January 25, 2006

EA-04-109
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 05000315/2005012;
05000316/2005012

Dear Mr. Nazar:

On December 31, 2005, 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 findings that were discussed on January 12, 2006 with Mr. J. Jensen 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, no new findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public

Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000315/2005012; 05000316/2005012
w/Attachment: Supplemental Information

cc w/encl: J. Jensen, Site Vice President
L. Weber, Plant Manager
G. White, Michigan Public Service Commission
L. Brandon, Michigan Department of Environmental Quality -
Waste and Hazardous Materials Division
Emergency Management Division
MI Department of State Police
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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.:	05000315/2005012 and 05000316/2005012
Licensee:	Indiana Michigan Power Company
Facility:	D. C. Cook Nuclear Power Plant, Units 1 and 2
Location:	Bridgman, MI 49106
Dates:	October 1, 2005, through December 31, 2005
Inspectors:	B. Kemker, Senior Resident Inspector J. Lennartz, Resident Inspector C. Brown, Reactor Engineer M. Parker, Consultant F. Ramírez, Reactor Engineer R. Jickling, Emergency Preparedness Analyst C. Phillips, Senior Operations Engineer
Approved by:	C. Lipa, Chief Projects Branch 4 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000315/2005-012, IR 05000316/2005-012; 10/01/2005-12/31/2005; D. C. Cook Nuclear Power Plant, Units 1 and 2, Resident Inspector Report.

The report covered a 13-week period of inspection by the resident inspectors and announced inspections by regional inspectors. No new findings of significance were identified. 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

None.

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

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

Unit 2 was operated at or near full power during the inspection period with the following one exception:

- 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 that was caused by poor brush contact with the exciter slip rings. The events and circumstances surrounding this trip were documented in NRC Special Inspection Report 05000316/2005013. Following necessary maintenance activities, plant operators completed reactor startup activities on November 10, 2005, and subsequently returned the plant to full power on November 13, 2005.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

The inspectors completed one inspection sample regarding adverse weather protection by reviewing and assessing activities conducted for the onset of cold weather.

The inspectors reviewed documentation to verify that procedure 12-IHP-5040-EMP-004, "Plant Winterization and De-Winterization," requirements had been completed; toured the east and west main steam enclosure areas to verify that the winterization temporary heating was established as required; toured the outside water storage tank areas (refueling water storage tanks, primary water storage tanks, and condensate storage tanks) and associated valve houses to verify that piping insulation was installed and not damaged, and that the associated heat trace circuits were operable; and, toured the lake screenhouse to verify that winterization heaters were in service.

The inspectors reviewed selected condition reports related to cold weather problems. The inspectors verified that identified problems were entered into the corrective action program with the appropriate significance characterization, and planned and completed corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

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

- Unit 2 east containment spray system train
- Unit 1 east motor driven and turbine driven auxiliary feedwater pumps
- Unit 1 AB emergency diesel generator
- Unit 2 south safety injection system 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, Administrative TS, 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.

In addition, the inspectors verified that equipment alignment problems were entered into the licensee's corrective action program with the appropriate characterization and significance.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors completed eight inspection samples regarding routine fire protection tours by conducting walkdowns in the following risk significant plant areas:

- Unit 1 and 2 corridor to the auxiliary feed pump rooms (fire zone 17C)
- Unit 1 and 2 technical support center (fire zone 126)
- Unit 1 hot shutdown panel (fire zone 144)
- Unit 2 hot shutdown panel (fire zone 145)
- Unit 1 diesel oil pump room (fire zone 21)
- Unit 2 east containment spray pump room (fire zone 1A)
- Unit 2 diesel oil pump room (fire zone 13)
- Unit 1 main steam line area east (fire zone 33A)

The inspectors verified that fire zone conditions were consistent with assumptions in the licensee's Fire Hazards Analysis. The inspectors 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.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07B)

a. Inspection Scope

Regional inspectors reviewed documents associated with maintenance and inspection of the emergency diesel generator lube oil, jacket water, and combustion air aftercooler heat exchangers for both units (the heat exchangers count as three samples). These heat exchangers were chosen based on their function of removing the heat generated by the risk significant emergency diesel generator system. While on site, the inspectors reviewed completed surveillances, associated calculations, eddy current test results, and preventive maintenance activities; and performed independent assessments to verify that these activities adequately ensured proper heat transfer. The inspectors also reviewed documentation to confirm that methods used to inspect the heat exchangers were consistent with expected degradation and that the established acceptance criteria were consistent with accepted industry standards. Heat sink parameters assessed included determination of an adequate ultimate heat sink reservoir, system and subcomponents were free from clogging due to macrofouling, and that the licensee had adequate controls in place for biotic fouling. In addition, the inspectors reviewed condition reports concerning heat exchanger or heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions to the identified issues. The documents that were reviewed are included at the end of the report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

The inspectors completed one inspection sample of licensed operator requalification training by observing a crew of licensed operators during simulator training on October 25, 2005. The inspectors assessed the operator's response to the simulated events that included a large-scale plant fire that resulted in a loss of essential service water pumps and circulating water pumps.

The inspectors verified that the operators were able to effectively mitigate the simulated events through accurate and timely implementation of applicable plant procedures including Annunciator Response Procedure OHP-4024-201, "Plant Fire System," Abnormal Operating Procedure, 2-OHP-4022-019-001, "Essential Service Water

System Loss / Rupture," and Emergency Operating Procedures OHP-4023-E-0, "Reactor Trip or Safety Injection." The inspectors observed the post-training critique to assess the licensee evaluators' and the operating crew's ability to self-identify performance deficiencies. The inspectors also verified that problems identified during the training session were entered into the licensee's corrective action program with the appropriate significance characterization.

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 inspection sample regarding maintenance effectiveness by reviewing the licensee's evaluation of selected degraded performance issues involving the following risk-significant system:

- reactor protection system

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the systems. Specifically, the inspectors independently verified the licensee's evaluation of the systems performance and condition problems with respect to:

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

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

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

- planned maintenance activities for the week of October 3, 2005, which included Unit 2 east residual heat removal pump maintenance and 345 kiloVolt switchyard "K" breaker maintenance;
- planned maintenance on the Unit 2 west component cooling water pump on October 17 and 18, 2005;
- planned maintenance on the Unit 2 CD emergency diesel generator on November 8, 2005;
- planned maintenance activities for the week of November 14, 2005, which included Unit 1 west essential service water pump maintenance, a Unit 2 west residual heat removal train surveillance test, Unit 1 west motor driven auxiliary feedwater pump maintenance, and 345 kiloVolt switchyard "N" breaker maintenance; and,
- planned maintenance activities on Unit 2 for the plant air compressor, the east charging pump and the east component cooling water pump during the week of November 28, 2005.

The inspectors reviewed documented risk evaluations to verify that plant risk assessments were completed as required by 10 CFR 50.65(a)(4) prior to commencing maintenance activities; reviewed the Operations Log and daily maintenance schedules to verify that equipment necessary to minimize plant risk was operable or available as required during the planned maintenance activities; and conducted plant walkdowns to verify that redundant safety-related plant equipment necessary to minimize risk was available for use.

In addition, the inspectors verified that maintenance risk-related problems were entered into the licensee's corrective action program with the appropriate significance characterization. Select 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)

a. Inspection Scope

The inspectors completed one inspection sample regarding personnel performance during non-routine plant evolutions.

On December 12, 2005, Unit 2 control room operators entered abnormal operating procedure 2-OHP-4022-013-012, "Steam Generator Pressure Instrument Malfunction," in response to unexpected alarms symptomatic of a failed bistable for steam generator pressure. The inspectors reviewed control room logs, plant procedures and TSs to verify that operator response was in accordance with procedural requirements and that TS requirements were complied with.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors completed five inspection samples regarding operability evaluations by reviewing the following condition reports (CR):

- CR 05321003, "West ESW (Essential Service Water) Pump Differential Pressure Is in the Alert Range"
- CR 05298095, "Unit Two 650' Containment Airlock Outer Door Failed to Meet Seal Leakage Surveillance Requirement"
- CR 04049051, "Unit 1 and 2 TS LCO (Limiting Condition of Operation) 3.3.3.5.1 for Appendix R Remote Shutdown Instrumentation Wording and Referenced Table Are Inconsistent"
- CR 02017052, "Programmatic Weakness in the Clearance Permit System That Could Circumvent the Load Shed Design Feature"
- CR 05236071, "One of the Two Upper Valve Gear Oil Supply Lines for the 2AB Emergency Diesel Generator Appears to Be Isolated Due to Flow Blockage or a Failed Valve"

The inspectors verified that the condition 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.

1R16 Operator Workarounds (71111.16)

.1 Review of Selected Operator Workarounds

a. Inspection Scope

The inspectors completed one baseline inspection sample regarding operator workarounds. The inspectors evaluated the issue identified in condition report CR05249027, "Auxiliary Building Ventilation," as a potential operator workaround to verify that the functionality of mitigating systems and the operators' response to initiating events were not adversely affected. The inspectors interviewed maintenance and operating department personnel, and reviewed selected procedures and documents.

b. Findings

No findings of significance were identified.

.2 Semiannual Review of the Cumulative Effect of Operator Workarounds

a. Inspection Scope

The inspectors completed one semiannual baseline inspection sample regarding the cumulative effect of operator workarounds. The inspectors reviewed existing operator workarounds, identified control room deficiencies, and known degraded conditions that required compensatory actions by the operators to assess the cumulative effect on:

- the reliability, availability and potential for mis-operation of a system;
- the ability of operators to respond to plant transients or accidents in a correct and timely manner; and
- the potential to increase an initiating event frequency or affect multiple mitigating systems.

The inspectors observed the Work Around Review Board meetings on October 20, and December 15, 2005, to verify that potential workarounds were appropriately characterized in accordance with plant procedure PMP-4010-OWA-001, "Oversight and Control of Operator Workarounds."

In addition, the inspectors reviewed selected condition reports for identified problems associated with operator workarounds. The inspectors verified that the issues were entered into the corrective action program with the appropriate significance characterization and that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

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

- Unit 2 west containment spray system motor operated valves
- Unit 1 west essential service water pump
- Unit 2 west residual heat removal motor operated valve 2-ICM-321
- Unit 2 CD emergency diesel generator agastat relay 2-62-2X-DGCD
- Unit 12 supplemental diesel generators

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 Outage Activities (71111.20)

.1 Unit 2 Forced Outage

a. Inspection Scope

The inspectors completed one inspection sample regarding outage activities.

On November 8, 2005, the licensee entered a forced outage on Unit 2 following a reactor trip. The unit was maintained in Mode 3 (Hot Standby) during the forced outage. Following repairs to the main generator exciter and two emergency diesel generator output breakers that malfunctioned following the event, the licensee performed a reactor startup and synchronized the unit to the grid on November 11, 2005. The NRC dispatched a Special Inspection Team to evaluate the facts and circumstances surrounding the reactor trip. The results of that inspection are documented in NRC Inspection Report 05000316/2005013.

The inspectors evaluated the conduct of forced outage activities to assess the control of plant configuration and management of risk. The inspectors reviewed configuration management to verify that the licensee maintained defense-in-depth commensurate with

the risk plan and reviewed outage work activities to ensure that correct system lineups were maintained for key mitigating systems. The inspectors interviewed operations, engineering, work control, and maintenance department personnel and reviewed selected procedures and documents.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- 2-EHP-4030-266-010, "Unit 2 Control Room Cable Vault Low Pressure CO2 Fire Suppression System Surveillance"
- 2-OHP-4030-217-050W, "West Residual Heat Removal Train Operability Test Modes 1-4"
- 1-OHP-4030-105-002A, "Number 1 Boric Acid Transfer Pump Operability Test"

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 two inspection samples by reviewing the following temporary modifications that were utilized on plant equipment:

- 12-TM-05-27-RO, "Fire Water Storage Tank Level Measurement"
- 12-TM-05-32-RO, "Temporary Systems Installed to Supply Hydrogen to Each Units Volume Control Tank"

The inspectors interviewed engineering, operations and maintenance department personnel, and reviewed the design documents and applicable 10 CFR 50.59 evaluations to verify that TSs and the Updated Final Safety Analysis Report requirements were satisfied. The inspectors reviewed documentation and conducted

plant walkdowns to verify that the modifications were 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.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors performed a screening review of the following revisions of portions of the D. C. Cook Nuclear Power Plant Emergency Plan to determine whether the changes made in these revisions decreased the effectiveness of the licensee's emergency planning: Appendix C, Revision 17; Appendix J, Revision 18; Appendix K, Revision 19; and Appendix L, Revision 20. This screening review did not constitute an approval of the changes and, as such, the changes are subject to future NRC inspection to ensure that the emergency plan continues to meet NRC regulations.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors completed one inspection sample regarding emergency preparedness drill evaluations by observing a training drill on November 1, 2005, in the emergency offsite facility.

The inspectors verified that the emergency offsite facility was activated in a timely manner; that event declarations, notifications and protective action recommendations were completed in an accurate and timely manner; and that the training drill objectives were met. The inspectors observed the post-drill critique to verify that drill evaluators and licensee emergency response personnel self-identified performance problems. The inspectors also reviewed condition reports to verify that drill performance problems were entered into the licensee's corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance identified.

4. OTHER ACTIVITIES

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 but 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 samples regarding problem identification and resolution by the conducting in-depth reviews for the following condition reports:

- CR 03294051, "1-27-T11A-1, 4 Kilo-volt Bus T11A Phase #1 Undervoltage Relay, Failing to Actuate as Desired for the Testing per 1-OHP-4030-132-217B"
- CR 05076025, "Action Request to Perform a Common Cause Evaluation for Site Mispositioning Errors"

The inspectors verified that: (1) the problems were accurately identified; (2) the root cause, apparent cause, and contributing causes were adequately justified; (3) extent of condition and generic implications were appropriately addressed; (4) previous occurrences were considered; and (5) corrective actions were appropriately focused to address the problem and implemented commensurate with the safety significance of the issue.

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors completed one inspection sample regarding the semi-annual review of trends. The purpose of this review was to identify trends not previously identified or adequately addressed by the licensee that might indicate the existence of safety significant issues. The inspectors reviewed repetitive or closely related issues documented in the licensee's corrective action program, and in other processes and programs utilized by the licensee to track the status of plant issues. This review included but was not limited to condition reports, system health reports, self-assessment reports, maintenance rule program reports, and documented operator burdens.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

The inspectors completed two inspection samples regarding event followup.

.1 Unit 2 Reactor Trip Response

a. Inspection Scope

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, both Unit 2 AB emergency diesel generator output breakers malfunctioned due to unrelated causes. The NRC dispatched a Special Inspection Team to evaluate the facts and circumstances surrounding this event. The results of that inspection are documented in NRC Inspection Report 05000316/2005013.

The inspectors evaluated control room operator performance immediately following the reactor trip. This evaluation included direct observation in the Unit 2 control room, review of the control room operators' use of emergency and normal plant operating procedures, identification of degraded plant conditions as a result of the partial loss of power immediately following the reactor trip, initial actions to mitigate the event, and actions to restore power that was lost to bus T21B. The inspectors interviewed plant personnel and reviewed applicable portions of the TSs, plant procedures, control room logs, plant process computer data, and the reactor trip report.

b. Findings

No findings of significance were identified.

.2 (Closed) Licensee Event Report (LER) 05000315/2005-002: Failure to Comply with Technical Specification Requirements Pertaining to Undervoltage Protection Instrumentation

On August 30, 2005, control room personnel identified that an equipment clearance implemented to support planned maintenance on the Unit 1 CD emergency diesel generator disabled 4 kilovolt bus loss of voltage relays required by TS 3.3.2.1. The TS required three channels per bus, with a minium of two channels per bus operable. The relay's functions were to automatically start the associated emergency diesel generator and the associated motor driven auxiliary feedwater pump if an undervoltage condition occurred on the 4 kilovolt bus. However, the equipment clearance rendered all three relays on the 4 kilovolt T-11C and T-11D busses inoperable, which was an operational condition prohibited by the TS. The undervoltage relays were energized immediately after the problem was identified to restore compliance with the TS.

Licensee personnel determined the cause to be a failure to assure TS requirements were met prior to removing the equipment from service. The operators preparing, reviewing and placing the clearance did not perform a review in sufficient detail to identify all TS's associated with the individual components de-energized by the clearance. Additional corrective actions included providing information within the clearance software to prompt clearance reviewers of the TS impact when de-energizing the circuit, which renders the loss of voltage relays inoperable.

No new findings were identified during the inspectors' review. The inspectors determined that rendering all of the loss of voltage relays inoperable, in this event, did not adversely impact the availability of the associated motor driven auxiliary feedwater pump because the emergency diesel generator had been taken out of service for planned maintenance. Consequently, the emergency diesel generator was not available to provide the necessary power to run the motor driven auxiliary feedwater pump if an undervoltage condition occurred during the time that the relays were removed from service. Also, the turbine driven auxiliary feedwater pump and redundant motor driven auxiliary feedwater pump were both operable and unaffected by this event.

Therefore, the inspectors concluded that this finding constitutes a violation of minor significance that is not the subject to enforcement action in accordance with Section IV of the NRC's enforcement policy. Licensee personnel documented this problem in condition report CR05242034. This LER is closed.

4OA5 Other

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

The inspectors completed a review of the interim INPO report 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 Potential Decrease in Effectiveness of the Steam Generator Secondary Side Release Emergency Action Level (URI 05000316/2004006-04)

The inspectors discussed unresolved item (URI) 05000316/2004006-04 with licensee staff. The URI pertains to a potential decrease in effectiveness of the steam generator secondary side release emergency action level in the revised emergency plan. The inspectors advised the licensee that this issue will continue to be evaluated in 2006.

This is not an inspection sample.

.3 Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles (TI 2515/150)

a. Inspection Scope

On February 11, 2003, the NRC issued Order EA-03-009 (ADAMS Accession Number ML030410402). This order required examination of the reactor pressure vessel head and associated vessel head penetration (VHP) nozzles to detect primary water stress corrosion cracking (PWSCC) of VHP nozzles and corrosion of the vessel head. The purpose of Temporary Instruction (TI) 2515/150, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles," was to implement an NRC review of the licensee's head and VHP nozzle inspection activities required by NRC Order EA-03-009.

The inspectors performed a review in accordance with TI 2515/150 of the licensee's procedures, equipment, and personnel used for examinations of the reactor vessel closure head (RVCH) and VHP nozzles to confirm that the licensee met requirements of NRC Order EA-03-009 (as revised by NRC letter dated February 20, 2004). The results of the inspectors' review included documentation of observations in response to the questions identified in TI 2515/150.

From March 28, 2005 through April 6, 2005, the inspectors performed a review of the licensee's RVCH inspection activities completed in response to NRC Order EA-03-009. This review included:

- observation of the licensee personnel conducting automated UT (ultrasonic examination) of 12 VHP nozzle locations from the on-site data acquisition trailer;
- interviews with non-destructive examination personnel performing non-destructive examinations of the RVCH and VHP nozzles from an on-site trailer;
- certification records of non-destructive examination personnel performing examinations of the RVCH and VHP nozzles;
- UT and eddy current (ET) examination procedures used for examinations of the RVCH and VHP nozzles;
- procedures used for identification and resolution of boric acid leakage from systems and components above the vessel head;

- the licensee's procedures and corrective actions implemented for boric acid leakage; and

- UT and ET examination records for the RVCH and VHP nozzles.

The inspectors conducted these reviews to confirm that the licensee performed the vessel head examinations in accordance with requirements of NRC Order EA-03-009, using procedures, equipment, and personnel qualified for the detection of PWSCC in vessel VHP nozzles and detection of vessel head wastage.

From April 11, 2005, through April 12, 2005, the inspectors reviewed the licensee's VHP nozzle susceptibility ranking calculation to:

- verify that appropriate plant-specific information was used as input;

- confirm the basis for the head temperature used by licensee; and

- determine if previous VHP cracks had been identified, and if so, documented in the susceptibility ranking calculation.

The documents reviewed by the inspectors in conducting this inspection are listed in the attachment to this report.

b. Observations

Summary: As of the end of operating cycle 19, the D.C. Cook Unit 1 vessel head was at 8.68 effective degradation years (EDY), which is in the moderate susceptibility ranking category as described in NRC Order EA-03-009. To meet the inspection requirements of Order EA-03-009, the licensee completed automated UT and ET examinations for each of the 79 VHP nozzles and head vent line penetration nozzles. The licensee identified 27 vessel head penetrations with minor limitations in the volumetric examination scope required by Order EA-03-009. The licensee requested and obtained relaxation from the Order to accept these limitations prior to plant restart. Additionally, one vessel head penetration had light spiraling surface scratches (non-crack like) on the inside diameter of the nozzle. These were previously identified and evaluated in 2002 and were believed to be created during construction. The scratches were also evaluated by Electric Power Research Institute, as a third party, which concurred with the licensee's appraisal. Comparison of the scratches to previous UT and ET scans showed no growth or change in appearance.

Overall, the inspectors concluded that the licensee had completed an examination of the reactor vessel head which was consistent with the requirements of NRC's Order EA-03-009. The inspectors documented conclusions in response to 11 specific questions related to the quality of personnel, procedures, and equipment used to perform the vessel head examination. For some of the questions in this temporary instruction, the inspectors could not independently confirm the ability of some of the nondestructive examination techniques to detect PWSCC. This condition reflected a lack of industry or vendor "qualified" techniques and did not represent a deviation from NRC Order EA-03-009, which did not specify qualification or demonstration standards

for the nondestructive examination techniques used. Additionally, the inability to identify PWSCC within the J-groove weld is consistent with the requirements of Order EA-03-009, which does not require examination of the J-groove welds when UT of the nozzle base material has been completed.

Evaluation of Inspection Requirements

In accordance with the reporting requirements contained within TI 2515/150, Revision 3, the inspectors evaluated and answered the following questions:

a. For each of the examination methods used during the outage, was the examination:

1. Performed by qualified and knowledgeable personnel?

Yes. The licensee's vendor personnel that performed the automated UT and ET examinations were certified to level I, II, or III in UT examination in accordance with vendor procedures WDP-9.2, "Qualification and Certification of Personnel in Nondestructive Examination;" SSI-A-005, "Qualification and Certification of Nondestructive Examination Personnel," Revision 20; SSI-A-005, "Qualification and Certification of Nondestructive Examination Personnel," Revision 21; ML-QAP-9.1, "Certification of NDE Personnel (ET);" SSI-A-013, "Qualification and Certification of Ultrasonic Examination Personnel for ASME XI PSI/ISI Inspections," Revision 1; and ANATEC-08, "Certification of NDT Personnel," Revision 3.

2. Performed in accordance with demonstrated procedures?

Yes. The licensee's vendor performed automated UT (including straight beam UT to identify possible lead paths in the shrink fit region between the head penetrations and the reactor vessel head) and ET of VHP nozzles in accordance with Procedure WDI-UT-010, "IntraSpect Ultrasonic Procedure for Inspection of Reactor Vessel Head Penetrations, Time of Flight Ultrasonic Longitudinal Wave and Shear Wave," Revision 10, and WDI-ET-008, "IntraSpect Eddy Current Imaging Procedure for Inspection of Reactor Vessel Head Penetrations," Revision 8, respectively. The vendor performed these examinations from the inside nozzle surface using probes which contained UT and ET equipment configurations which were consistent with those used during vendor mockup testing.

3. Able to identify, disposition, and resolve deficiencies and capable of identifying the PWSCC and/or head corrosion phenomena described in Order EA-03-009?

Automated UT/ET of VHP Nozzles Equipped with a Thermal Sleeve and Part Length Control Rods

Yes. The licensee's vendor examined the 60 (53 thermal sleeved control rod drive and 7 part length) VHP nozzle base metal using the

Westinghouse "Gapscanner" end effector and "Trinity Blade Probe" from the inside surface of the nozzles. The Trinity Blade Probe contained a time-of-flight-diffraction (TOFD) UT transducer, a zero degree UT transducer, and an ET coil designed to optimize detection of both circumferential and axial oriented flaws. The UT portion of this probe was also configured to detect leakage paths in the shrink fit region between the VHP nozzle tube and the reactor vessel head material.

Automated UT/ET of VHP Nozzles without a Thermal Sleeve

Yes. The licensee's vendor examined the 19 unsleeved (open housing) control rod drive VHP nozzle base metal using the Westinghouse 7010, "Open Housing Scanner," from the inside surface. This probe contained TOFD UT transducer pairs, zero degree UT transducers, and ET coils designed to optimize detection of both circumferential and axial oriented flaws. The UT portion of this probe was also configured to detect leakage paths in the shrink fit region between the VHP nozzle tube and the reactor vessel head material.

Vent Line Penetration ET

Unknown. The licensee's vendor used probes containing an array of ET coils to examine the inside of the head vent line and vent line VHP nozzle J-groove weld. However, the ET technique used had not been demonstrated for detection on PWSCC type flaws. Therefore, the inspectors could not independently confirm that this examination would have been effective at detection of PWSCC.

VHP Nozzle J-Groove Welds

No. (It should be noted that this is not a requirement of the Order). The licensee's vendor examinations of the VHP nozzle base material were not designed to detect PWSCC contained entirely within the VHP nozzle J-groove welds. Therefore, the inspectors could not conclude that these examinations would be effective at identification of PWSCC flaws located in this region.

b. What was the physical condition of the reactor vessel head (e.g., debris, insulation, dirt, boron from other sources, physical layout, viewing obstructions)?

Not applicable. The licensee was not required by the NRC Order EA-03-009 to conduct visual examinations of the D.C. Cook Unit 1 vessel head during this refueling outage and therefor did not perform one. Additionally, during the boric acid walkdown at the beginning of the refueling outage, the licensee did not identify any indication of boric acid leakage from sources above the vessel head.

c. Could small boron deposits, as described in the Bulletin 01-01, be identified and characterized?

Not applicable. The licensee performed a volumetric examination of the reactor from under the vessel head during the refueling outage and did not perform a bare metal visual examination as discussed above.

d. What material deficiencies (i.e., cracks, corrosion, etc.) were identified that required repair?

None.

e. What, if any, impediments to effective examinations, for each of the applied methods, were identified (e.g., centering rings, insulation, thermal sleeves, instrumentation, nozzle distortion)?

The licensee identified physical limitations (due to RVCH and VHP nozzle design configurations) to completing the extent of the examination coverage required by NRC Order EA-03-009. Specifically, the licensee could not meet the NRC Order EA-03-009 requirement IV.C.(5)(I) to perform ultrasonic testing to at least 1-inch below the lowest point at the toe of the J-groove weld for 27 VHP nozzles. The outside diameter coverage extends to at least 1-inch below the lowest weld elevation at 52 penetration locations. The minimum coverage achieved below the weld elevation on the remaining 27 locations was 0.68-inch. The licensee staff requested relaxation from the NRC Order EA-03-009 requirements for these 27 VHP nozzles.

f. What was the basis for the temperatures used in the susceptibility ranking calculation, were they plant-specific measurements, generic calculations, (e.g., thermal hydraulic modeling, instrument uncertainties), etc.?

The basis for the temperatures used in the susceptibility ranking calculation was plant specific data used in a Westinghouse calculation to derive a reactor vessel upper bulk mean fluid temperature of the vessel head area.

NRC Order EA-03-009 required licensees to calculate the susceptibility category of the reactor head to PWSCC-related degradation. The susceptibility category in EDY established the basis for the head inspections scope. The licensee documented the EDY for the D.C. Cook Unit 1 reactor head in CALC-SD-050406-001, "Cook Nuclear Plant Unit 1 - Calculation of Effective Degradation Years (EDY) of Operation for Unit 1," Revision 0. In this calculation, the licensee used the formula required by NRC Order EA-03-009 and determined the EDY for the vessel head. At the end of operating cycle 19, the D.C. Cook Unit 1 reactor vessel head was at 8.68 EDY, which placed it in the moderate susceptibility category.

g. During non-visual examinations, was the disposition of indications consistent with the guidance provided in Appendix D of this TI? If not, was a more restrictive flaw evaluation guidance used?.

Not applicable. The licensee did not identify any indications for which they had applied a flaw evaluation, nor did the inspectors identify indications which may require additional licensee evaluations.

The inspectors reviewed the licensee's draft summary report which documented the results of the UT and ET examinations. The licensee had completed review and acceptance of their vendor's UT and ET data results, which confirmed the absence of PWSCC in the VHP nozzles. Very shallow axially oriented surface scratches on the inside surface of VHP nozzle No. 62 were re-evaluated. They had been previously identified in 2002 and were believed to be a manufacturing related phenomenon. The inspectors were concerned that this condition could increase the susceptibility of this nozzle to PWSCC (e.g., reduce the initiation time for the onset of PWSCC). The licensee vendor indicated that there was no UT depth and that ET showed that there had been no increase in appearance or length since initially identified. In addition, the head is in the moderate susceptibility range and is due to be replaced in 2007.

h. Did procedures exist to identify potential boric acid leaks from pressure-retaining components above the vessel head?

Yes. Procedure 12-QHP-5050-NDE-027; "Visual Examination for Boric Acid and Condition of Component Surfaces," Revision 1, contained general walkdown inspection requirements. This procedure required boric acid corrosion control inspections by VT-2 (visual examination) examiners. The licensee did not identify any boric acid leaks from pressure-retaining components above the vessel head during this inspection.

I. Did the licensee perform appropriate follow-on examinations for boric acid leaks from pressure retaining components above the vessel head?

Not applicable. The licensee did not identify any boric acid leaks from pressure retaining components above the vessel head.

c. Findings

No findings of significance were identified.

.4 Pressurizer Penetration Nozzles and Steam Space Piping Connections in U.S. Pressurized Water Reactors (TI 2515/160)

a. Inspection Scope

On May 28, 2004, the NRC issued Bulletin 2004-01, "Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors (PWR)." The purpose of this Bulletin was to:

(1) advise PWR licensees that current methods of inspecting Alloy 82/182/600 materials used in the fabrication of pressurizer penetrations and steam space

piping connections may need to be supplemented with additional measures to detect and adequately characterize flaws due to PWSCC;

(2) request PWR addressees to provide the NRC with the information related to the materials from which the pressurizer penetrations and steam space piping connections at their facilities were fabricated; and

(3) request PWR licensees to provide the NRC with the information related to the inspections that have been and those that will be performed to ensure that degradation of Alloy 82/182/600 materials used in the fabrication of pressurizer penetrations and steam space piping connections will be identified, adequately characterized, and repair.

The objective of TI 2515/160, "Pressurizer Penetration Nozzles and Steam Space Piping Connections in U.S. Pressurized Water Reactors," was to support the NRC review of licensees' activities for inspecting pressurizer penetrations and steam space piping connections made from Alloy 82/182/600 materials and to determine whether the inspections of these components are implemented in accordance with the licensee responses to Bulletin 2004-01. In response to Bulletin 2004-01, the licensee committed to perform a bare metal visual inspection of 100 percent of the five susceptible Inconel pressurizer penetrations in the upper pressurizer head using a VT-2 qualified examiner. The licensee also committed to perform PT/UT examinations on the five nozzle-to-safe end welds.

b. Observations

Summary: Based upon a bare metal visual examination of the pressurizer, the licensee did not identify any indications of boric acid leaks from pressure retaining components in the pressurizer system.

Evaluation of Inspection Requirements

In accordance with the requirements of TI 2515/160, the inspectors evaluated and answered the following questions:

1. For each of the examination methods used during the outage, was the examination performed by qualified and knowledgeable personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)

   Yes. The inspectors verified that the examinations were performed by qualified and certified Level II VT-2, PT, and UT examiners. The licensee vendor examiners completed the required training and examination processes as prescribed under the Framatome ANP Administrative Procedures and included the recommendations of ASNT-TC-1A, NQA-1, ANS/ASNT CP-189, and/or ANSI/ASME N45.2.6.

2. For each of the examination methods used during the outage, was the examination performed in accordance with demonstrated procedures?

   VT Examination. Yes.

   PT Examination. Yes. The inspectors did not directly view the licensee's surface examinations (PT) of the pressurizer penetrations. However, the inspectors did observe PT examinations of the No. 14 steam generator inlet and outlet nozzle-to-safe end welds (Section 1R08(a)) which were performed by the same examiners using the same demonstrated procedure as used in the pressurizer PT examinations.

   UT Examination. No. Due to scan limitations, the licensee elected to perform "best effort" UT exams of the pressurizer nozzle-to-safe and welds. The best effort exams involved using the UT procedure as "guidance" only. The exams performed were incomplete (i.e., did not get a sufficient degree of coverage) and the licensee planned to perform more thorough exams next refueling outage which is still within the current inspection period.

3. Able to identify, disposition, and resolve deficiencies?

   VT Examination. Yes. The licensee removed insulation covering all of the dissimilar metal welds. The inspector concluded that the examiners' direct visual examinations were capable of detecting leakage from cracking in pressurizer penetrations if it had existed.

   PT Examination. Yes. As discussed in the previous question, the inspectors viewed PT exams performed on the No. 14 steam generator and as a result concluded that the examiners would be able to identify, disposition and resolve deficiencies.

   UT Examination. Unknown. The inspectors did not directly view the licensee's volumetric examinations (UT) of the pressurizer penetrations. While one indication was found while taking the best effort exam approach, scan limitations reduced the weld volumes interrogated.

4. Capable of identifying the leakage in pressurizer penetration nozzle or steam space piping components, as discussed in NRC Bulletin 2004-01?

   Yes. The VT examination as discussed in the Bulletin was capable of identifying leakage in the pressurizer penetration nozzle or steam space piping components. The inspectors' basis is discussed in the answer to question 3 above.

5. What was the physical condition of the penetration nozzle and steam space piping components in the pressurizer system (e.g., debris, insulation, dirt, boron from other sources, physical layout, viewing obstructions)?

The upper pressurizer head Inconel penetrations included three safety relief valve penetration nozzles, a power operated relief valve nozzle and a spray line penetration nozzle. The inspector observed that the canned metal reflective insulation had been removed from the pressurizer at these penetration locations to allow a bare metal visual examination. The inspector performed a direct visual inspection for these pressurizer penetrations. Based on this inspection, the area examined was free of debris or deposits or other obstructions which could mask evidence of leakage. However, the top of the pressurizer and the immediate area contained various amounts of debris including dirt/particles, small pieces of tape, and various tools from another job in progress. While not an obstruction to a bare metal visual examination, the surface of the nozzle-to-safe end were cleaned before an adequate surface and volumetric exam could be performed. Floor grating was also in place which made maneuvering more difficult but did not prohibit a thorough visual exam. It was later necessary to remove this grating before adequate surface and volumetric examinations could be performed.

6. How was the visual inspection conducted (e.g., with video camera or direct visual by the examination personnel)?

   The licensee conducted a direct bare metal visual examination of these pressurizer penetrations.

7. How complete was the coverage (e.g., 360 degrees around the circumference of all the nozzles)?

   The licensee performed a bare metal inspection of the five steam space piping connections/nozzles which included 360 degrees around the circumference of each penetration nozzle.

8. Could small boron deposits, as described in the Bulletin 2004-01, be identified and characterized?

   Yes. The inspectors determined through direct observation of the licensee's efforts that the licensee staff were capable of detecting pressurizer nozzle leakage, if any had existed. Because the licensee did not identify any deposits indicative of leakage in the areas examined, the inspector could not assess the licensee's plans to characterize leakage on pressurizer components.

9. What material deficiencies (i.e., cracks, corrosion, etc.) were identified that required repair?

   The licensee did not identify any material deficiencies through visual examination that required repair.

10. What, if any, impediments to effective examinations, for each of the applied methods, were identified (e.g., centering rings, insulation, thermal sleeves, instrumentation, nozzle distortion)?

The inspector did not identify any impediments to an effective visual examination. All of the insulation had been removed around the nozzles to allow direct visual, surface and volumetric examinations of the bare metal for 360 degrees around the circumference of each penetration nozzle. In addition, cleaning of the surface and removal of floor grating was required prior to surface and volumetric examinations. However, UT scan limitations were encountered due to weld contour, nozzle taper, and depressions along with contouring on the safe-end side of the weld.

11. If volumetric or surface examination techniques were used for the augmented inspection examinations, what process did the licensee use to evaluate and dispose any indications that may have been detected as a result of the examinations?

    Surface (PT) and volumetric (UT) examinations were performed on all five nozzle-to-safe end welds. One recordable indication was identified by UT in the pressurizer to nozzle-to-safe end weld 1-PRZ-23 (the pressurizer nozzle is for pressurizer safety valve 1-SV-45A). The indication extended from the approximate center of the weld thickness (approximately 88 percent thru-wall) and was ID connected. The indication was discovered while performing what the licensee deemed a "best effort" examination using Procedure 54-ISI-829-02, "Manual Ultrasonic Examination of Dissimilar Metal Piping Welds," as guidance, and reported in accordance with plant specific requirements. The requirements called for an evaluation and disposition by the inservice inspection program owner per ASME Code, Section XI. The indication required repair and the licensee elected to perform a weld overlay.

12. Did the licensee perform appropriate follow-on examinations for indications of boric acid leaks from pressure-retaining components in the pressurizer system?

    Not applicable. The licensee did not identify any indications of boric acid leaks from pressure retaining components in the pressurizer system.

c. Findings

No findings of significance were identified.

.5 Notice of Violation and Civil Penalty Issued to Indiana Michigan Power Company

On November 23, 2005, the NRC issued a Notice of Violation (NOV) 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” (EA-05-171). The violations were identified during an NRC inspection (NRC Inspection Report No. 05000315/2005006) conducted at D.C. Cook in the spring and summer of 2005 to review the plant’s reactor operator licensing program. The inspection also reviewed corrective actions undertaken to address a previous violation (EA-04-109 issued Sept. 29, 2004) in the same area.

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 will evaluate the effectiveness of those corrective actions during future inspections. Apparent violation AV 05000315/316/2005006-01 is updated to VIO 05000315/316/2005006-01 (Failure of the licensee to accurately report the completion of corrective actions from a previous SLIII violation in 2004.); AV 05000315/316/2005006-02, 04, and 06 are updated to VIO 05000315/316/2005006-02 (Failure to provide accurate and complete information about operators' health prior to the NRC performing a licensing action.); and AV 05000315/316/2005006-03, and 05 are updated to VIO 05000315/316/2005006-03 (Failure of the licensee to report the change in operator medical status.).

4OA6 Meetings

.1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. J. Jensen and other members of licensee management on January 12, 2006. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meeting

Interim exits were conducted for:

- Temporary Instruction 2515/150 and Temporary Instruction 2515/160 with Mr. J. Jensen and other members of licensee management on April 28, 2005. The inspectors returned proprietary information reviewed during the inspection and the licensee confirmed that none of the potential report input discussed was considered proprietary.

- Biennial Heat Sink Performance with Mr. D. Fadel on October 7, 2005.

- Emergency Preparedness inspection with Mr. P. Carteaux by telephone call on December 20, 2005.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Nazar, Senior Vice President, Chief Nuclear Officer
J. Jensen, Site Vice President
D. Fadel, Vice President Engineering
L. Weber, Plant Manager
J. Anderson, Engineering
P. Carteaux, Emergency Preparedness Manager
H. Etheridge, Regulatory Affairs Engineer
A. Feliciano, Design Engineering
R. Lingle, Assistant Plant Manager
B. Mammoser, Design Engineering
R. Meister, Regulatory Affairs Specialist
M. Scarpello, Compliance Supervisor
S. Vazquez, Engineering Programs Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000315/200506-01 05000316/200506-01	VIO	Failure to Accurately Report Completion of Corrective Actions from a Previous Severity Level III Violation
05000315/200506-02 05000316/200506-02	VIO	Failure to Provide Complete and Accurate Information about Operators' Health Status
05000315/200506-03 05000316/200506-03	VIO	Failure to Report a Change in Operator Medical Status

Closed

05000315/200506-01; 05000316/200506-01	AV	Failure to Provide Complete and Accurate Information to the NRC Which Impacted a Licensing Decision (Section 40A5)
05000315/200506-02; 05000316/200506-02	AV	Failure to Provide Complete and Accurate Information to the NRC Which Impacted a Licensing Decision (Section 40A5.5)
05000315/200506-03; 05000316/200506-03	AV	Failure to Report a Change in a License Operator's Medical Condition. (Section 40A5.5)
05000315/200506-04; 05000316/200506-04	AV	Failure to Provide Complete and Accurate Information to the NRC Which Impacted a Licensing Decision. (Section 40A5.5)
05000315/200506-05; 05000316/200506-05	AV	Failure to Report a Change in a License Operator's Medical Condition. (Section 40A5.5)
05000315/200506-06; 05000316/200506-06	AV	Failure to Provide Complete and Accurate Information to the NRC Which Impacted a Licensing Decision. (Section 40A5.5)
05000315/200407-01; 05000316/200407-01	VIO	Failure to Provide Complete and Accurate Information to the NRC Which Impacted a Licensing Decision. (Section 40A5.5)
05000315/2005-002	LER	Failure to Comply with Technical Specification Requirements Pertaining to Undervoltage Protection Instrumentation

Discussed

05000316/2004006-04	URI	Potential Decrease in Effectiveness of the Steam Generator Secondary Side Release Emergency Action Level

LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection. Inclusion on this list does not imply 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 12-IHP-5040-EMP-004, Plant Winterization and De-Winterization, Revision 6
C CR 05328018, Security Diesel Jacket Water Temperature is Abnormally Low, November 24, 2005
C CR 05344004, RWST Heating System Abnormal or Temperature Low Has Come in Several Times and Cleared, December 10, 2005
C CR 05313010, Mis-routing of Power Cable for Winterization in the U2 West Mainsteam Enclosure Area, November 9, 2005

1R04 Equipment Alignment

C D. C. Cook Units 1 and 2 TSs and Bases
C D. C. Cook Updated Final Safety Analysis Report, Revision 20
C Shift Manager's Logs, October 24, 2005
C Unit 2 Control Room Logs, October 24, 2005
C 02-OHP-4030-STP-007V, "Containment Spray System Valve Position Verification," Revision 0B
C 02-OHP-4021-009-001, "Placing the Containment Spray System in Standby Readiness," Revision 8
C PMP-4043-SLV-001, "Sealed/Locked Valves," Revision 15
C 02-OHP-4030-214-035, "Controlled Valve Position Logging," Revision 3
C CR 04196039, "The Dial Indicator for 2-IMO-210 (East CST Pump Discharge Shutoff Valve) is Reading above 100 percent when the Valve is Fully Closed," July 17, 2004
C 1-OHP-4030-STP-017E, Lineup Sheet 1, East MDAFP Valve Lineup, Revision 14
C 1-OHP-4021-056-001, Filling and Venting Auxiliary Feedwater System, Revision 24
C OP-1-5106A-58, Flow Diagram Aux-Feedwater Unit 1
C 01-OHP-4021-032-008AB, "Operating DG1AB Subsystems," Revision 7
C OP-1-5151A-44, "Flow Diagram Emergency Diesel Generator 'AB' Unit No. 1," Revision 44
C OP-1-5151B-59, "Flow Diagram Emergency Diesel Generator 'AB' Unit No. 1," Revision 59
• 02-OHP-4021-008-002, "Placing S.I. System in Standby Readiness (Manual Valves Outside Containment)," Revision 14
C OP-2-5142-47, "Flow Diagram Emergency Core Cooling (SIS)," Revision 47
C CR 05279005; "Following the ITS implementation it was found that the Annunciator Response Procedures for Pressurizer Pressure Extreme Low do not list the correct ITS setpoint," October 6, 2005
C CR 05285002; "2-CFI-415 east residual heat removal pump mechanical seal heat exchanger HE-32E CCW outlet flow indicator only reads up to 10 gpm. Esoms tour require a reading between Min 8 - Max 13 gpm. At this time 2-CFI-415 is reading > 10gpm," October 11, 2005.

- CR 05275020; "The normal position of 1-150, Nitrogen to the U-1 PRT pressure reducing valve was changed from open to closed. Now the actions in the ARP to respond to a low pressure condition will no longer work," October 6, 2005.

1R05 Fire Protection

- D. C. Cook Updated Final Safety Analysis Report (UFSAR), Section 9.8.1, "Fire Protection System," Revision 20
- D. C. Cook Fire Hazards Analysis, Units 1 and 2, Revision 12 (Fire Zones 1A, 13, 17C, 21, 126, 144 and 145)
- DC Cook Fire Pre-Plan, Units 1 and 2, Revision 2, (Fire Areas A, B, Q, and UU)
- Fire Protection Program Manual, Technical Evaluation 11.36, Generic Letter 86-10 Technical Evaluation, Revision 9
- CR 03198030, "Emergency Battery Pack Lights not Tested As Required by Appendix R," July 17, 2003
- CR 04300035, "Thermal Lag Needs to be Added to Data Sheet 1 of 12-PPP-4030-066-016," October 26, 2004
- CR 05293023, "12 West Diesel Driven Fire Pump Battery 2 Specific Gravity," October 20, 2005
- CR 05301003, "2-FP-506 Packing Gland Follower Broke While Adjusting Packing," October 28, 2005

1R07 Heat Sink Performance

- ENVI-8913, Zebra Mussel Monitoring and Control program, Revision 4
- 01-OHP-4024-123, Annunciator #123 Response: Circulating Water, Revision 15
- 12-EHP-8913-001-002, Heat Exchanger Inspection, Revision 0
- 12-MHP-5030-016-002, Emergency Diesel Generator Engine Jacket Water/Lube Oil Heat Exchanger Disassembly, Inspection, Cleaning, Tube Plugging and Assembly, Revision 3
- 12-THP-6020-CHM-313, Chlorination, Revision 13
- DIT-B-02720-00, Minimum Required Pipe Wall Thickness Value for 5/8" Copper Tubing Inside the Lube Oil and Jacket Water Coolers, May 9, 2003
- ENSM980327JDJ, Results of Operating the Diesel Generator Lube Oil Cooler and Jacket Water Cooler Elevated Lake Temperature, Revision 1, CS-1
- MD-12-MSC-068-N, Tube Plugging Allowances for Safety-Related Heat Exchangers, Revision 1
- MD-12-ESW-078-N, EDG Cooler Tube Plugging Allowance, Revision 1, CS-1
- MDS-607, Heat Exchanger Tube Plugging, Revision 5
- Mollusc Biofouling Program 2004, March 2005
- SA-2003-REA-003-QH, Zebra Mussel Monitoring and Control Program, January 26, 2004
- Anatic Eddy Current Reports, Emergency Diesel Generator Lube Oil and Jacket Water Coolers [Unit 1 and Unit 2], May 2003
- RT 00024039-01, Inspect and Clean "ESW" Pump Bays, Unit 2, October 21, 2004
- RT 00016542-13, Maint-1, Inspect and Clean the ESW Pump Bay, April 5, 2005
- Unit 1 and Unit 2 Diesel Generator Lube Oil Cooler Inspections, October 10, 2004, May 14, 2003, May 29, 2003, September 8, 2001, October 27, 2003, May 3, 2003, May 9, 2003, and May 24, 2002

- Unit 1 and Unit 2 Diesel Generator Jacket Water Cooler Inspections, October 9, 2004, May 29, 2003, September 1, 2001, May 20, 2003, May 10, 2003, and September 4, 2001
- Unit 1 and Unit 2 Diesel Generator After Cooler Inspections, November 14, 2003, May 4, 2003, May 13, 2005, May 13, 2003, October 18, 2004, May 25, 2003, June 3, 2003, and September 8, 2001
- South and Center Intake Tunnels Internal Underwater Inspection by Remotely Operated Vehicle (ROV), October 15-18, 2004
- Generic Letter 89-13 Basis Document for EDG Lube Oil, Jacket Water, and Combustion Air Aftercooler Heat Exchangers, Revision 1
- P-00-08134, Acceptability of the Seismic Class III Intake Tunnels, June 5, 2000
- CR 03183037, Question Concerning Assumption Under Item 7.1 of Calculation MD-12-ESW-078-N, July 2, 2003
- CR 03261030, U1 AB EDG Cooler Could be Installed With the Baffle Plates 180 Degrees from Design Position, September 18, 2003
- CR 04283059, Foreign Material Found in Inlet End of EDG Lube Oil Cooler, October 9, 2004
- CR 05272021, Non-Conformance on the 2AB Emergency Diesel Generator Lube Oil Cooler and Jacket Water Cooler, September 29, 2005
- CR 05278017, Track Enhancement to DIT-B-02720-00, October 5, 2005
- CR 05279023, Effect of Intermittent Flow on ESW Heat Exchangers, October 6, 2005
- CR 05279032, Review NRC Commitment on Forebay Inspection and Cleaning, October 6, 2005
- CR 05091076, Revise GL 89-13 Basis Document, October 6, 2005

1R11 Licensed Operator Requalification Program

- 2-OHP-4022-019-001, Essential Service Water System Loss / Rupture, Revision 4
- 2-OHP-4023-E-0, Reactor Trip or Safety Injection, Revision 28
- RQ-S-3050, Nuclear Plant Simulator Training Guide, Revision 0
- CR 05279069, Operations Response to Threat Contains Potentially Conflicting Instructions, October 6, 2005

1R12 Maintenance Effectiveness

- Maintenance Rule Scoping, Reactor Protection System, Revision 1
- Maintenance Rule (a)(1) Action Plan, Reactor Protection System Test Injection Switches, Revisions 0, 1 and 2
- Plant Health Committee Meeting Minutes, July 12, 2005
- System Health and Status Report, Reactor Protection System, Unit 1 and Unit 2, 2nd Quarter 2005
- Maintenance Rule Expert Panel Meeting Minutes
- CR 02009025, Tracking CR for Maintenance Rule (a)(1) Action Plan Corrective Actions, January 9, 2002
- CR 01050018, RCS Loop 3 Overtemperature Delta-T is Indicating 30 percent Low with Respect to Other Three Channels, February 19, 2001
- CR 01296002, 2-NTI-12 Loop 1 Overtemperature Delta-T Indicator Became Erratic and Dropped in Indication from 112 percent to 80 percent, October 23, 2001
- CR 05010041, 2-NTI-22 Loop 2 Overtemperature Delta-T Indication Failed to Return to Normal Following Restoration, October 10, 2005

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

- D. C. Cook Units 1 and 2 TSs and Bases
- D. C. Cook Updated Final Safety Analysis Report, Revision 20.1
- Unit 1 and Unit 2 Control Room Logs
- PMP-2291-OLR-001, On-Line Risk Management, Data Sheet 1, Work Schedule Review and Approval Form, Revision 7, October 2-8, October 16-22, November 13-19, November 28 through December 2, 2005
- Daily Snap Shot List of Scheduled Activities, October 2-8, October 17-18, November 13-19, November 28 through December 2, 2005

1R14 Personnel Performance During Non-Routine Plant Evolutions

- 02-OHP-4024-213, Annunciator #213 Response: Steam Generator 1 and 2, Drop 21, SG 1, 2, 3, 4 Steam Line Pressure Low, Revision 8
- 02-OHP-4024-213, Annunciator #213 Response: Steam Generator 1 and 2, Drop 14, Steam Gen 1 Steam Line DP Low, Revision 8
- 02-OHP-4024-214, Annunciator #214 Response: Steam Generator 3 and 4, Drop 44, Steam Gen 4 Steam Line DP Low, Revision 6
- 02-OHP-4024-214, Annunciator #214 Response: Steam Generator 3 and 4, Drop 45 Steam Gen 4 Steam Line Pressure Low, Revision 6
- 02-OHP-4022-013-012, Steam Generator Instrument Malfunction, Attachment A-3, SG Pressure Loop 1 Channel 4 Bistable Tripping, Revision 4
- 02-OHP-4022-013-012, Steam Generator Instrument Malfunction, Attachment D-3, SG Pressure Loop 4 Channel 4 Bistable Tripping, Revision 4

1R15 Operability Evaluations

- 01-OHP-4030-119-022W, West Essential Service Water System Test, Revision 7, November 16, 2005
- CR 05321003, West ESW (Essential Service Water) Pump Differential Pressure is in the Alert Range, November 16, 2005
- CR 05298095, "Unit Two 650' Containment Airlock Outer Door Failed to Meet Seal Leakage Surveillance Requirement," October 25, 2005
- CR 04049051, "Unit 1 and 2 TS LCO 3.3.3.5.1 for Appendix R Remote Shutdown Instrumentation Wording and Referenced Table Are Inconsistent," February 18, 2005
- CR 02017052, "Programmatic Weakness in the Clearance Permit System That Could Circumvent the Load Shed Design Feature," January 17, 2002
- CR 04111017, "Valves Relied Upon to Isolate the Emergency Core Cooling System and Containment Spray System Pump Drains from Recirculation Piping Network Are Not Leak Tested," April 19, 2004
- CR 05236071, "One of the Two Upper Valve Gear Oil Supply Lines for the 2AB EDG Appears to Be Isolated Due to Flow Blockage or a Failed Valve," August 24, 2005
- CR 95-1243, "Investigate Practice of Air Roll of the EDG Prior to the Surveillance Run," August 16, 1995

1R16 Operator Workarounds

- Unit 1 and Unit 2 Contingency / Compensatory Actions
- Unit 1 and Unit 2 Operator Workarounds
- 12-OHP-4021-028-011, Auxiliary Building Ventilation, Revision 17
- 01-EHP-4030-128-228A, 1-HV-AES-1 Engineered Safety Feature Ventilation Surveillance, Revision 8

- C CR 05249027, Auxiliary Building Ventilation, September 6, 2005
- C CR 05234034, Spent Fuel Pool Ventilation, August 22, 2005
- C CR 05231029, Traveling Water Screen TWS 2-5, August 19, 2005

1R19 Post Maintenance Testing

- C PMI-5071, Inservice Testing, Attachment 1, Operability After Maintenance, Revision 2
- C Job Order RO260761-02, 2-IMO225, Refueling Water Storage Tank to West Containment Spray Pump Suction Shutoff Valve, October 24, 2005
- C Job Order RO261145, 2-WMO-718, West Containment Spray Heat Exchanger ESW Outlet Valve, October 24, 2005
- C Job Order RO244563, 2-IMO-220, West Containment Spray Pump Discharge Shutoff Valve, October 24, 2005
- C Technical Data Book, Figure 2-19.1, Power Operated Valve Stroke Time Limits, Revision 64
- C CR 05250037, JOA PMT failed, September 7, 2005
- C 01-OHP-4030-119-022W, West Essential Service Water System Test, Revision 7
- C 02-OHP-4030-208-053B, ECCS. Valve Operability Test - Train B, Revision 6
- C Job Order 05313035, Replace Agastat Relay 2-62-2X-DGCD, November 10, 2005
- C Job Order 05317020, Phase Differential Trip Relay Setpoint Adjustment, December 1, 2005
- C 12-OHP-4030-033-001, Supplemental Diesel Generator Testing, Revision 1

1R20 Refueling and Outage Activities

- C D. C. Cook Unit 2 TS
- C D. C. Cook UFSAR, Revision 19

1R22 Surveillance Testing

- C D. C. Cook Units 1 and 2 TSs and Bases
- • Shift Manager's Logs, October 27, 2005
- C Unit 2 Control Room Logs, October 27, 2005
- C 2-EHP-4030-266-010, "Unit 2 Control Room Cable Vault Low Pressure CO2 Fire Suppression System Surveillance," Revision 3
- C 02-OHP-4030-217-050W, “West Residual Heat Removal Train Operability Test Modes 1-4," Revision 1
- C 1-OHP-4030-105-002A, "#1 Boric Acid Transfer Pump Operability Test," Revision 1
- C Technical Data Book Figure 1-15.1, "Safety Related Pump Inservice Test Hydraulic Reference," Revision 85
- C Technical Data Book Figure 1-15.2, "Safety Related Pump Inservice Test Vibration Reference," Revision 75
- C D.C. Cook Pump and Valve Inservice Testing (IST) Program Third 10 Year Interval Request for Relief Request REL-PP2, Revision 3

1R23 Temporary Modifications

- C 12-TM-05-27-RO, North and South Fire Water Storage Tanks Elevation and Pressure Measurements to Determine Level, September 27, 2005
- C 2-TM-05-32-R0, "Temporary Hydrogen Addition Systems for Each Unit's Volume Control Tank," Revision 0
- C 1-OHP-4030-114-030, Fire Protection Water Storage Tanks Level Checks, Revision 10

- C Job Order 04162064-10, "12-H-102, Stage/Hook-up Hydrogen Bottles Per 12-TM-05-32," November 7, 2005
- C CR 05278019, South Fire Protection Water Storage Tank Level Indicating Meter is no Longer Available, October 5, 2005
- C CR 05320010, "12-TM-05-32-R0 Hydrogen Cylinders Not Restrained in Accordance with PMP-5020-RTM-001/12-TM-05-32-R0," November 16, 2005

1EP4 Emergency Action Level and Emergency Plan Changes

- Donald C. Cook Nuclear Plant Emergency Plan; Revision 15/16
- Donald C. Cook Nuclear Plant Emergency Plan Appendix C; Revision 17
- Donald C. Cook Nuclear Plant Emergency Plan Appendix J; Revision 18
- Donald C. Cook Nuclear Plant Emergency Plan Appendix K; Revision 19
- Donald C. Cook Nuclear Plant Emergency Plan Appendix L; Revision 20

1EP6 Drill Evaluation

- C EMD-32a, Michigan State Police, Nuclear Plant Event Notification, November 1, 2005
- C RMT-2080-EOF-001, Activation and Operation of the EOF, Revision 8
- C Cook Plant November 1, 2005, Drill Objectives and Emergency Response Timeline
- C CR 05301011,Tracking CR for ERO Drill Scheduled for November 1, 2005, for Team 3, October 28, 2005
- C CR 05306087, During the 11-1-2005 Emergency Plan Drill the EOF Failed to Activate Within 60 Minutes of the declaration of an Alert, November 2, 2005
- C CR 05306085, November 1, 2005, ERO Drill Critique Item: Late Pager Activation After Simulated Alert Declaration, November 2, 2005

4OA2 Problem Identification and Resolution

- CR 03294051, "1-27-T11A-1, 4KV Buss T11A Phase #1 Undervoltage Relay, Failing to Actuate as Desired for the Testing per 1-OHP-4030-132-217B (step 4.3.33)," October 21, 2003
- C CR 05189039, "Perform Quick Hit Assessment Potential Adverse Trend for Event Code A4b1, Incorrect Procedures," July 8, 2005
- C CR 05038032; "Area radiation alarm was received in the Nuclear Sampling Room (NSR) and a personal electronic dosimeter dose rate alarm due to too high of a flow rate of U-2 Reactor Coolant (RCS) through the sample piping. This was due to an improper valve line-up" February 7, 2005
- CR 05286008; "Chemistry Excellence Plan - Attribute 3: Department with Depth" October 13, 2005
- CR 04245043; "Procedural steps followed incorrectly" September 9, 2005
- CR 05023003; "2-AUX-502, 125psi Aux Steam to MFP Turbines Shutoff Valve, was found closed while trying to roll East MFP on Aux Steam" January 23, 2005
- CR 05040054; "Recovery/Excellence Plan tracking" February 9, 2005
- CR 05076025; "AR to perform a common cause evaluation for site mispositioning errors" March 3, 2005
- CLG-142; Chemistry Work Activity Risk Assessment Guidelines, Revision 0

4OA3 Event Response

- CR 05242034, Clearance Placed on the Unit 1 CDDG Disabled Undervoltage Relays Required by CTS 3.2.1 Table 3.3-3 Item 8a and Item 6b, August 30, 2005
- Custom Technical Specification 3.3.2, Engineered Safety Feature Actuation System Instrumentation, Amendment 202

LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents and Management System
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
CR	Condition Report
EDY	Effective Degradation Years
ET	Eddy Current
INPO	Institute of Nuclear Power Operations
LCO	Limiting Condition of Operation
LER	Licensee Event Report
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PT	Dye Penetrant Examination
PWR	Pressurized Water Reactor
PWSCC	Primary Water Stress Corrosion Cracking
RCS	Reactor Coolant System
RVCH	Reactor Vessel Closure Head
TI	Temporary Instruction
TOFD	Time Of Flight Diffraction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Examination
VHP	Vessel Head Penetration
VT	Visual Examination