January 19, 2005

Mr. M. Nazar
Senior Vice President and
Chief Nuclear Officer
Nuclear Generation Group
American Electric Power Company
500 Circle Drive
Buchanan, MI 49107

SUBJECT: D. C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000315/2004012;
05000316/2004012

Dear Mr. Nazar:

On December 31, 2004, 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 which were discussed on January 5, 2005, with you 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 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/

Eric R. Duncan, Chief
Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report 05000315/2004012; 05000316/2004012
w/Attachment: Supplemental Information

See Attached Distribution

DOCUMENT NAME: C:\temp\MXLibDir\DCC 2004 012.wpd **To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy**

OFFICE	RIII	N						
NAME	EDuncan:dtp							
DATE	1/19/05							

OFFICIAL RECORD COPY

cc w/encl: J. Jensen, Site Vice President
M. Finissi, Plant Manager
G. White, Michigan Public Service Commission
Michigan Department of Environmental Quality
Emergency Management Division
MI Department of State Police
D. Lochbaum, Union of Concerned Scientists

Enclosure

ADAMS Distribution:
WDR
JGL1
RidsNrrDipmIipb
GEG
HBC
KGO
BJK1
CAA1
C. Pederson, DRS (hard copy - IR's only)
DRPIII
DRSIII
PLB1
JRK1
ROPreports@nrc.gov (inspection reports, final SDP letters, any letter with an IR number)

Enclosure

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-315; 50-316
License Nos:	DPR-58; DPR-74
Report No:	05000315/20040012; 05000316/2004012
Licensee:	Indiana Michigan Power Company
Facility:	D. C. Cook Nuclear Power Plant, Units 1 and 2
Location:	1 Cook Place Bridgman, MI 49106
Dates:	October 1, 2004, through December 31, 2004
Inspectors:	B. Kemker, Senior Resident Inspector I. Netzel, Resident Inspector J. Lennartz, Palisades Senior Resident Inspector T. Bilik, Reactor Engineer R. Daley, Senior Reactor Engineer W. Slawinski, Senior Radiation Specialist
Approved by:	Eric R. Duncan, Chief Branch 6 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000315/2004012, IR 05000316/20040012; 10/01/2004-12/31/2004; D. C. Cook Nuclear Power Plant, Units 1 and 2; Integrated Inspection Report.

This report covers a 13-week period of inspection by resident and region-based inspectors. 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. Inspector-Identified and Self-Revealed Findings

No findings of significance were identified.

B. Licensee Identified Violations

No findings of significance were identified.

REPORT DETAILS

Summary of Plant Status

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

Unit 2 operated at or near full power until October 2, 2004, when the licensee conducted a reactor shutdown for the Cycle 15 refueling outage (U2C15). Following completion of the refueling outage, the licensee synchronized the unit to the grid on November 9, 2004.

Following the refueling outage, Unit 2 operated at or near full power until November 22, 2004, when the licensee conducted a reactor shutdown to repair a steam leak on the right moisture separator reheater drain tank and to determine the location of an unidentified reactor coolant system (RCS) leak. The licensee identified a leak from the pressurizer manway cover. Following repairs, the licensee synchronized the unit to the grid on November 29, 2004. Unit 2 operated at or near full power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

The inspectors reviewed the licensee's procedures and preparations for cold weather conditions. The inspectors reviewed winterization procedures, severe weather procedures, and performed general area walkdowns. This was considered to be two inspection samples.

During pre-winterization walkdowns conducted during the week of November 29, 2004, the inspectors toured selected buildings and areas to verify that the licensee had identified all discrepant conditions such as damaged doors, windows, or vent louvers. The inspectors reviewed documentation to verify that 12-IHP-5040-EMP-004, "Plant Winterization and De-Winterization," had been completed to prepare for the onset of cold weather. Additionally, the inspectors observed housekeeping conditions and verified that materials capable of becoming airborne missile hazards during high wind conditions, or impacting snow removal, were appropriately located and restrained. The inspectors also verified that outside water storage tanks (refueling water storage tanks, primary water storage tanks, and condensate storage tanks) and associated valve houses and piping had no missing or damaged insulation and were serviced by operable heat trace circuits.

During post-winterization walkdowns conducted the week of December 20, 2004, 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.

The inspectors 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.

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

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

- Unit 1 and 2 Spent Fuel Pit Cooling
- Unit 2 South Safety Injection
- Unit 1 AB Emergency Diesel Generator

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 TSs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components 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)

.1 Routine Resident Inspector Tours

a. Inspection Scope

The inspectors performed seven fire protection walkdowns of the following risk significant plant areas:

- Unit 1 Turbine Oil Tank Room (Zone 95)
- Unit 2 Turbine Oil Tank Room (Zone 100)
- Unit 1 and Unit 2 Spray Additive Tank Room (Zone 61)
- Unit 1 Computer Room (Zone 71)

- Unit 2 Computer Room (Zone 72)
- Unit 2 Lower Containment Inner Volume (Zone 75)
- Unit 2 Lower Containment Piping Annulus (Zone 74)

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 (71111.07)

a. Inspection Scope

The inspectors reviewed the completed test reports and observed the licensee perform selected portions of inspections for the following two heat exchangers. This was considered to be two inspection samples.

- 2-HE-18E Unit 2 East Containment Spray Heat Exchanger
- 2-HE-18W Unit 2 West Containment Spray Heat Exchanger

The inspectors selected these heat exchangers to inspect because the containment spray system was identified as risk significant in the licensee's risk assessment. During this inspection, the inspectors observed the as-found condition of the heat exchangers and verified that no deficiencies existed that would mask degraded performance. The inspectors discussed the as-found condition as well as the historical performance of the heat exchangers with engineering department personnel and reviewed applicable documents and procedures.

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 heat sink performance related issues documented in selected condition reports.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities (71111.08)

a. Inspection Scope

Between October 4, 2004, and November 18, 2004, the inspectors conducted a review of the implementation of the licensee's inservice inspection program for monitoring degradation of the RCS boundary, risk-significant piping system boundaries, and the containment boundary.

Inspection Activities Other Than Steam Generator Tube Inspections, Pressurized Water Reactor Vessel Upper Head Penetration Inspections, Boric Acid Corrosion Control

This review represented one sample.

The inspectors conducted direct observation of the following nondestructive examination activities to evaluate compliance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code requirements and to verify that indications and defects were dispositioned in accordance with the ASME Code or an NRC approved alternative:

1. Ultrasonic examination of a Unit 2 pressurizer sprayer supply pipe elbow to pipe weld, weld #2-RC-28-37;

2. Liquid Penetrant examination of a Unit 2 pressurizer sprayer supply pipe elbow to pipe weld, weld #2-RC-28-37;

3. Liquid Penetrant examination of a Unit 2 pressurizer safety valve nozzle-to-safe end, weld #2-PZR-22;

4. Liquid Penetrant examination of a Unit 2 pressurizer safety valve nozzle-to-safe end, weld #2-PZR-23;

5. Liquid Penetrant examination of a Unit 2 pressurizer safety valve nozzle-to-safe end, weld #2-PZR-2;

6. Liquid Penetrant examination of a Unit 2 pressurizer relief valve nozzle-to-safe end, weld #2-PZR-25; and

7. Liquid Penetrant examination of a Unit 2 pressurizer spray line nozzle-to-safe end, weld #2-PZR-21.

The inspectors reviewed the following two examinations with recordable indications that have been accepted by the licensee for continued service to verify that the licensee's acceptance for continued service was in accordance with the ASME Code or an NRC approved alternative:

1. Ultrasonic test of a Unit 2 pressurizer bottom head-to-lower shell weld - PZR-11 (indication found to be acceptable per ASME Code Section XI, Table 3510-1); and

2. Ultrasonic test of a Unit 2 pressurizer head-to-tube sheet weld, STM-24-01 (indication found to be acceptable per ASME Code, Section XI, Table 3510-1).

The inspectors reviewed documents for the following pressure boundary weld for Class 1 or 2 systems which were completed to verify that the welding process and welding examinations were performed in accordance with ASME Code requirements or an NRC approved alternative:

1. An ISI class 2 weld repair, of 2-FW-118-4, a Unit 2 feedwater to steam generator #4 containment isolation check valve; and

2. ISI class 1 weld repairs, of the J-Groove welds of Unit 2 control rod drive penetrations #74 and #75.

Pressurized Water Reactor Vessel Upper Head Penetration Inspection Activities

Temporary Inspection 2515/TI-150, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles," Revision 2, was performed as described in Section 4OA5 of this report.

This review represented one inspection sample.

Boric Acid Corrosion Control (BACC) Inspection Activities

This review represented one sample.

Following shutdown, the inspectors reviewed a sample of BACC walkdown visual examination activities through direct observation. This walkdown was completed with Unit 2 in Mode 3 and included the lower containment building inner volume and annulus. The inspectors verified that the visual inspections emphasized locations where boric acid leaks can cause degradation of safety significant components.

The inspectors reviewed the following three boric acid leak corrective actions to confirm that they were consistent with the requirements of the ASME Code and 10 CFR Part 50, Appendix B, Criterion XVI. The inspectors also reviewed the engineering evaluations performed for these same three corrective action documents. The evaluations were verified, as applicable, to ensure that ASME Code wall thickness requirements were maintained:

1. Condition Report (CR) 04224071 (Unit 1), "1NLP-151-IH Packing Leak;"

2. CR 04282050 (Unit 2), "Reactor Coolant Pump #2 Found with Boric Acid Residue;" and

3. CR 04293083 (Unit 2), "NW Manway Stud Hole #18 Has White Residue, Possible Leak Indication."

Steam Generator Tube Inspection Activities

(Cannot count the following as a fully completed sample):

The inspectors were unable to review the results of in-situ pressure testing for the steam generator tubes, because the licensee did not identify any tubes that required pressure testing.

The licensee had not performed operational assessment predictions. The licensee replaced their steam generators in 1988 with those containing Alloy 690 tubing. Since that time, only 16 tubes had been plugged and only four indications had been identified since 1997.

The inspectors confirmed that the licensee's inspection scope as contained in SGP-DA-U2-C15, "Steam Generator Degradation Assessment - Unit 2 Cycle 15," was consistent with the plant's TS and the Electric Power Research Institute (EPRI) Guidelines, Revision 6. The licensee stated that they had no present commitments for steam generator U-tube sampling.

The licensee's steam generator U-tube inspection consisted of a full length bobbin coil inspection of 25 percent of the tubes for all four Unit 2 steam generators. Additionally, a rotating coil probe was used to inspect 20 percent of the tubes in steam generators #22 and #23 at the top of the hot leg tubesheet and in the tubesheet expansion area. The rotating coil probe was also used to inspect 20 percent of the tubes in steam generator #22 in the U-bend area for tube rows 1 and 2. The licensee's inspection assured that potential degradation areas were adequately examined. The licensee identified no new degradation mechanisms during the outage.

The TS plugging limit was 40 percent through-wall degradation. During the outage, the licensee discovered no tubes that exceeded this limit; however, one tube in steam generator 22 had 25 percent degradation. This tube was conservatively plugged even though the 40 percent limit had not been exceeded. The inspectors reviewed the TS repair criteria, and based upon the results of the steam generator tube inspection, confirmed that repair and depth sizing criteria were being adhered to.

The licensee did not have steam generator leakage greater than three gallons per day. The inspectors confirmed that the eddy current test probes and equipment were qualified for the expected types of tube degradation and assessed the site specific qualification of one or more techniques (e.g., equipment, data quality/noise issues, degradation mode).

The inspectors also verified that the licensee identified ISI and steam generator inspection problems at an appropriate threshold and entered them in the corrective action program; determined that the licensee's procedures directed the licensee to perform a root cause evaluation and take corrective actions when appropriate; verified the appropriateness of the corrective actions for a selected sample of problems associated with ISI and steam generator inspections documented by the licensee; and determined that the licensee assessed the applicability of operating experience to their ISI group.

Identification and Resolution of Problems

The inspectors reviewed a sample of ISI related problems documented in the licensee's corrective action program to assess conformance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements.

In addition, the inspectors verified that the licensee correctly assessed operating experience for applicability to the ISI group.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (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 November 16, 2004. The inspectors focused on alarm response, command and control of crew activities, communication practices, procedural adherence, and implementation of emergency plan requirements.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors evaluated the licensee's handling of selected degraded performance issues involving the following two risk-significant structures, systems, and components (SSCs):

- Failure of the 2-21A4 Circuit Breaker to Trip
- Unit 2 Main Turbine Control Fluid System Failures

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

- appropriate work practices,
- identifying and addressing common cause failures,
- scoping of SSCs in accordance with 10 CFR 50.65(b),
- characterizing SSC reliability issues,
- tracking SSC unavailability,

- trending key parameters (condition monitoring),
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification, and
- appropriateness of performance criteria for SSCs/functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/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.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the following six maintenance and operational activities affecting safety-significant equipment:

- Unit 2 Safety Injection Accumulator Fill Line Pressurization and Pressure Isolation Valve Back Leakage
- Unit 1 East and West Main Feedwater Pump Lube Oil Filter Swap Emergent Activities
- Unit 1 and Unit 2 West Essential Service Water Pump Elevated Vibration Levels Emergent Activity
- Unit 2 Shutdown Risk/Protective Equipment During Defueled Conditions for October 18, 2004
- Unit 2 Dual Train Essential Service Water Outage Risk Assessment
- Unit 2 Shutdown Risk/Protective Equipment During Refueling Conditions for October 25th and 26th, 2004

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, 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 and 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 characterization and significance.

b. Findings

No findings of significance were identified.

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

.1 Attempted Volume Transfer Between Unit 2 Safety Injection System Accumulators

a. Inspection Scope

On September 10, 2004, operators attempted to move safety injection accumulator volume into the #21 accumulator from one or more of the other three accumulators by raising the pressures in the #22, #23, and #24 accumulators. The Control Room low level alarm was in for the #21 accumulator and levels in the other three accumulators were near the upper end of the control band. Operators were concerned that levels in the other three accumulators would also increase while attempting to fill the #21 accumulator due to leak by on the accumulator fill valves. Operators had apparently observed levels rise in the #22, #23, and #24 accumulators before with the fill valves closed when a safety injection pump was started to fill accumulators.

The inspectors reviewed the operational decision making involved with this non-routine evolution and reviewed the outcome of the attempted volume transfer between accumulators because it appeared that the licensee was using a normal operating procedure for a purpose that was beyond the intent of the procedure and no additional evaluation of the potential consequences had been performed by the licensee. The attempted water transfer was not successful because the boundary isolation valves did not leak by.

b. Findings

No findings of significance were identified.

.2 Unit 2 Reactor Coolant System Unidentified Leakage Investigation

a. Inspection Scope

On November 17, 2004, the licensee noted a very slight increase in the RCS unidentified leakage calculation for Unit 2. On November 16th, the calculated leak rate was 0.24 gallons-per-minute and on November 17th, the leak rate was 0.19 gallons-per-minute. Although this was well below the TS action limit of 1.0 gallons-per-minute, the leakage was higher than normal and the licensee demonstrated appropriate sensitivity to the increase. The inspectors reviewed the licensee's troubleshooting efforts over several days which led to a conservative operational decision to shut down the unit when the source could not definitively be determined with the unit at power. When the licensee shut down Unit 2 on November 22nd, the unidentified RCS leak rate was 0.27 gallons-per-minute. Following the unit shutdown, the licensee discovered a leak from the pressurizer manway cover due to a failed gasket. The scope of this inspection was limited to the licensee's troubleshooting efforts and decision making process.

b. Findings

No findings of significance were identified.

.3 Unit 2 Control Rod H-8 Misalignment Troubleshooting

a. Inspection Scope

On November 29, 2004, during power ascension from the Unit 2 forced outage and at the end of a series of successive Control Bank 'D' withdrawals, an outward step was made in which all but control rod H-8 moved outward. Upon review, rod position indication data showed that rod H-8 dropped inward 5 steps at the same moment. The inspectors reviewed the licensee's troubleshooting efforts over several weeks which led to a conservative operational decision to shut down the unit on January 21, 2005. The licensee concluded that there was an open circuit in the movable gripper circuit for rod H-8; consequently, whenever the control rod received a demand to move in or out, the rod would ratchet down. This created an operational challenge and resulted in operation with control rods in "manual." The scope of this inspection was limited to the licensee's troubleshooting efforts and decision making process.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following six condition reports (CRs) to ensure that either the condition did not render the involved equipment inoperable or result in an unrecognized increase in plant risk, or the licensee appropriately applied TS limitations and appropriately returned the affected equipment to an operable status.

- CR 04170049, "Technical Specification Requirement for Safety Related Batteries May Be Non-conservative Based on Discrepancies Discovered in Design Basis Calculations"
- CR 04294010, "Ambiguity in Definition of Available"
- CR 04275059, "Unit 1 Received Unexpected Flux Deviation Alarm"
- CR 04300072 "Evaluation of Unapproved Hoses in Unit 1 Containment"
- CR 04281052, "Modes 1-4 Aggregate Operability Determination Evaluation for Unit 2"
- CR 02082004, "4 Kilovolt Bus Loss of Voltage Relays All Had 'As Found' Pick-up Voltage High Out of Specification"

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 evaluated the issue listed below as a potential operator workaround (OWA) to identify any potential affect on the functionality of mitigating systems or on the operators' response to initiating events:

- Unit 2 Control Rod H-8 Lowered Approximately Eight Steps During Control Rod Bank Insertion of One-half Step

The inspectors selected this issue to review as a potential OWA in order to understand the cause of the apparent control rod misalignment and the potential effect on continued plant operations. The inspectors interviewed operating and engineering 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 reviewed the cumulative effect of OWAs, control room deficiencies, and degraded conditions on equipment availability, initiating event frequency, and the ability of the operators to implement abnormal or emergency operating procedures. During this review, the inspectors considered the cumulative effects of OWAs on the following:

- 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.

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 issues potentially affecting the functionality of mitigating systems or on the operators' response to initiating events that were documented in selected condition reports.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed the engineering analyses, modification documents and design change information associated with the following two permanent plant modifications:

- 2-CMM-40151, "Replace 2-PP-50W Suction Piping"
- 2-CMM-30066, "Install New Check Valves in Main Steam Isolation Valves (2-MRV-210, 2-MRV-220, 2-MRV-230, and 2-MRV-240) Hydraulic Circuits"

The first modification replaced the Unit 2 West centrifugal charging pump with a newer stainless steel casing design. The licensee had previously planned to perform this pump replacement during a later refueling outage, but chose to perform the work during U2C15 after the installed pump was inadvertently over-pressurized during check valve testing at the beginning of the outage. Work included not only the replacement of the charging pump, but also replacement of the pump suction valve and the suction piping. The second modification replaced check valves in the hydraulic circuits for the main steam isolation valves to address a recurring problem with the valves drifting from fully open while at lower power levels during plant start ups and also following reactor trips.

During this inspection, the inspectors evaluated the implementation of the designs to verify that:

- the compatibility, functional properties, environmental qualifications, seismic qualification, and classification of materials and replacement components were acceptable;
- the affected operating procedures and training were identified and necessary changes were completed;
- the pressure boundary integrity was not compromised;
- the implementation of the modifications did not impair key safety functions;
- no unintended system interactions occurred;
- the system performance characteristics affected by the modification continued to meet the design basis; and
- the modification design assumptions were appropriate.

Completed activities associated with the implementation of the modifications were also inspected and the inspectors discussed the modifications with the responsible engineering, maintenance, performance verification and operations staff. In addition, the inspectors reviewed the applicable sections of the TS, Updated Final Safety Analysis Report (UFSAR), and 10 CFR 50.59 safety evaluation associated with the design change packages.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed five post maintenance testing activities associated with the following scheduled maintenance:

- Unit 1 Train A Post Accident Containment Hydrogen Monitoring System Backup Air Supply Check Valve (2-CA-7044) Replacement
- Unit 2 AB Emergency Diesel Generator Maintenance, Voltage Regulator and Governor Replacement
- Unit 2 West Charging Pump Discharge Check Valve (2-CS-299) Replacement Retest
- Unit 2 Rod Control Card Replacements
- Unit 2 CD Emergency Diesel Generator Governor and Voltage Regulator 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 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 were identified.

1R20 Refueling and Outage Activities (71111.20)

.1 Unit 2 Refueling Outage (U2C15)

a. Inspection Scope

The inspectors evaluated the licensee's conduct of Unit 2 refueling outage activities to assess the licensee's control of plant configuration and management of shutdown risk. The inspectors reviewed configuration management to verify that the licensee maintained defense-in-depth commensurate with the shutdown risk plan; reviewed major outage work activities to ensure that correct system lineups were maintained for key mitigating systems; and observed refueling activities to verify that fuel handling operations were performed in accordance with the TSs and approved procedures. Other major outage activities evaluated included the licensee's control of the following:

- containment penetrations in accordance with the TSs;
- SSCs which could cause unexpected reactivity changes;
- flow paths, configurations, and alternate means for RCS inventory addition and control of SSCs which could cause a loss of inventory;
- RCS pressure, level, and temperature instrumentation;
- spent fuel pool cooling during and after core offload;

- switchyard activities and the configuration of electrical power systems in accordance with the TSs and shutdown risk plan; and
- SSCs required for decay heat removal.

The inspectors reviewed the licensee's commitments from Generic Letter 88-17, "Loss of Decay Heat Removal, 10 CFR 50.54(f)," and assessed the conduct of operations during drain down and mid-loop conditions. This review included verification that the licensee had appropriate controls in place governing mid-loop operation and had contingency plans in place to ensure containment closure capability, restoration of vital electrical power to key mitigating equipment, and means of adding inventory to the RCS.

The inspectors observed portions of the plant cooldown, including the transition to shutdown cooling, to verify that the licensee controlled the plant cooldown in accordance with the TSs. The inspectors also observed portions of the restart activities to verify that TS requirements and administrative procedure requirements were met prior to changing operational modes or plant configurations. Major restart inspection activities performed included:

- verification that RCS boundary leakage requirements were met prior to entry into Mode 4 and subsequent operational mode changes;
- verification that containment integrity was established prior to entry into Mode 4;
- inspection of the Containment Building, including the ice condenser, to assess material condition and search for loose debris, which if present could be transported to the containment recirculation sumps and cause restriction of flow to the emergency core cooling system (ECCS) pump suctions during loss-of-coolant accident conditions;
- verification that the material condition of the ECCS recirculation sumps met the requirements of the TSs and was consistent with the design basis; and

The inspectors interviewed operations, engineering, work control, radiological protection, and maintenance department personnel and reviewed selected procedures and documents.

In addition, the inspectors reviewed the issues that the licensee entered into the licensee's 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 refueling outage issues documented in selected condition reports.

b. Findings

No findings of significance were identified.

.2 Unit 2 Forced Outage (U2F04C)

a. Inspection Scope

On November 22, 2004, the licensee entered a forced outage on Unit 2 to repair a steam leak on the right moisture separator reheater drain tank and to determine the location of an unidentified RCS leak. The licensee identified a leak from the pressurizer manway cover due to a failed gasket. The licensee entered Mode 5 (Cold Shutdown) to replace the gasket and perform additional maintenance work. The licensee performed a reactor startup and synchronized the unit to the grid on November 29, 2004.

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 also observed portions of the plant cooldown, including the transition to shutdown cooling, to verify that the licensee controlled the plant cooldown in accordance with the TSs. 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 observed portions of the following seven surveillance testing activities and/or reviewed the test results to determine whether risk significant systems and equipment were capable of performing their intended safety function and to verify that testing was conducted in accordance with applicable procedural and TS requirements.

- 01-OHP-5030-050-001, "Main Turbine and Feed Pump Turbine Valve Functional Checks"
- 01-OHP-4030-102-016, "Reactor Coolant System Leak Rate Test"
- 12-MHP-4030-010-002, "Ice Condenser Flow Passage Surveillance"
- 12-EHP-4030-051-256, "Main Steam Safety Valve Setpoint Verification with Lift Assist Device"
- 02-OHP-4030-232-217B "DG2AB Load Sequencing and ESF Testing"
- 02-EHP-4030-203-238, "Emergency Core Cooling Check Valve Test"
- 02-OHP-4030-203-208, "Unit 2 ECCS Flow Balance - Boron Injection System"

The inspectors reviewed the test methodology and test results to verify that equipment performance was consistent with safety analysis and design basis assumptions. 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 reviewed two temporary modifications and verified that the installation was consistent with design modification documents and that the modifications did not adversely impact system operability or availability.

- 12-TM-00-61-R3, "Winterization/De-winterization to Support 12-IHP-5040-EMP-004"
- 12-TM-04-52-RO, "Defeat the East Auxiliary Building Crane Interlock for Slack Line for the Auxiliary Hoist Down Control"

The inspectors verified that configuration control of the modifications were correct by reviewing design modification documents and confirmed that appropriate post-installation testing was accomplished. The inspectors interviewed engineering, operations and maintenance department personnel and reviewed the design modification documents and 10 CFR 50.59 evaluations against the applicable portions of the TS and UFSAR.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed activities in the plant simulator and the Technical Support Center during an emergency preparedness training drill conducted on December 7, 2004. The inspectors verified that the emergency classifications and notifications to offsite agencies were completed in an accurate and timely manner as required by the emergency plan implementing procedures. The inspectors also verified that the training drill was conducted in accordance with the prescribed sequence of events, drill objectives were satisfied and that the required prompts from the licensee drill controllers were appropriately communicated to the drill participants.

The inspectors observed the post-drill critique in the Technical Support Center and reviewed documented post-drill critique comments by licensee evaluators to verify that licensee personnel and licensee drill evaluators adequately self-identified drill performance problems of significance. The inspectors also verified that condition reports were generated for drill performance problems of significance and entered into the corrective action program with the appropriate characterization and significance.

b. Findings

No findings of significance identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors reviewed the licensee's access controls and survey data for the following work areas located within radiation, high radiation, and locked high radiation areas in the plant to determine if radiological controls, postings and barricades were acceptable:

- Unit 2 Upper Containment;
- Unit 2 Reactor Vessel Head Temporary Storage/Staging Area;
- Unit 1 and 2 Auxiliary Buildings (various areas); and
- Unit 2 Lower Containment including Steam Generator Platforms.

The inspectors reviewed the radiation work permits (RWPs) that governed access to these areas and defined the radiological conditions to ensure the work control instructions and control barriers that had been specified were adequate. The inspectors walked down and surveyed (using an NRC survey meter) selected areas in the Unit 1 and 2 Auxiliary Buildings to verify that the prescribed RWP controls were in place, and that licensee surveys and postings were complete and accurate.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable (ALARA) Planning and Controls (71121.02)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed plant collective outage exposure history, current exposure trends and ongoing outage activities in order to assess current performance and exposure challenges. This included determining the plan's current 3 year rolling average for collective exposure in order to help establish resource allocations and to provide a perspective of significance for any resulting inspection finding assessment.

The inspectors reviewed the Unit 2 refueling outage (U2C15) work and the associated work activity exposure and time/labor estimates for the following eleven work activities which were likely to result in the highest personnel collective exposures or were otherwise activities that were conducted in radiologically significant activities:

- Refuel Cavity Decontamination Activities;
- Steam Generator Manway/Diaphragm Activities;
- Modification No. 45672, RTD [Resistance Thermal Detector] Bypass Supports;
- Temporary Shielding in Containment;
- RCP Seal Maintenance Activities;
- Containment Remove, Reinstall and Modify Insulation;
- Containment Install, Modify and Remove Scaffold;
- Steam Generator Secondary Side Work;
- Perform In-Service Inspection Activities in Containment;
- Control Rod Drive Mechanism (CRDM) Head Inspections; and
- Steam Generator Platform Activities.

The inspectors determined site specific trends in collective exposures based on plant historical exposure and source term data. The inspectors reviewed procedures associated with maintaining occupational exposures ALARA and assessed those processes used to estimate and track work activity exposures.

These reviews represented four inspection samples.

b. Findings

No findings of significance were identified.

.2 Radiological Work Planning

a. Inspection Scope

The inspectors obtained the licensee's list of work activities ranked by estimated exposure that were in progress during the outage and reviewed the following ten radiologically significant work activities:

- Steam Generator Manway/Diaphragm Activities (RWP 042147);
- Modification No. 45672, RTD Bypass Supports (RWP 042197);
- Temporary Shielding in Containment (RWP 042123);
- RCP Seal Maintenance Activities (RWP 042151);
- Containment Remove, Reinstall, and Modify Insulation (RWP 042140);
- Containment Install, Modify, and Remove Scaffold (RWP 042142);
- Steam Generator Secondary Side Work (RWP 042149);
- Perform In-Service Inspection Activities in Containment (RWP 042143);
- CRDM Head Inspections (RWP 042106); and
- Steam Generator Platform Activities (RWP 042148).

For the activities listed above, the inspectors reviewed the ALARA Plan and associated total effective dose equivalent (TEDE) ALARA evaluations, exposure estimates, and exposure mitigation requirements in order to verify that the licensee had established radiological engineering controls that were based on sound radiation protection

principles in order to achieve occupational exposures that were ALARA. This also involved determining that the licensee had reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances.

The inspectors compared the exposure results achieved through the first 20 days of the scheduled 30 day outage including the dose rate reductions and person-rem expended with the dose projected in the licensee's ALARA planning for these ten work activities. Reasons for inconsistencies between intended (projected) and actual work activity doses were evaluated to determine if the activities were planned reasonably well and to ensure the licensee identified any work interface/planning deficiencies.

The interfaces between operations, radiation protection, maintenance and scheduling groups were reviewed to varying degrees to identify potential interface problems. The extension of ALARA requirements into work procedures and/or RWP documents was also evaluated to verify that the licensee's radiological job planning was integrated into the work process.

The inspectors compared the person-hour estimates provided by maintenance planning and craft groups to the radiation protection ALARA staff with the actual work activity time expenditures in order to evaluate the accuracy of these time estimates.

The inspectors evaluated if work activity planning included consideration of the benefits of dose rate reduction activities such as shielding provided by water filled components/piping, system flushing and hydrolazing, and sequencing of scaffold and shielding installation/removal along with logic-ties in the work scheduling process in order to maximize dose reduction. The licensee's work in progress reports were reviewed for those outage jobs that accrued collective exposures of 50 and 80 percent of that projected to verify that the licensee could identify problems and address them as work progressed. RWP jobs or specific RWP tasks that accrued greater than one rem and exceed 125 percent of the projected doses were also reviewed to ensure work was suspended, if warranted, and identified problems were entered into the licensee's corrective action program consistent with the licensee's procedure.

These reviews represented seven inspection samples.

b. Findings

No findings of significance were identified.

.3 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the licensee's assumptions and basis for its collective outage exposure estimate, and evaluated the methodology and practices for projecting work activity specific exposures. This included evaluating both dose rate and time/labor estimates for adequacy compared to historical station specific or industry data.

The inspectors reviewed the licensee's process for adjusting outage exposure estimates when unexpected changes in scope, emergent work, or other unanticipated problems

were encountered which significantly impacted worker exposures. This included determining that adjustments to estimated exposure (intended dose) were based on sound radiation protection and ALARA principles and not adjusted to account for failures to plan or control the work. The frequency of these adjustments was reviewed to evaluate the adequacy of the original ALARA planning.

The licensee's exposure tracking system was evaluated to determine whether the level of exposure tracking detail, exposure report timeliness, and exposure report distribution was sufficient to support control of collective exposures. RWPs were reviewed to determine if they covered too many work activities to allow work activity specific exposure trends to be detected and controlled. During the conduct of exposure significant work, the inspectors evaluated if licensee management was aware of the exposure status of the work and would intervene if exposure trends increased beyond exposure estimates.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.4 Job Site Inspections and ALARA Control

a. Inspection Scope

The inspectors observed the following three activities that were being performed in high or locked high radiation areas that potentially represented significant radiological risk to workers:

- Steam Generator Platform Demobilization and Secondary Side Work;
- Reactor Vessel Head Inspection; and
- Reactor Vessel Head Repair Setup/Preparation.

The licensee's use of ALARA controls for these work activities was evaluated using the following:

- The licensee's use of engineering controls to achieve dose reductions was evaluated to verify that procedures and controls were consistent with the licensee's ALARA reviews.

- Job sites were observed to determine if workers were cognizant of work area radiological conditions and utilized low dose waiting areas and were effective in maintaining their doses ALARA by moving to the low dose waiting area when subjected to temporary work delays.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.5 Source Term Reduction and Control

a. Inspection Scope

The inspectors reviewed licensee records to understand historical trends and current status of plant source terms. The inspectors discussed the plant's source term with health physics staff to determine if the licensee has developed a good understanding of the input mechanisms and the methodologies and practices necessary to achieve reductions in source term. The inspectors reviewed selected exposure reduction initiatives taken for U2C15 such as flushing, use of shielding and hydrolazing. The inspectors discussed the water chemistry control initiatives implemented during the cooldown for the outage and its impact on source term reduction compared to industry practices. Results of the licensee's controlled CRUD burst initiative was reviewed for the outage to assess the adequacy of the cooldown and reactor coolant system cleanup process.

The inspectors reviewed the licensee's Source Term Reduction 5 Year Plan and discussed its implementation with members of the radiation protection staff. The inspectors determined if specific sources had been identified by the licensee for exposure reduction initiatives and that priorities were established or being considered for the implementation these actions.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.6 Radiation Worker Performance

a. Inspection Scope

Radiation worker and radiation protection technician performance was observed during work activities being performed in radiation areas and locked high radiation areas including work in the upper and lower Containment Building and in the Auxiliary Building. The inspectors evaluated whether workers demonstrated the ALARA philosophy in practice by being familiar with the work activity scope, the tools to be used for the job, by utilizing low dose waiting areas and had knowledge of the radiological conditions and adhered to the ALARA requirements for the work activity. Job oversight, job support and the communications provided by the radiation protection staff were also evaluated by the inspectors.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.7 Monitoring of Declared Pregnant Women and Dose to Embryo/Fetus

a. Inspection Scope

The inspectors reviewed the licensee's monitoring methods and procedures, exposure controls, and the information provided to declared pregnant women to determine if an adequate program had been implemented to limit embryo/fetal dose. The inspectors also reviewed the pregnancy declaration and radiation exposure results for several individuals that declared their pregnancy to the licensee in 2003 and 2004 through October 2004, to verify compliance with the requirements of 10 CFR 20.1208 and 20.2106.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.8 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments and audits related to the ALARA program since the last inspection, as applicable, to assess the licensee's ability to identify and correct problems.

The inspectors verified that identified problems were entered into the corrective action program for resolution, and that they had been properly characterized, prioritized, and were being addressed. This included post-outage ALARA critiques/lessons learned for exposure performance from the licensee's previous refueling outage in 2003.

Corrective action reports generated during U2C15 related to the ALARA program were selectively reviewed and staff members were interviewed to verify that follow-up activities were being conducted in a timely manner commensurate with their importance to safety and risk using the following criteria:

- 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 licensee's corrective action program was also reviewed to determine if repetitive deficiencies in problem identification and resolution had been addressed.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Radiation Safety Strategic Area

a. Inspection Scope

The inspectors sampled licensee submittals for the performance indicator (PI) listed below for the period December 2003 thru mid-October 2004. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in Revision 2 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," were used. The following PI was reviewed:

- Occupational Exposure Control Effectiveness

For the time period reviewed, no reportable occurrences were identified by the licensee. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with radiation protection staff the scope and breadth of its PI data review and the results of those reviews. The inspectors independently reviewed selected electronic dosimetry dose alarm reports (radiologically controlled area electronic dosimetry egress transactions), the personnel contamination log, dose assignments for any intakes that occurred during the period of review, and the licensee's CR database along with individual CRs generated during the period reviewed to verify there were no unrecognized occurrences. Additionally, as discussed in Section 2OS1, the inspectors walked down the boundaries of selected locked high radiation areas to verify the adequacy of postings and access control physical barriers.

These reviews represented one inspection sample.

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 entered into the licensee's corrective action system as a result of inspectors' observations are included in the list of documents reviewed which are attached to this report.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors completed a review of repetitive or closely related issues documented in the licensee's corrective action program and other processes/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, operator workaround lists, equipment reliability lists, corrective and elective maintenance backlogs, and various plant performance indicators. The purpose of this review was to identify trends not previously identified or adequately addressed by the licensee that might indicate the existence of more safety significant issues.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles (Temporary Instruction (TI) 2515/150, Revision 2)

a. Inspection Scope

From October 13, 2004, through November 18, 2004, the inspectors performed TI 2515/150. The objective of this TI is to support the review of the licensee's reactor pressure vessel (RPV) head and vessel head penetration (VHP) nozzle inspection activities that are implemented in accordance with the requirements of Order EA-03-009 (ADAMS Accession Number ML030410402), issued on February 11, 2003. This TI validates that a plant conforms to its inspection commitments and requirements, during its next and subsequent refueling outages, using procedures, equipment, and personnel that have been demonstrated to be effective in the detection and sizing of primary water stress corrosion cracking (PWSCC) in VHP nozzles and detection of RPV head wastage.

As an ancillary benefit, this TI promotes information gathering to help the NRC staff identify and shape possible future regulatory positions, generic communications, and rulemaking.

During the Unit 2 outage, the licensee performed remote visual, volumetric ultrasonic testing and eddy current testing (UT and EC), and some dye penetrant tests (PTs) of the RPV and VHP nozzles. The inspectors performed a review in accordance with TI 2515/150 of the licensee's procedures, equipment, and

personnel used for examinations of the Unit 2 RPV and VHP 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 inspector's review included documentation of observations in response to the questions identifi

ed in part "b" (Evaluation of Inspection Requirements) which follows. To evaluate the licensee's efforts in conducting examinations, the inspectors:

- Observed visual test (VT-2) personnel conducting a remote visual examination of the RPV head VHP nozzles and reviewed an electronic recording (compact disc) of the remote visual examination of the RPV for all VHP nozzles;
- Observed inspection personnel conducting volumetric examinations of RPV head VHP nozzles;
- Conducted interviews with the nondestructive examination personnel performing nondestructive examinations of the vessel head;
- Reviewed the head inspection procedures;
- Reviewed the certification records for the nondestructive examination personnel performing examinations of the vessel head;
- Reviewed the procedures used for the identification and resolution of boric acid leakage from the systems and components above the vessel head; and
- Reviewed the licensee's procedures and corrective actions to be implemented for boric acid leakage.

The inspectors conducted these reviews to confirm that the licensee performed the vessel head examinations in accordance with the requirements of NRC Order EA-03-009 (or approved Order relaxation requests), using procedures, equipment, and

personnel qualified for the detection of PWSCC on vessel VHP nozzles and detection of vessel head wastage.

In NRC Bulletin 2002-02, the effective degradation years (EDY) is used as a basis to establish appropriate inspection programs for VHP nozzles based on increasing susceptibility to nozzle cracking with increasing EDY. For Unit 2, the licensee calculated an EDY of 13.03 years to October 2, 2004, end of cycle (EOC) of U2R14. Based on the calculated EDY and the guidance given in the NRC Order, since cracks were found and repaired in 1996, Unit 2 is categorized as a highly susceptible unit for PWSCC.

Summary: The licensee did not identify any leaking VHP nozzles. However, volumetric examinations by the licensee identified flaws in nozzles 12, 15, 21, 59, 64, and 74. A number of these flaws had been previously identified. The licensee determined that the flaws in these nozzles would remain within service limits acceptable to the NRC for a minimum of 1.79 years (an interval which will exceed the time until the next inspection).

In addition, PT examinations of penetrations 74 and 75 showed 1/4-inch rounded indications in the corresponding J-groove welds. In response, the licensee performed weld overlay repairs of these welds, and submitted, as part of the submittal for relief request for the repair of these welds, analysis which addressed/bounded crack growth for weld overlays of an embedded flaw repair.

b. Evaluation of Inspection Requirements

In accordance with requirements of TI 2515/150, Revision 2, the inspectors evaluated and answered the following questions:

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

1. Performed by qualified and knowledgeable personnel?

Yes. The inspectors verified that the examinations were performed by qualified and certified Level II examiners.

2. Performed in accordance with demonstrated procedures?

Yes. Visual, surface, and volumetric examinations were conducted during this outage. The inspectors verified that the bare metal visual examination was conducted in accordance with procedures which required examination personnel with knowledge of identifying CRDM leakage. These inspectors also employed the use of EPRI training materials. The inspectors also verified that the volumetric exams were performed per EPRI demonstrated procedures. The inspectors did not observe the surface exams being performed. However, an interview with examiners indicated that demonstrated procedures were used.

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

Yes. The inspectors concluded from observing portions of the remote visual inspection process and a review of the video of the reactor vessel head penetration remote visual inspection that the licensee had sufficient access to perform a remote visual examination of 100 percent of the bare metal of the reactor head as well as 360 degree coverage of

each penetration. The inspection included both remote visual inspection and video taping accomplished via the use of a magnetic wheeled crawler mounted remote manipulator and manually articulated video probe cameras. No evidence of penetration leakage or boric acid accumulation was identified. The inspectors also concluded from observing portions of the remote volumetric inspection process that demonstrated procedures were being followed. The inspectors did not observe the surface examinations, but the licensee did identify rounded indications on the two penetrations (penetrations 74 and 75) examined which led to their repair.

4. Capable of identifying the PWSCC and/or RPV head corrosion phenomena described in Order EA-03-009?

Yes. The inspectors determined through observing the remote visual and volumetric inspection process that the licensee's efforts were capable of detecting and characterizing VHP nozzle leakage, PWSCC and/or RPV head corrosion. In addition, surface examination of penetrations 74 and 75 were able to detect the rounded indications.

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

The reactor head was covered with mirror type insulation. However, this insulation did not obstruct the exam. Some of these insulation panels were removed to allow for access for the inspection equipment/probes. The inspectors determined that the licensee had complete viewable coverage with the aid of remote controlled high resolution cameras mounted on a magnetic wheeled crawler, and when the crawler movement was restricted, a manually articulated camera. The as-found pressure vessel head condition was clean. No evidence of loose boric acid particles was identified.

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

Yes. The inspectors determined through direct observation of the inspection process, a review of the inspection video and the visual inspection procedure, that small boron deposits, as described in the Bulletin 01-01, could be identified and characterized. No such deposits were evident.

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

Penetrations 74 and 75 had rounded indications in the J-groove weld which were detected during dye penetrant non-destructive testing. The licensee elected to repair these indications with weld overlays.

8. 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)?

Impediments to volumetric exams included thermal sleeves and excavated/repaired ID surface indications. These impediments were overcome by using a variety of test probes. The licensee had sufficient access to perform a remote visual examination with

360 degree coverage of each penetration. The penetrations subject to surface examinations were also free of impediments.

9. 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.

10. 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?

Yes. The licensee performed flaw growth evaluations for flaws in nozzles 12, 15, 21, 59, 64, and 74 in accordance with WCAP-14118-NP, Revision 7. The licensee determined that the flaws in these nozzles would remain within service limits acceptable to the NRC for a minimum of 1.79 years (an interval which will exceed the time until the next inspection).

Dye penetrant examinations of penetrations 74 and 75 showed 1/4-inch rounded indications in the J-groove weld itself. Enclosure 1 to Appendix D is not applicable to J-groove welds. The licensee submitted a relief request to the NRC and performed weld overlays of these welds. WCAP-15987-P-Revision 2-P-A was submitted as part of the relief request to address/bound crack growth for weld overlays of an embedded flaw repair.

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

Yes. The inspectors verified that visual examinations to detect potential boric acid leaks from pressure-retaining components above the RPV head were conducted in accordance with 02-OHP-4030-001-002, Revision 16, "Containment Inspection Tours."

12. Did the licensee perform appropriate follow-on examinations for indications of boric acid leaks from pressure-retaining components above the RPV head?

No evidence of leakage was noted during inspection.

c. Findings

No findings of significance were identified.

2. Reactor Pressure Vessel Lower Head Penetration Nozzles (Temporary Instruction 2515/152, Revision 1)

a. Inspection Scope

On October 4, 2004, the inspectors performed TI 2515/152. The objective of TI 2515/152, Revision 1, "Reactor Pressure Vessel Head and Vessel Head Penetration

Nozzles (NRC Bulletin 2003-02)," is to support the review of licensee's RPV lower head inspection activities that are implemented in response to Bulletin 2003-02 (ADAMS Accession Number ML032320153), which was issued on August 21, 2003. This TI validates that a plant is meeting its inspection commitments using procedures, equipment, and personnel that have been demonstrated to be effective in detecting signs of leakage from the RPV lower head penetration nozzles and the detection of RPV lower head degradation.

As an ancillary benefit, this TI promotes information gathering regarding the condition of the RPV lower head to help the NRC staff identify and shape possible future regulatory positions, generic communications, and rulemaking.

Based on the actions committed to by the licensee in response to NRC Bulletin 2003-02, the licensee performed a bare-metal visual inspection of the Unit 2 RPV lower head and penetrations during this refueling outage. The insulation was removed from the RPV lower head to allow access to the head and all 58 instrument penetrations. The inspection was performed using a high resolution camera mounted on a pole and manipulated by personnel in contact with the examiners. Images acquired were processed directly to electronic media.

The inspection was recorded by VT-2 examiners using approved inspection procedures. The results of the inspection of each penetration and of the bare metal were documented in a data sheet contained in the procedure.

Summary: The licensee did not identify any leaking RPV lower head penetration nozzles.

b. Evaluation of Inspection Requirements

In accordance with requirements of TI 2515/152, Revision 1, the inspector evaluated and answered the following questions:

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

1. Performed by qualified and knowledgeable personnel?

Yes. The inspectors verified that the examination was performed by two qualified and certified Level II VT-2 examiners. The inspector attended the pre-job "tailgate" which reviewed the procedural requirements, radiation and industrial safety aspects of the job.

2. Performed in accordance with demonstrated procedures?

Yes. The inspectors verified that the bare metal visual examination was conducted in accordance with procedure 12-QHP-5050-NDE-027, "Visual Examination for Boric Acid and Condition of Component Surfaces," and supplemented by procedure PMP-5030-001-001, "Boric Acid Corrosion of Ferritic Steel Components," which is part of the overall BACC program.

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

Yes. The inspectors concluded from directly observing the inspection efforts at both the lower RPV head (i.e., the calibration and positioning of the camera) and the electronic feed to the remote monitoring site (i.e., the remote monitor being used by the Level II to observe and document the inspection) that the licensee had sufficient access to perform a direct visual examination of 100 percent of the bare metal of the reactor head as well as 360 degree coverage of each penetration. No evidence of penetration leakage or boric acid accumulation was identified.

4. Capable of identifying pressure boundary leakage as described in the bulletin and/or RPV lower head corrosion?

Yes. The inspectors determined through direct observation of the licensee's efforts that the personnel (certified Level II VT inspectors) were capable of detecting and characterizing VHP nozzle leakage and/or RPV head corrosion. Access to, and visibility of, the lower RPV head and the annulus region of all 58 penetrations were clear and unobstructed.

5. Could small boric acid deposits representing reactor coolant system (RCS) leakage, as described in the Bulletin 2003-02, be identified and characterized, if present, by the visual examination method used?

Yes. The inspectors determined through direct observation of the licensee's efforts that the personnel (certified Level II VT examiners) were capable of detecting and characterizing VHP nozzle leakage and/or RPV head corrosion. Access to, and visibility of, the lower RPV head and the annulus region of all 58 penetrations were clear and unobstructed.

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

The inspection was performed using a high resolution camera mounted on an extension pole and manipulated by personnel in remote contact with the examiners. Images acquired were processed directly to electronic media.

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

There was 360 degree coverage around all 58 penetrations.

8. What was the physical condition of the RPV lower head (e.g., debris, insulation, dirt, deposits from any source, physical layout, viewing obstructions)? Did it appear that there are any boric acid deposits at the interface between the vessel and the penetrations?

The physical condition of the RPV lower head was good. The head had been cleaned/pressure washed during the last refueling outage. Post cleaning baseline photographs had been taken and there appeared to have been no degradation in the condition of the head since the cleaning when comparing those baseline photos to the current condition. Some innocuous rust streaking was present on the RPV itself, but were there in the baseline photos and do not appear to have increased in severity. The

insulation had been completely removed and allowed complete access to all penetrations by maneuvering the camera, mounted on the end of a hand held pole, 360 degrees around all penetrations. Access to the RPV lower head was via scaffolding, which provided several vantage points from which to position the camera.

No. It did not appear that there were any boric acid deposits at the interface between the vessel and the penetrations (e.g., the annulus region).

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

There were no material deficiencies identified that required repair.

10. What, if any, impediments to effective examination, for each of the applied non-destructive examination methods, were identified (e.g., insulation, instrumentation, nozzle distortion)?

There were no impediments to effective examination (see *response to reporting requirement* "8" above).

11. Did the licensee perform appropriate follow-on examinations for indications of boric acid leaks from pressure-retaining components above the RPV lower head?

N/A. There were no indications of boric acid leaks from pressure-retaining components above the RPV lower head. The rust streaking noted above did not appear to be recent.

12. Did the licensee take any chemical samples of the deposits? What type of chemical analysis was performed (e.g., Fourier Transform Infrared (FTIR)), what constituents were looked for (e.g., boron, lithium, specific isotopes), and what were the licensee's criteria for determining any boric acid deposits were not from RCS leakage (e.g., Li-7, ratio of specific isotopes, etc.)?

N/A. See *response to reporting requirement* "8" above.

13. Is the licensee planning to do any cleaning of the head?

The licensee did not plan to perform any cleaning of the head unless there was some resultant rundown following "flood-up." The current condition of the head was very clean with no stains, streaking nor debris in or near the annulus areas.

14. What are the licensee's conclusions regarding the origin of any deposits present and what is the licensee's rationale for the conclusions?

N/A. There were no deposits present. However, there were some small, white, non-adhering flakes of material laying on top of some of the insulation positioned below the RPV lower head. The licensee believed that the material was left over from the previous cleaning. Material found prior to that cleaning was analyzed and found to be boron from seal leakage. Since there was no credible source of boron during this inspection (i.e., no indication of any new rundown, staining on the RPV lower head or leakage from any of the penetrations) the licensee did not plan any additional analysis of the material.

c. Findings

No findings of significance were identified.

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

a. Inspection Scope

On October 13, 2004, the inspectors performed TI 2515/160. The objective of this TI is to support the review of licensees activities for inspecting pressurizer penetrations and steam space piping connections made from Alloy 82/182/600 material and to determine whether the inspections of these components are implemented in accordance with pertinent licensee responses to NRC Bulletin 2004-01 (ADAMS Accession Number ML0480034), which was issued on May 28, 2004. This TI validates that the licensee for a plant addressed by NRC Bulletin 2004-01 is meeting its inspection commitments using procedures, equipment, and personnel that have been demonstrated to be effective in detecting leakage from Alloy 82/182/600 pressurizer penetrations and steam space piping connections.

As an ancillary benefit, this TI promotes information gathering regarding the condition of Alloy 82/182/600 pressurizer penetrations or nozzles, pressurizer steam space piping connections, and pressurizer heads and shells to help the NRC staff identify and shape possible future regulatory positions, generic communications, and rulemaking.

Summary: The licensee did not identify any leaking Alloy 82/182/600 pressurizer penetrations or steam space piping connections.

b. Evaluation of Inspection Requirements

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

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

1. 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 examination was performed by qualified and certified Level II VT-2, PT and UT examiners.

2. Performed in accordance with demonstrated procedures?

Yes. Visual, surface and volumetric examinations were conducted during this outage. The inspectors verified that the examination methods used were performed in accordance with demonstrated procedures.

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

Yes. The licensee removed insulation covering all of the safety, relief, and spray line dissimilar metal welds. The inspectors concluded through direct observation that the

welds receive a 100 percent bare metal VT-2 examination. While ASME Section XI requires volumetric and surface examinations of the dissimilar metal welds at the Safe Ends for the Safety, Relief and Spray lines once per inspection interval, the licensee elected to perform surface and volumetric examinations on all of the Spray, Safety and Relief nozzles this outage.

The inspectors were certified examiners performing the inspection in accordance with procedures. The examination procedures, which included acceptance criteria/recordable conditions and evaluation and corrective measures, in conjunction with the overall and boric acid control program enabled the examiners to disposition and resolve deficiencies.

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

Yes. The inspectors determined through direct observation of the licensee's efforts that the personnel (certified Level II VT inspectors) were capable of detecting and characterizing leakage in nozzle or stream space piping components.

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 penetration nozzles and steam space piping components were free of debris, dirt, and boron. The insulation had been completely removed and with the physical layout permitted complete access to all penetrations (360 degrees around all penetrations).

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

The inspection was conducted by direct visual examination.

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

All of the insulation had been removed around the five steam space piping connections/nozzles so that coverage was 360 degrees around the circumference of all of the penetrations.

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 personnel (certified Level II VT inspectors) were capable of detecting and characterizing pressurizer nozzle leakage.

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

No material deficiencies that required repair were identified.

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)?

There were no impediments to effective examination. All of the insulation had been removed around the nozzles so that coverage was 360 degrees around the circumference of all of the nozzles. The area around the inspection area was free of instrumentation or other impediments. This provided adequate access for visual, surface, and volumetric exams.

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 and volumetric examinations were performed on all five nozzles as previously mentioned in "a.3". Note that these additional inspection methods were not performed to augment any indications resulting from visual inspections. A small (1/16-inch) rounded indication was found via surface examination on one of the welds. The indication was dispositioned in accordance with Procedure 54-ISI-240-40, "Visible Solvent Removable Liquid Penetrant Examination Procedure." The indication was evaluated by the ISI program owner and was found to be acceptable per ASME Code, Section XI, Table IWB-3514-2.

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

There were no indications of boric acid leaks from pressure-retaining components in the pressurizer system.

c. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. M. Nazar and other members of licensee management at the conclusion of the inspection on January 5, 2005. 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

- Occupational Radiation Safety ALARA program inspection during the licensee's Unit 2 refueling outage with Mr. J. Zwolinski on October 22, 2004.

- Inservice inspection (IP 71111.08), Temporary Instruction TI 2515/150, Temporary Instruction TI 2515/152, and Temporary Instruction TI 2515/160, with Mr. J. Jensen on November 18, 2004.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

H. Etheridge, Regulatory Affairs Engineer
D. Fadel, Vice President Engineering
M. Finissi, Plant Manager
D. Garner, Reactor Vessel Project Manager
J. Gebbie, Engineering Programs Manager
R. Gillespie, Operations Director
R. Hall, ISI Program Owner
J. Jensen, Site Vice President
C. Lane, Engineering Programs Supervisor
T. McCool, Operations Senior License Holder
R. Meister, Regulatory Affairs Engineer
P. Monk, Steam Generator Program Owner
M. Nazar, Senior Vice President, Chief Nuclear Officer
R. Serocke, Radiation Protection Manager
S. Simpson, Learning Organization Manager
R. Story, Radiation Protection General Supervisor, Production
S. Vazquez, System Engineering Manager
J. Waddell, Maintenance Manager
L. Weber, Work Control Manager
J. Zwolinski, Safety Assurance Director

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

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 PMI-5055, "Winterization/Summerization," Revision 1
C PMP-5055-001-001, "Winterization/Summerization," Revision 0
C 01-OHP-4021-057-002, "Placing In / Removing From Service Circulating Water Deicing System," Revision 8a
C 12-IHP-5040-EMP-004, "Plant Winterization and De-Winterization," Revision 4a
C 12-OHL-4030-SOM-022, "Unit 12 STP's (Surveillance Test Procedures) - Inside Heat Trace," Revision 1
C 12-OHL-4030-SOM-016, "Unit 12 STP's - Outside Heat Trace," Revision 1
C 12-OHP-5030-001-001, "Operations Plant Tours," Revision 0
C CR 04354007, "Unplanned TS LCO Action Entry and Unit 1 Secondary Transient Caused by Low Area Temperatures on December 12, 2004 as a Result of a Winterization Cover Blowing Off," December 19, 2004
C CR 04347003, "During Performance of 12-IHP-5040-EMP-004, Attachment 31 It States that Unit 2 N-Train Battery Room Heater Should Be Installed and Operable," December 12,2004
C CR 03127040, "1-15A266-HTR-1, RWST Heat Trace Circuit 15A266 Heat Tape No.1 Is Indicating Zero Degrees," May 7, 2003
C CR 03041008, "Numerous Fire Water Storage Tank Heat Trace Alarms this Winter with Nothing Wrong with the Actual Alarms or Heat Trace," February 10, 2003
C CR 04337082, "Un-insulated 1 Inch Sample Lines at Unit 2 Unit Vent, Insulated at Unit 1 Unit Vent," December 2, 2004
C CR 04006004, "Received Annunciator 221 Drop 89 (Refueling Water Storage Tank Temperature Low)," January 6, 2004

1R04 Equipment Alignment

• D. C. Cook Units 1 and 2 TSs and Bases
• D. C. Cook Updated Final Safety Analysis Report, Revision 19
C 12-OHP-4021-018-002, "Placing In Service and Operating the Spent Fuel Pit Cooling and Cleanup System," Revision 12a
C OP-12-5136-21, "Flow Diagram Spent Fuel Pit Cooling & Clean-Up Unit 1 and 2," Revision 21
C OP-2-5142-47, "Flow Diagram Emergency Core Cooling Safety Injection System," Revision 47
C 02-OHP-4021-008-002, "Placing Emergency Core Cooling System in Standby Readiness," Revision 14
C 02-OHP-4021-008-007, "Operation of the Safety Injection Pumps," Revision 3a
C 01-OHP-4021-032-008AB, "Operating DG1AB Subsystems," Revision 4
C OP-1-5151A-44, "Flow Diagram Emergency Diesel Generator 'AB' Unit 1," Revision 44
C OP-1-5151B-58, "Flow Diagram Emergency Diesel Generator 'AB' Unit 1," Revision 58

1R05 Fire Protection

- D. C. Cook Fire Hazards Analysis, Units 1 and 2, Revision 10
C D. C. Cook UFSAR, Section 9.8.1, "Fire Protection System", Revision 19
C 12-5973-9, "Fire Hazard Analysis Basement Plan Elevations 591 Foot and 587 Foot," Revision 9
C 12-5974-8, "Fire Hazard Analysis Mezzanine Floor Elevation 609 Foot," Revision 8
C 12-5976-8, "Fire Hazard Analysis Turbine Building Main Floor Elevation 633 Foot," Revision 8
C 12-5977-5, "Fire Hazard Analysis Reactor Building Main Floor Elevation 650 Foot," Revision 5
C 12-5979-5, "Fire Hazard Analysis Section "A-A", "B-B" & "C-C"," Revision 5
C 12-5980-4, "Fire Hazard Analysis Section "D-D", "E-E" & "F-F"," Revision 4
C 12-5981-6, "Fire Hazard Analysis Section "G-G", "H-H", "J-J" & "K-K"," Revision 6
C 12-5982-7, "Fire Hazard Analysis Section "L-L" & "M-M"," Revision 7
C 12-5983-6, "Fire Hazard Analysis Section "N-N", "P-P", "Q-Q" & "R-R"," Revision 6

1R07 Heat Sink Performance

C Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," July 18, 1989
C Generic Letter 89-13, Supplement 1, "Service Water System Problems Affecting Safety-Related Equipment," April 4, 1990
C Job Order R0245646, "2-HE-18W - Perform Eddy Current Testing," November 5, 2004
C Job Order R0246597-01, "2-HE-18E - Open, Close, Inspect, Clean Shell Side 89-13," November 21, 2004
C Job Order R0246597-02, "2-HE-18E - Perform Leak Test Post Maintenance Test," November 26, 2004
C Job Order R0246598-01, "2-HE-18W - Open, Close, Inspect, Clean Shell Side 89-13," November 7, 2004
C Job Order R0246598-05, "2-HE-18W - Perform Leak Test Post Maintenance Test," November 23, 2004
C Job Order 04026001, "2-HE-18W - Investigate/Repair Water in Both Sides," November 2, 2004
C 2-HE-18W Containment Spray Heat Exchanger Preliminary Eddy Current Inspection Report, October 20, 2004

1R08 Boric Acid Inspection

C 12-EHP-0543-OAR-001; Change 1; Owner's Acceptance Review; Revision 2; December 10, 2003
- 12-QHP-5050-NDE-027; Visual Examination for Boric Acid and Condition of Component Surfaces; Revision 1; July 9, 2004
- PMP-5030-001-001; Boric Acid Corrosion of Ferritic Steel Components and Materials; Revision 8; July 30, 2004
- 02-OHP-4030-001-002; Containment Inspection Tours; Revision 16; May 29, 2004

- 54-ISI-836-08; Ultrasonic Examination of Austenitic Piping Welds; Revision 8; August 10, 2004
- 54-ISI-240-40; Visible Solvent Removable Liquid Penetrant Examination Procedure; Revision 40; December 12, 2001

- ISWT Indication Resolution Record; Steam Generator, Lower Shell-to-Tube Sheet; May 27, 2003
- JOA 03171066-17; Section XI Repair Replacement Workplan
- CR 03171066; Leak on Containment Integrity Check Valve 2-FW-118-4; June 20, 2003
- CR 03318055; Boric Acid Build Up Area on the Upstream Side of Valve # 2-SI-144S, South SI Pump PP-26S Suction Bay Vent Valve; November 14, 2003
- CR 04259051; Weld Leak Between the #2 Steam Generator DSR-302 Blowdown Sample Line and 2-CPN-66; September 15, 2004
- CR 04090012; Upper Pressurizer Manway Leaking at NOP/NOT; March 30, 2004
- CR 04273041; Response to NRC IN 2004-16, Tube Leakage Due to a Fabrication Flaw in a Replacement Steam Generator; September 9, 2004
- CR 04209056; Response to NRC IN 2004-14, Use of Less Than Optimal Bounding Assumptions in Criticality Safety Analysis at Fuel Cycle Facilities; July 27, 2004
- CR 04124029; Response to NRC IN 2004-09, Corrosion of Steel Containment and Containment Liner; May 3, 2004
- CR 04131064; Response to NRC IN 2004-11, Cracking in Pressurizer Safety and Relief Nozzles and in Surge Line Nozzle; May 10, 2004
- CR 04224071; 1NLP-151-IH Packing Leak; August 11, 2004
- CR 04282050; Reactor Coolant Pump #2 Found with Boric Acid Residue; October 8, 2004
- CR 04293083; NW Manway Stud Hole #18 Has White Residue, Possible Lead Indication; October 19, 2004

1R12 Maintenance Effectiveness

- PMI-5035, "Maintenance Rule Program," Revision 11
- PMP-5035-MRP-001, "Maintenance Rule Program Administration," Revision 4
- 12-EHP-5035-MRP-001, "Maintenance Rule Program Administration," Revision 11
- Job Order 02256024-01, "2-LRV-41 Repair/Replace Valve," February 12, 2003
- Job Order 02256024-02, "2-LRV-41 Perform Leak Inspection," February 13, 2003
- Job Order 02256024-03, "2-LRV-41 Set Pressure as Required," February 13, 2003
- Job Order 03343015-01, "2-LRV-41 Repair/Replace Valve (Rework)," April 10, 2004
- Job Order 03343015-02, "2-LRV-41 Perform Leak Inspection," April 11, 2004
- CR 03343015, "Repair/Replace Unit 2 Main Turbine Control Fluid High Pressure Regulating Valve (2-LRV-41)," December 9, 2003
- CR 04094007, "Control Fluid Alarms During Turbine Roll Up and Subsequent Load Changes," April 3, 2004
- CR 04004010, "When Unit 2 Main Turbine Was Rolled Off Turning Gear, Control Valves B&D Popped Open and Re-closed," January 4, 2004
- CR 03304055, "Excessive Control Valve Movement During Normal Unit Operation," October 30, 2003
- CR 02269002, "Unit 2 Main Turbine 'B' Control Valve Opened Unexpectedly from 5 percent to 75 percent, Causing an Unintended Power Rise and RCS Temperature Reduction and Automatic Control Rod Withdrawal," September 25, 2002
- CR 04294071, "Maintenance Rule Evaluation of the Failure of the 2-21A4 Circuit Breaker," October 20, 2004

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 19

- PMP 4100-SDR-001, "Plant Shutdown Safety and Risk Management," Revision 7
- PMP-2291-OLR-001, "On-Line Risk Management," Revision 5
- PMP-2291-SCH-001, "Work Control Activity Scheduling Process," Revision 12
- NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Section 11, "Assessment of Risk Resulting From Performance of Maintenance Activities," Revision 2
- ORAM Desktop Guide, Revision 8
- 02-OHP-5030-001-002, "Outage Risk Surveillance," Revision 3
- OP-2-5142-47, "Flow Diagram Emergency Core Cooling," Revision 47
- OP-2-5143-58, "Flow Diagram Emergency Core Cooling," Revision 58
- OP-2-5143A-2, "Flow Diagram Emergency Core Cooling Accumulator Piping," Revision 2
- CR 04312026, "Investigate Continuing Pressure Rise In the Safety Injection Header," November 11, 2004
- PMP-2291-TRS-001, Data Sheet 1, "Troubleshooting Control Form Plan Documentation Sheet," "Unit 2 Safety Injection Header Pressure Rising," November 8, 2004
- PMP-4010-ODM-01, "Data Sheet 1, "Operational Decision Making Checklist," "Safety Injection Pump Discharge Header Pressure Rise," November 8, 2004
- Unit 2 Control Room Logs, November 8, 2004
- 01-OHP-4021-055-003, Attachment 6, "Transferring Main Feedwater Pump Full Flow Lube Oil Filters" for Unit 1 West Main Feedwater Pump, Revision 18 October 30, 2004
- 01-OHP-4021-055-003, Attachment 6, "Transferring Main Feedwater Pump Full Flow Lube Oil Filters" for Unit 1 East Main Feedwater Pump, Revision 18
- PMP-2291-TRS-001, Data Sheet 1, "Troubleshooting Control Form Plan Documentation Sheet," "Unit 1 East Main Feedwater Pump," November 1, 2004
- PMP-2291-TRS-001, Data Sheet 1, "Troubleshooting Control Form Plan Documentation Sheet," "Unit 1 West Main Feedwater Pump," October 30, 2004
- OP-1-5106-50, "Flow Diagram Feedwater," Revision 50
- PMP-4010-ODM-001 Data Sheet 1, "Operational Decision Making Checklist," Revision 0
- Unit 1 and Unit 2 Control Room Logs, October 27, 2004 through October 29, 2004
- CR 04301035, "While Performing 01-OHP-5030-019-002W West Essential Service Water System Flow Test Vibration Point 1H the Outboard Bearing Horizontal Was Reading Above the Alert Limit," October 27, 2004
- CR 04301059, "Elevated Vibration Levels Measured on Unit 2 West Essential Service Water Pump and Motor," October 27, 2004
- CR 04302008, "Elevated Vibration Levels Measured on Unit 2 West Essential Service Water Pump and Motor," October 28, 2004
- PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 52, Week 1, October 17, 2004 through October 23, 2004
- 02-OHP-5030-001-002, "Outage Risk Surveillance," Data Sheet 8, "Defueled Condition System Availability Checklist," October 18, 2004
- 02-OHP-5030-001-002, "Outage Risk Surveillance," Data Sheet 6, "Condition 6B System Availability Checklist," October 25, 2004 through October 26, 2004
- PMP-4010-ODM-01, "Data Sheet 1, "Operational Decision Making Checklist," "Unit 1 and Unit 2 West Essential Service Water Pumps Exhibiting Degraded Performance," November 28, 2004

1R14 Personnel Performance During Non-Routine Plant Evolutions

- D. C. Cook Unit 2 TSs and Bases
- D. C. Cook Updated Final Safety Analysis Report, Revision 19
- Unit 2 Control Room Logs, September 9, 2004 through September 10, 2004
- Unit 2 Control Room Logs, November 16, 2004 through November 22, 2004
- Unit 2 Control Room Logs, November 29, 2004 through December 1, 2004
- Operational Decision Making Checklist for Potential RCS Unidentified Leakage Rise on Unit 2," November 18, 2004
- Operational Decision Making Checklist for Unit 2 Control Rod H-8, December 1, 2004
- Job Order 04336124, "Troubleshoot Drift of Rod H-8 in Unit 2," December 14, 2004
- CR 03206034, "2-OME-6-1 Accumulator Tank 1 Level Is Rising Due To In-leakage," July 24, 2004
- CR 03239023, "Pressure Increasing In The Safety Injection Pump Discharge Header During Heatup," August 27, 2004
- CR 01125013, "#14 Accumulator Filled When the South Safety Injection Pump Was Started," May 5, 2001
- CR 04261020, "Accumulator Fill Event," September 17, 2004
- CR 04347007, "Inability to Determine Control Rod Position H-8 Using Incore Flux Mapping System," December 12, 2004
- CR 04340022, "Current Unit 2 Operational Conditions Create Significant Challenges in Terms of Appropriate Operator Response for Effective Reactor Control," December 5, 2004
- CR 04336124, "Upon Inserting Control Bank 'D' 0.5 Steps Overall, Individual Rod Position Indication for Control Rod H-8 Lowered From 207.5 Steps to 200 Steps," December 1, 2004

1R15 Operability Evaluations

- D. C. Cook Units 1 and 2 TSs and Bases
- Design Information Transmittal B-00634-00, "Closing Spring Charging and Emergency Diesel Generator Field Flash Inverter Operation," Revision 0
- CR 04300072, "Evaluation of Unapproved Hoses in Unit 1 Containment," October 26, 2004
- CR 04295052, "Flexible Hose Outer Cover is Cracked and Should Be Replaced," October 21, 2004
- CR 04295050, "Flexible Hose Outer Cover is Cracked and Should Be Replaced," October 21, 2004
- CR 04281052, "Modes 1-4 Aggregate Operability Determination Evaluation for Unit 2," October 7, 2004
- CR 04170049, "Technical Specification Requirements for Batteries May Be Non-conservative Based on Discrepancies Discovered in Design Basis Calculations," June 18, 2004
- CR 04275059, "Unit 1 Received Unexpected Flux Deviation Alarm," October 1, 2004
- CR 04294010, "Ambiguity In Definition of "AVAILABLE" In Various Applications to Technical Specifications and Appendix R," October 20, 2004
- 01-OHP-4030-066-4025, "Unit 1 Appendix R and Ventilation Requirements for Unit 2," Revision 3
- Unit 1 Control Room Logs, October 14, 2004 through October 21, 2004
- PMP-2291-OLR-001, "On-Line Risk Management," Revision 5
- PMP-4100-SCR-001, "Plant Shutdown Safety and Risk Management," Revision 7

- CR 02082004, "4 KV Bus Loss of Voltage Relays All Had "As Found" Pick-Up Voltage High Out Of Specification," March 23, 2004
- 02-IHP-6030-IMP-250, "4 KV Bus Loss of Voltage and 4 KV Bus Degraded Voltage Relay Calibration," Revision 13

1R16 Operator Workarounds

- PMP 4010-OWA-001, "Oversight and Control of Operator Workarounds," Revision 1
- Workaround Review Board Meeting Minutes, August 30, 2004
- CR 03080043, "Automatic Makeup to the Unit 1 Stator Water System Doesn't Work," March 21, 2003
- CR 04105021, "DRV-407 Caused Cooldown Following a Reactor Trip," April 14, 2004
- CR 04173036, "2-KRV-792 Condensate Makeup to the Condensate Storage Tank Locked Up and Would Not Open Until Manually Pried Open With a 100% Demand Signal to Open," June 21, 2004
- CR 04336124, "Upon Inserting Control Bank D 0.5 Steps to 219.5 Steps Overall, Individual Rod Position Indication for Control Rod H8 Lowered From 207.5 Steps to 200 Steps," December 1, 2004
- CR 04340022, "Current Unit 2 Operational Conditions Create Significant Challenges in Terms of Appropriate Operator Response for Effective Reactor Control," December 5, 2004

1R17 Permanent Plant Modifications

- 2-CMM-40151, "Replace 2-PP-50W Suction Piping," Revision 0
- 2-CMM-30066, "Install New Check Valves in Main Steam Isolation Valves (2-MRV-210, 2-MRV-220, 2-MRV-230, And 2-MRV-240) Hydraulic Circuits," Revision 0
- ANSI/ASME B31.1, "ASME Code For Pressure Piping - Power Piping," Chapter VI, "Examination, Inspection, And Testing," 1986 Edition
- Cook Nuclear Plant Welding Manual, Revision 4
- Job Order 04281076-01, "Replace 2-PP-50W Suction Piping," October 10, 2004
- CR 04276040, "While Performing Step 4.3.11 (Closing 2-CS-296W) Of 2-EHP-4030-203-208, CCP Check Valve Leak Rate Test, Valve 2-QPI-257-V1 Started Leaking Water Between Body and Bonnet. This Valve Also Leaks By In The Closed Position," October 2, 2004
- CR 04283045, "EE-2003-0619, Which Authorized A Replacement Centrifugal Charging Pump With A Stainless Steel Casing, Did Not Identify An Impact To UFSAR Table 6.2-5 (Design Parameters - ECCS Pumps)," October 9, 2004
- CR 04284066, "Thrust Bearing Axial Clearance For West Centrifugal Charging Pump Out Of Tolerance," October 10, 2004
  CR 04284003, "As Found Suction Piping For U2 West Centrifugal Charging Pump Does Not Match Isometric Drawing 2-CS-81," October 10, 2004
- CR 04285040, "While Inspecting 2-CS-299W Under JOA 04276059-01, The Disc Seating Surface And Body Sealing Surface Were Found Damaged," October 11, 2004
- CR 04291022, "Socket Welds Installed On Spool Piece Do Not Meet The Weld Profile Specified In Detail 1, of Drawing INT-2-CS-81-40151," October 17, 2004
- CR 04291035, "New Valve 2-CS-296W Included In Replacement Suction Piping For 2-PP-50W Leaked Past Seat During Attempts To Pressurize For Shop Hydro Prior To Installation In 2W Charging Pump Suction," October 18, 2004
- CR 04291036,"Tracking CR To Capture Lessons Learned From Replacement Of 2-PP-50W, Unit 2 West Centrifugal Charging Pump Under Job Order 04276040,"

October 17, 2004
C CR 04294022, "Incorrect Fabrication During Modification 2-CMM-40151," October 20, 2004
C CR 04294038, "This Is An Issue That Was Captured in 04291022 But Is Being Tracked Into Its Own eSAT Per The CR Screening Committee. Socket Welds On A Section Of Piping Fabricated For 2-PP-50W Were Accepted But Did Not Meet The Weld Profile," October 20, 2004

1R19 Post Maintenance Testing

• Unit 2 Technical Data Book Figure 19.9, "Diesel Generator Pot Settings," Revision 44
C Job Order 01311039-04, "DCP-0071, Remove 2-QR-168, SG-40, Install Recorder," October 14, 2004
C Job Order 03161013-06, "2-CMM-40100, Replace Voltage Regulatory (DGAB-VRCKT)," October 9, 2004
C Job Order 03161013-09, "2-CMM-40100, Replace Voltage Regulatory (DGAB-VRCKT)," October 15, 2004
C Job Order 03147062, "2-TR-ELSCX: Replace Cooling Fans," October 12, 2004
C Job Order R0243990, "2-HE-47-ABN, (GL 89-13) Perform Cooler Inspection," October 15, 2004
C Job Order R0245874-10, "2-OME-150-AB, Perform 18 Month Diesel Surveillance," October 16, 2004
C Job Order R0255052-07, "Disassemble, Inspect Coolers and Bypass Valves," October 15, 2004
C Job Order 04041003-02, "Replace Fuel Injection Pump 2-PP-163-3R-AB on 2-OME-150-AB-EN," October 15, 2004
C Job Order R0244008-04, "2-HE-47-ABS, (GL 89-13) Perform Cooler Inspection," October 15, 2004
C Job Order R0255052-08, "Disassemble, Inspect Coolers and Bypass Valves," October 15, 2004
C Job Order R0255052-09, "Disassemble, Inspect Coolers and Bypass Valves," October 15, 2004
C Job Order R0255052-10, "Disassemble, Inspect Coolers and Bypass Valves," October 15, 2004
C Job Order R0243990-07, "2-HE-47-ABN, (GL 89-13) Perform Cooler Inspection," October 21, 2004
C Job Order R0244008-06, "2-HE-47-ABS, (GL 89-13) Perform Cooler Inspection," October 21, 2004
C Job Order R0246297-09, "2-ESW-144 Disassemble for Section XI Inspection," October 21, 2004
C Job Order R0246297-04, "2-ESW-144 Disassemble for Section XI Inspection," October 15, 2004
C Job Order R0246298-11, "2-ESW-143 Disassemble for Section XI Inspection," October 21, 2004
C Job Order R0246298-04, "2-ESW-143 Disassemble for Section XI Inspection," October 15, 2004
C 02-CMM-40147, "Rod Control System Upgrades: Rod Control System Gripper Circuit Fuses Replacement and Removal of Stationary/Moveable Gripper Blocking Diodes," Revision 0
C Job Order 04205067-07, "Implement Rod Control System Upgrades," October 27, 2004

- C 02-EHP-4030-202-386, "Multiple Rod Drop Measurements," Revision 2
- C Job Order R0246154-09, "Run [2CD] Diesel Full Load for Post Maintenance Test," October 26, 2004
- C Job Order 03161011-03, "Replace Emergency Diesel Generator CD Governor System Post Modification Testing," October 27, 2004
- C Job Order 03161011-06, 2-OME-150-CD Hydact, Leak Inspection," October 26, 2004
- C Job Order R0265018-03, "2 EHP-4030-203-238, Leak Rate Test for 2-CS-299W," October 19, 2004
- C Job Order R0265018-04, "2 EHP-4030-203-238, Leak Rate Test for 2-CS-299W," October 22, 2004
- C Job Order R0265018-05, "2 EHP-4030-203-238, Leak Rate Test for 2-CS-299W," October 23, 2004
- C Job Order R0265018, "2-EHP-4030-203-238, Leak Rate Test for 2-CS-299W," October 22, 2004
- C 02-EHP-4030-203-238, "Centrifugal Charging Pump Check Valves Leak Rate Test," Revision 2
- C 12-IHP-4030-040-254, "Unit 1 and Unit 2 - Post Accident Containment Hydrogen Monitoring System Back-up Air Supply Check Valve Leak Test," Revision 2
- C CR 04292060, "Foreign Material (Duct Tape) Found in Inlet Side of Channel Head of 2-HE-47-ABS," October 18, 2004
- C CR 04289004, "Air Continued To Be Admitted To the 2AB Emergency Diesel Generator After Pressing the Trip Button on the Local Subpanel When Performing the Initial Air Roll After the 18 Month Work Package," October 15, 2004
- C CR 04283057, "The Replacement of the Unit 2 AB Diesel Generator Governor (2-MOD35182) and Associated Testing Did Not Have the Proper Focus and Resources to Ensure Success," October 9, 2004
- C CR 0428094, "2-DGAB Manual Voltage Regulation Circuitry is Erratic When Transferring from Auto to Manual at the Local Controls (DGAB Auxiliary Sub Panel)," October 8, 2004
- C CR 04283059, "Foreign Material (Flashlight) Found in the Inlet End of the Emergency Diesel Generator Lube Oil Cooler 2-QT-110-AB Upon Opening For Inspection," October 9, 2004
- C CR 04281079, "2AB Emergency Diesel Generator: Manual trip of Emergency Diesel Generator During Modification Testing," October 7, 2004
- C CR 04282047, "2-OME-150-AB Has a Grounded Outboard Generator Bearing," October 7, 2004
- C CR 04278018, "Unexpected Response When Transferring 2AB Diesel Voltage Regulator From Local to Remote," October 4, 2004
- C CR 04274091, "Tracking Condition Report to Check the Change in Time on Unit 2 From Previous Cycles," September 30, 2004

1R20 Refueling and Outage Activities

- C D. C. Cook Unit 2 TSs
- C D. C. Cook UFSAR, Revision 19
- C 02-OHP-4021-001-001, "Plant Heatup From Cold Shutdown to Hot Standby," Revision 30
- C 02-OHP-4021-001-004, "Plant Cooldown From Hot Standby to Cold Shutdown," Revision 31
- C 02 OHP 4021-017-002, "Placing In Service the Residual Heat Removal System," Revision 15
- C 02-OHP-4030-214-030, "Daily and Shiftly Surveillance Checks," Revision 1

C 02-OHP-4021-001-002, "Reactor Startup," Revision 25
C 02-OHP-4021-002-001, "Filling and Venting the Reactor Coolant System," Revision 20
C 02-OHP-4021-002-005, "RCS Draining," Revision 20
C 02-OHP-4021-002-013, "Reactor Coolant System Vacuum Fill," Revision 1
C 12-OHP-4050-FHP-001, "Refueling Procedure Guidelines," Revision 6
C 12-OHP-4050-FHP-005, "Core Unload/Reload and Shuffle," Revision 6
C 02-OHP-4030-227-041, "Refueling Integrity," Revision 1
C 12-EHP-4030-002-356, "Low Power Physics Tests with Dynamic Rod Worth Measurement," Revision 2
C PMP 4100-SDR-001, "Plant Shutdown Safety and Risk Management," Revision 7
C DTG-OPS-015, "Operational Decision Making Checklist for Potential RCS Unidentified Leakage Rise on Unit 2," November 18, 2004
C NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors," June 9, 2003
C NRC Generic Letter 88-17, "Loss of Decay Heat Removal, 10 CFR 50.54(f)," October 17, 1988
C Shift Manager's Logs, October 2 through November 9 2004
C "U2C15 Refueling Outage Schedule Shutdown Risk Review," September 14, 2004, with subsequent revisions
C CR 04304010, "Load Procedures Do Not Contain Sufficient Detail To Limit A Load That Could Cause Significant Reactor Fuel Damage If Dropped Over The Reactor Core When Open With Fuel In The Vessel," October 30, 2004
C CR 04309025, "Downstream Pipe Flange Weld On Valve 2-CCW-135 Has Surface Rust Due To No Coating On The Flange Or Weld Area," November 4, 2004
C CR 04310051, "Disconnected Rod Hanger On Plant Air Pipe Found In Unit 2 Annulus," November 5, 2004
C CR 04311032, "Noticed During NRC Walkdown of Containment - Piping Associated With 2-CS-450-1, 2-QFI-10 Outlet Shutoff Valve Has An Unattached Hanger At Column #6," November 6, 2004
C CR 04311033, "Noticed During NRC Walkdown Of Containment - Piping Associated With 2-NRV-103, Reactor Coolant Loop #3 Hot Leg Sample NSX-103 Shutoff Valve Is Not Supported Adequately,"November 6, 2004
C CR 04311034, "Noticed During NRC Walkdown of Containment - Approximately 1" Piping Located At Column 27 In The Annulus Is Missing Adequate Pipe Support. This Piping Is Located In The Overhead," November 6, 2004
C CR 04311036, "Noticed During NRC Walkdown Of Containment - Scaffold Knuckle Is Attached To The Hand Rail," November 6, 2004
C CR 04311037, "Valve And Valve Cap Were Leaking," November 6, 2004
C CR 04311038, "Noticed During NRC Walkdown Of Containment - A Piece Of 6" Conduit Approximately 15' Above CPN-76 At #2 Lower Containment Vent Unit Is Missing A Conduit Clamp," November 6, 2004
C CR 04311043, "Identified By NRC Containment Walkdown - Reactor Cavity Sump Had Debris Behind The Grating Which Was Removed During A Containment Walkdown," November 6, 2004
C CR 04313052, "2-SV-1002 And -3 Accumulator Safety Valve Tail Pieces Are Directed Up Where -1 And -4 Are Pointing Down," November 6, 2004
C CR 04314062, "Cap Missing On Containment Penetration And Weld Channel Pressurization System Pipe Stub In Containment. Identified During NRC Walkdown Of Containment," November 6, 2004
C CR 04314068, "Issued Found During NRC Walkdown Of Containment - Conduit Strap Directly Above 2-CPN-27 Is Made Up (Not Connected)," November 9, 2004

- C CR 04314069, "Issued Found During NRC Walkdown of Containment - Wire For Hanger Around Conduit Above 2-HV-RHRS-2 (Near Inner Wall In The Overhead) Not Connected," November 9, 2004
- C CR 04328019, "The Unit 2 Pressurizer Manway Was Found Leaking During the Walkdown with Unit 2 in Mode 3 to Determine Source of RCS Leakage," November 23, 2004

1R22 Surveillance Testing

- C 02-OHP-4030-232-217B, "DG2AB Load Sequencing and ESF Testing," Revision 6
- C 12-MHP-4030-010-002, "Ice Condenser Flow Passage Surveillance," Revision 4
- C 02-EHP-4030-203-238, "Centrifugal Charging Pump Check Valves Leak Rate Test," Revision 1
- C 01-OHP-5030-050-001, "Main Turbine and Feed Pump Turbine Valve Functional Checks," Revision 4a
- C 12-EHP-4030-051-256, "Main Steam Safety Valve Setpoint Verification With Lift Assist Device," Revision 7
- C 02-MHP-4030-208-001, "Verification of ECCS Throttling Valve Positions," Revision 0a
- C 02-EHP-4030-203-208, "Unit 2 ECCS Flow Balance - Boron Injection System," Revision 4
- C 2-DCP-558, "Unit 2 Boron Injection System Flow Orifice Sizing," Revision 1
- C Nuclear Trevitest Control Results for Unit 2 Main Steam Safety Valves, October 2, 2004
- C Job Order R0246030-01, "As-found Flow Passage Surveillance," October 3, 2004
- C Job Order R0246030-02, "As-left Flow Passage Surveillance," October 29, 2004
- C 01-OHP-4030-102-016, "Reactor Coolant System Leak Rate Test," Revision 2
- C CR 04292067, "Unit Two Mode Required Equipment," October 18, 2004
- C CR 04277015, "Unit 2 Train A Post Accident Containment Hydrogen Monitoring System Containment Valves Did Not Open as Expected When 2-101-BPA Was Taken to the Bypass Position," October 3, 2004
- C CR 04291004, "Unit 2 West Residual Heat Removal Pump Load Shed and Sequencing Did Not Occur Properly During Testing," October 17, 2004
- C CR 04291009, "Approximately 130 Gallons of Water Was Unexpectedly Transferred From the Volume Control Tank to the Boron Injection Tank During Testing," October 17, 2004
- C CR 04283013, "Unit 1 Unexpected Turbine Load Change While Performing Control Valve Testing," October 9, 2004

1R23 Temporary Modifications

- C 12-TM-04-52-RO, "Defeat the East Auxiliary Building Crane Interlock for Slack Line for the Auxiliary Hoist Down Control," Revision 0
- C 12-TM-00-61-R3, "Winterization/De-winterization to Support 12-IHP-5040-EMP-004"
- C Job Order 04275053-02, "12-QM-3E, Install Jumper in Accordance with Temporary Modification 12-TM-04-052-R0," October 2, 2004
- C Drawing PS12-95511-4, "Auxiliary Building East Crane Sheet 1 of 9 Wiring Diagram," Revision 4
- C Drawing OP-12-98777-12, "Auxiliary Building 150/20-Ton East Crane Elementary Diagram," Revision 12
- C CR 04301011, "Typo Was Discovered in Temporary Modification After Installation," October 27, 2004

1EP6 Emergency Preparedness Drill Evaluation

- PMP-2080-EPP-101, "Emergency Classification," Revision 4
- PMP-2080-EPP-107, "Notification," Revision 18
- RMT-2080-TSC-001, "Activation and Operation of the Technical Support Center,"Revision 4
- Timeline With Initial Actions, Emergency Response Drill, December 7, 2004
- Emergency Response Drill Exercise Messages, December 7, 2004
- EMD-32A, "Nuclear Plant Event Notification," Drill Messages for Declared Unusual Event, Alert and Site Area Emergency, December 7, 2004

2OS1 Access Control to Radiologically Significant Areas

- RWP 042106; U2C15 - CRDM Head Inspections; Revision 00
- RWP 042148; U2C15 - Steam Generator Platform Activities; Revision 00
- RWP 042118; U2C15 Tours and Inspections; Revision 00

2OS2 ALARA Planning and Controls

- Units 1 and 2 Outage Dose Information for 2002 and 2003
- U2C15 RWP Summary and Associated Time/Dose Estimates
- U2C15 RWP Daily Dose Total Reports for October 19 - 21, 2004
- ALARA Committee Meeting Agenda Topics; Current RWP Dose Evaluation; October 17, 2004
- 12-THP-6010-RPP-006; RWP Processing; Revision 21
- PMP-6010-ALA-001; ALARA Program - Review of Plant Work Activities; Revision 13
- 12-THP-6010-RPP-014; Total Effective Dose Equivalent Evaluation; Revision 6
- PMP-6010-RPP-006; RWP Program; Revision 8
- 12-THP-6010-RPP-018; Controls for Radiological Risk Significant Work Activities; Revision 1
- RWP 042100, associated ALARA Plan and TEDE Evaluations; U2C15 Refuel Cavity Decontamination Activities to Include Support Work; Revision 0
- RWP 042100, associated ALARA Plan and TEDE Evaluations; U2C15 Steam Generator/Diaphragm Activities; Revision 00
- RWP 042197, associated ALARA Plan and TEDE Evaluations; U2C15 Modification 45672, RTD Bypass Supports; Revision 00
- RWP 042123, associated ALARA Plan and TEDE Evaluations; U2C15 Temporary Shielding; Revision 00
- RWP 042151, associated ALARA Plan and TEDE Evaluations; U2C15 RCP Seal Maintenance Activities; Revision 00
- RWP 042140, associated ALARA Plan and TEDE Evaluations; U2C15 Containment Remove, Reinstall and Modify Insulation; Revision 00
- RWP 042142, associated ALARA Plan and TEDE Evaluations; U2C15 Containment Install, Modify and Remove Scaffold; Revision 00
- RWP 042149, associated ALARA Plan and TEDE Evaluations; U2C15 Steam Generator Secondary Side Work; Revision 00
- RWP 042143, associated ALARA Plan and TEDE Evaluations; U2C15 Perform In-Service Inspection Activities in Containment; Revision 00
- RWP 042106, associated ALARA Plan and TEDE Evaluations; U2C15 CRDM Head Inspections; Revision 00

- RWP 042148, associated ALARA Plan and TEDE Evaluations; U2C15 Steam Generator Platform Activities; Revision 00
- 12-THP-6010-RPP-121; Dose Monitoring for Declared Pregnant Woman; Revision 2
- Exposure Records and Pregnancy Declaration and Undeclaration Forms for Declared Pregnant Women; January 2003 - October 2004
- ALARA In-Progress Reviews for RWP 042150; RCP Motor Activities; October 6, 12, and 14, 2004
- ALARA In-Progress Reviews for RWP 042101; Refuel Preparation Activities and Head Disassembly; October 6 and 7, 2004
- ALARA In-Progress Reviews for RWP 042106; CRDM Head Inspections; October 10, 18, and 19, 2004
- ALARA In-Progress Reviews for RWP 042142; Install, Modify, and Remove Scaffold in Unit 2 Containment; October 11 and 13, 2004
- ALARA In-Progress Reviews for RWP 042143; In-Service Inspection Activities in Containment; October 14 and 18, 2004
- ALARA In-Progress Reviews for RWP 042148; Steam Generator Platform Activities; October 13 and 16, 2004
- ALARA In-Progress Reviews for RWP 042155; Containment and Annulus Sump Activities; October 11, 13, and 18 2004
- D. C. Cook Nuclear Power Plant Dose Reduction 5 Year Plan - 2004; September 24, 2004
- Condition Report Database Listing for ALARA and Various Radiation Protection Issues; September 25 - October 21, 2004
- CR 04294058, "Individual Alarmed PM-7 Indicating Upper Body Contamination," October 20, 2004
- CR 03150028, "The Dose Estimate for the NRV/QRV Shield Wall Modification Exceeded its Original Dose Estimate of 5.975 Rem," May 30, 2003
- CR 04285080, "RWP 042155, Containment Recirc Sump Activities Exceeded its Dose Estimate," October 13, 2004
- CR 03164033, "The Dose Estimate for the Reactor Head CRDM Inspection Exceeded its Original Dose Estimate," June 13, 2003
- CR 02193010, "Action Request Created to Track Rad-Environmental Self-Assessment SA-2002-RPS-004," July 12, 2002

4OA1 Performance Indicator Verification

- Various Dosimetry Egress Transactions, Personal Contamination Logs, and Intake Dose Assessments for Period December 2003 - mid-October 2004

4OA5 Other Activities

- ISWT Indication Resolution Record; Pressurizer, Bottom Head-to-Lower Shell; May 27, 2003
- CALC-SD-040824-001; Cook Nuclear Plant Unit 2 - Calculation of Effective Degradation Years (EDY) of Operation for Unit 2; Revision 1; October 14, 2004
- WCAP-14907-NP; Probabilistic Evaluation of Reactor Vessel Closure Head Penetration Integrity for the Donald C. Cook Units 1 and 2; Revision 2; August, 2004
- WCAP-149118-NP; Structural Integrity Evaluation of Reactor Vessel Upper Head Penetrations to Support Continued Operation: D. C. Cook Units 1 and 2; Revision 7; May 2004

- GQP 9.7; Liquid Penetrant Examination and Acceptance Standards for Welds, Base Materials and Cladding; Revision 10; August 2, 2004
- MRS-SSP-1483-AMP; Reactor Vessel Head Penetration Remote Visual Inspections for D. C. Cook Unit 2; Revision 1; September 24, 2004
- WDI-ET-004; IntraSpect Eddy Current Analysis Guidelines; Revision 6; June 29, 2004
- WDI-ET-008; IntraSpect Eddy Current Imaging Procedure for Inspection of Reactor Vessel Head Penetrations with Gap Scanner; Revision 4; June 29, 2004
- WDI-ET-003; IntraSpect Eddy Current Imaging Procedure for Inspection of Reactor Vessel Head Penetrations; Revision 7; June 29, 2004
- MRS-SSP-1485-AMP; Reactor Vessel Head Penetration NDE Tool Operation D. C. Cook Unit 2; Revision 1; July 15, 2004
- WCAL-002; Pulser/Receiver Linearity Procedure; Revision 4; February 16, 2004
- WDI-UT-010; IntraSpect Ultrasonic Procedure for Inspection of Reactor Vessel Head Penetrations, Time of Flight Ultrasonic, Longitudinal Wave and Shear Wave; Revision 8; September 14, 2004
- REF: DWG 35R05014; D. C. Cook Unit 2 RVHVI STUD REFERENCE DWG; Revision A; July 28, 2004

LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents and Management System
AEP	American Electric Power
ALARA	As Low As Is Reasonably Achievable
ASME	American Society of Mechanical Engineers
BACC	Boric Acid Corrosion Control
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
CRDM	Control Rod Drive Mechanism
DC	Direct Current
DEI	Dose Equivalent Iodine
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
ECCS	Emergency Core Cooling System
EDY	Effective Degradation Years
EHP	Engineering Head Procedure
EOC	End of Cycle
EPRI	Electric Power Research Institute
ESW	Essential Service Water
HRA	High Radiation Area
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISI	Inservice Inspection
KV	Kilovolt
LER	Licensee Event Report
LHRA	Locked High Radiation Area
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
OA	Other Activities
OHP	Operations Head Procedure
PARS	Publically Available Records
PI	Performance Indicator
PMI	Plant Manager's Instruction
PMP	Plant Manager's Procedure
PT	Penetrant Test
PWSCC	Primary Water Stress Corrosion Cracking
RCS	Reactor Coolant System
RP	Radiation Protection
RPV	Reactor Pressure Vessel
RTD	Resistance Thermal Detector
RWP	Radiation Work Permit
SDP	Significance Determination Process
SSCs	Structures, Systems, and Components
TI	Temporary Instruction
TS	Technical Specification
TEDE	Total Effective Dose Equivalent
U2C15	Unit 2 Cycle 15 Refueling Outage
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Test

VHP	Vessel Head Penetration
VHRA	Very High Radiation Area
VT	Visual Testing