Revision 2
- C SCBA Bottle Air Compressor Breathing Air Quality Test Data Sheets; dated various periods in 2004 - 2005
- C Mine Safety Appliance Certified CARE Technician Training Certificates for various D.C. Cook staff; July 1, 2005
- C SCBA Regulator Calibration Data Sheets (ProCheck3 Test Results) for numerous SCBA Units; dated various periods in 2004 - 2005
- C CR 05282023, Use History Analysis for Personnel Contamination Monitor Detector Failed As Found Data; October 9, 2005
- C CR 05130026, RMS Channels Went Into Alert Following Source Checks; May 10, 2005
- C CR 05185001, Recommend Further Evaluation of Whole-Body Contamination Monitors and Small Article Monitors; July 4, 2005
- C CR 05318014, Whole Body and Hand/Foot Monitors Throughout Auxiliary Building are Inoperable; November 14, 2005
- C RP-Environmental Quick Hit Self-Assessment, Review of the Radiological and Environmental Monitoring Equipment Reliability; January 10, 2005
- C SA-2004-RPS-002-F, Radiation Protection Department Assessment - Radiation Protection Instrumentation Program; December, 30, 2004
- C PA-05-01, Performance Assurance Audit - Radiation Protection Program; March 10, 2005
- C Radiation Protection Quick Hit Self-Assessment; RP Instrument Program; January 2006

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring

- C 12-THP-4030-023-516, AGA Daily, Monthly, and Quarterly Requirements; Revision 2
- C 12-THP-4030-023-516, AGA Daily, Monthly, and Quarterly Requirements, Attachment 1 Daily Channel Check - Module A; Data Sheets; 2005 Calendar Year
- C 12-THP-4030-023-516, AGA Daily, Monthly, and Quarterly Requirements, Attachment 2 Daily Channel Check - Module B; Data Sheets; 2005 Calendar Year

- C 12-THP-4030-023-516, AGA Daily, Monthly, and Quarterly Requirements, Attachment 3 Monthly Channel Functional Check; Data Sheets; 2005 Calendar Year
- C 12-THP-4030-023-516, AGA Daily, Monthly, and Quarterly Requirements, Attachment 4 AGA Quarterly Calibration, Data Sheets; 2005 Calendar Year
- C AGA Logs; 2005 Calendar Year
- C Chemistry Equipment Related Deficiencies (Work Orders/Work Requests); 2005 Calendar Year
- C Condition Reports, ECAP Search "AGA"; 2005 Calendar Year
- C CR 06012095, Untimely Actions to Address Lower Than Expected Oxygen Trends for AGA Module A during July 20, 2005 through August 8, 2005; January 11, 2006
- C P3 On Line Work Schedule for Chemistry Related Equipment; Search January 11, 2006
- C Power Log Report, Radioactive Waste Disposal; 2005 Calendar Year

40A1 Performance Indicator Verification

- C Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2
- C Licensee Event Reports, January 1, 2004 through December 31, 2005
- C Control Room Logs, January 1, 2004 through December 31, 2005

40A2 Problem Identification and Resolution

- C Root Cause Evaluation for Condition Report 05312013, "Unit 2 RCP Bus Undervoltage Reactor Trip and Diesel Generator Output Breaker Malfunctions," Revision 3
- C Root Cause Evaluation for Condition Report 06033056, "Steam Generator 2-2 Level Transient During Transmitter Calibration," February 2, 2006
- C CR 05312013, "D. C. Cook Unit 2 Experienced an Automatic Reactor Trip Due to Reactor Coolant Pump Bus Undervoltage," November 8, 2005
- C CR 05322007, "Two Observations and Two Findings Resulting from the Special Inspection Following the Unit 2 Reactor Coolant Pump Bus Undervoltage Reactor Trip on November 8 2005," November 18, 2006
- C CR 06047031, "An NRC Finding In NRC Inspection Report 05000316/2005013 Was Determined to Not Be Adequately Captured in the Corrective Action Program," February 16, 2006
- C CR 06004015, "Action Request to Document the Results of the NRC Inspection Report 05000316/2005013 to Provide a Mechanism for Tracking, Cross-referencing, and Reviewing the Corrective Action Taken to Resolve Issues Identified," January 4, 2006
- C CR 06033056, "Steam Generator 2-2 Level Transient During Transmitter Calibration," February 2, 2006

40A3 Event Response

- C LER 50-316/2005-001-00, "Reactor Trip From RCP Bus Undervoltage Signal Complicated by Diesel Generator Output Breaker Failure," January 9, 2006

40A5 Other

- C 12-OHP-4022-082-004, "Degraded Offsite AC Voltage Response," Revision 4
- C OHI-4000, "Conduct of Operations: Standards," Revision 21

- C PMP-2291-OLR-001, "On-Line Risk Management," Revision 9
- C PMP-3100-IOA-001, "Inter-Organizational Agreement Between the AEP Utility Operations and the AEP Nuclear Generation Group Assistance to Cook Nuclear Plant," Revision 2
- C 1-OHP-4024-121, "Annunciator #121 Response: Generator," Revision 15
- C 2-OHP-4024-221, "Annunciator #221 Response: Generator," Revision 15
- C 2-OHP-4021-011-001, "At-Power Operation Including Load Swings," Revision 14
- C 2-OHP-4021-001-003, "Power Reduction," Revision 24

LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents and Management System
AFW	Auxiliary Feedwater
AGA	Automatic Gas Analyzer
ARM	Area Radiation Monitor
CAP	Corrective Action Program
CARB	Corrective Action Review Board
CFR	Code of Federal Regulations
CR	Condition Report
DRS	Division of Reactor Safety
EDG	Emergency Diesel Generator
ESW	Essential Service Water
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
JPM	Job Performance Measures
LER	Licensee Event Report
LORT	Licensed Operator Requalification Training
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
RCA	Radiologically Controlled Area
RCP	Reactor Coolant Pump
RP	Radiation Protection
SAT	Systems Approach to Training
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
SSC	Structures, Systems, and Components
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report