April 29, 2004

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 05000315/2004002;
05000316/2004002

Dear Mr. Nazar:

On March 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 March 29, 2004, 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, two findings of very low safety significance (Green) were identified, one of which involved a violation of NRC requirements. However, because of the very low safety significance and because the violation was entered into your corrective action program, the NRC is treating the issue as a Non-Cited Violation in accordance with Section VI.A.1 of the NRC Enforcement Policy. In addition, one Severity Level IV violation was identified, which will also be treated as a Non-Cited Violation.

If you contest the subject or severity of a Non-Cited Violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U. S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the D. C. Cook Nuclear Power Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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 05000315/2004002; 05000316/2004002
w/Attachment: Supplemental Information

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

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-315; 50-316
License Nos:	DPR-58; DPR-74
Report No:	05000315/2004002; 05000316/2004002
Licensee:	Indiana Michigan Power Company
Facility:	D. C. Cook Nuclear Power Plant, Units 1 and 2
Location:	1 Cook Place Bridgman, MI 49106
Dates:	January 1, 2004, through March 31, 2004
Inspectors:	B. Kemker, Senior Resident Inspector I. Netzel, Resident Inspector M. Jordan, Operations Engineer, Region III B. Jorgensen, Operations Engineer, Region III W. Slawinski, Senior Radiation Specialist
Approved by:	Eric R. Duncan, Chief Branch 6 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000315/2004002, IR 05000316/2004002; 01/01/2004-03/31/2004; D. C. Cook Nuclear Power Plant, Units 1 and 2; Maintenance Effectiveness; Personnel Performance During Non-Routine Plant Evolutions; Performance Indicator Verification.

This report covers a 13-week period of inspection by resident and regional based inspectors. The report includes an announced baseline inspection in the area of radiation protection, a special inspection for reactor containment sump blockage, and a special inspection for spent fuel material control and accounting. Two Green findings were identified, one of which had an associated Non-Cited Violation (NCV). One Severity Level IV Violation was identified with an associated NCV. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." The licensee failed to take effective corrective action to address obsolete and degrading emergency diesel generator (EDG) governing system components to prevent repetitive load swings on the plant's EDGs. Specifically, following engine load swings affecting the Unit 2 'CD' EDG on November 2, 2002, and on January 23, 2003, the licensee did not implement effective corrective actions to preclude recurrence of engine load swings on the Unit 2 'AB' EDG on December 7, 2003, for the same cause. The licensee subsequently restored the Unit 2 'AB' EDG to an operable status by replacing a failed electronic governing module.

  The inspectors concluded that this issue was associated with the Mitigating Systems cornerstone and adversely affected the cornerstone objective. Specifically, the repetitive EDG governor control failures affected the availability, reliability, and capability of a system that responds to initiating events to prevent undesirable consequences. Although this finding represented an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, a Phase 3 Significance Determination Process analysis was performed in support of an emergency license amendment on December 9, 2003, which concluded that there was no net increase in risk associated with extending the allowed outage time for Technical Specification 3.8.1.1.b an additional 72 hours for a total of 144 hours. (Section 1R12)

Cornerstone: Initiating Events

- Green. The inspectors identified a finding of very low safety significance associated with a human performance error by a maintenance craftsman that resulted in a Unit 2 reactor trip. This finding did not constitute a violation of NRC requirements. Corrective actions included the establishment of enhanced controls for the disconnecting and connecting of electrical leads.

The inspectors concluded that this finding was associated with the Human Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability during power operation since the human performance error caused a reactor trip. The inspectors concluded that this finding was a licensee performance deficiency of very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. (Section 1R14.2)

Cornerstone: Initiating Events

- Severity Level IV. The inspectors identified a Severity Level IV Non-Cited Violation of 10 CFR 50.9 because the licensee failed to accurately report two Unit 2 reactor trips in the performance indicator for Unplanned Scrams with Loss of Normal Heat Removal, which resulted in the performance indicator crossing the Green-to-White threshold. The licensee subsequently counted the reactor trips in the performance indicator.

  The inspectors concluded that this issue was not suitable for evaluation by the Significance Determination Process; however, it was reviewed using the guidance in Section IV of the NRC Enforcement Policy because the licensee's failure to accurately report performance indicator data impacted the NRC's ability to carry out its statutory mission. The inspectors reviewed Supplement VII of the NRC Enforcement Policy and determined that this issue was a Severity Level IV Violation. (Section 4OA5.1)

B. <u>Licensee Identified Violation</u>

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

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full power until March 29, 2004, when the licensee conducted a reactor shutdown 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 April 7, 2004.

Unit 2 operated at or near full power with the following exceptions:

On December 30, 2003, the unit experienced an automatic reactor trip due to an unplanned closure of the number 22 and 23 steam generator feedwater isolation valves. The feedwater isolation valve closure originated from a momentary ground in the Control Room Instrument Distribution (CRID) 120 Volt Alternating Current (AC) power system due to an error when re-landing leads. The licensee maintained the unit in Mode 3 (Hot Standby) to verify proper operation of the affected CRID electrical bus and perform additional maintenance work. The licensee synchronized the unit to the grid on January 4, 2004.

On March 29, 2004, the unit experienced an automatic reactor trip when the Train 'B' reactor trip bypass breaker was manipulated during surveillance testing. An electrical fault developed during the manipulation and shorted out one phase of power to the control rod drive mechanisms. Several control rods inserted into the core and caused a negative rate trip signal. Following replacement of several power supplies in the control rod drive system, the unit was restarted and synchronized to the grid on April 2, 2004.

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, and performed general area walkdowns during periods of extended freezing to evaluate the effectiveness of the licensee's plant winterization program. This activity represented two inspection samples.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

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

- Unit 1 AB Emergency Diesel Generator (EDG) fuel oil, lubricating oil, starting air, jacket cooling water and electrical control systems performed on January 15, 2004

- Unit 1 Main Feedwater System performed on February 6, 2004 (risk significant as a potential event initiator)

- Unit 2 Auxiliary Building Ventilation performed on February 20, 2004 (risk significant for radiation release pathway)

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones. The inspectors reviewed operating procedures, system diagrams, 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 corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

.2 The inspectors performed one complete system walkdown of the following risk significant system:

- Unit 2 Safety Injection System performed January 10, 2004, through March 21, 2004

The inspectors reviewed operating procedures, system diagrams, TS requirements, and applicable sections of the Updated Final Safety Analysis Report (UFSAR) to ensure the correct system lineup. The inspectors verified acceptable material condition of system components, availability of electrical power to system components, and that ancillary equipment or debris did not interfere with system performance.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours

a. Inspection Scope

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

- Unit 1 Control Room Cable Vault (Zone 57)
- Unit 1 Turbine Building Pump Bay Elevation 569' (Zone 2)
- Unit 1 West Auxiliary Feed Pump Room Elevation 591' (Zone 17A)
- Unit 1 East Auxiliary Feed Pump Room Elevation 591' (Zone 17D)
- Unit 1 Screenhouse Motor Control Center and Screenhouse (Zones 29E and 29G)
- Unit 2 Turbine Building Pump Bay Elevation 569' (Zone 2)
- Unit 2 West Auxiliary Feed Pump Room Elevation 591' (Zone 17B)
- Unit 2 East Auxiliary Feed Pump Room Elevation 591' (Zone 17G)
- Unit 2 Screenhouse Motor Control Center and Screenhouse (Zones 29F and 29G)

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 corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

1R06 Flood Protection (71111.06)

a. Inspection Scope

The inspectors performed one inspection activity related to the licensee's precautions to mitigate the risk from internal flooding events. The inspectors performed a walkdown of the lower plant elevations of the Turbine Building and Auxiliary Building to assess the adequacy of watertight doors and verify that drains and sumps were clear of debris and were operable. The inspectors also reviewed the work activities associated with the turbine building sump inspection to verify that identified problems were being entered into the corrective action program with the appropriate characterization and significance.

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 licensed operator re-qualification evaluations in the D. C. Cook operations training simulator on February 11, 2003. The inspectors focused on alarm response, command and control of crew activities, communication practices, procedural adherence, and the implementation of emergency plan requirements.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following three risk-significant structures, systems, and components (SSCs):

- Unit 1 Train 'B' Reactor Trip Bypass Breaker Causes Alarm When Racked In

- Unit 2 'AB' EDG Multiple Equipment Failures Requires Emergency License Amendment

- Unit 1 and 2 Recurring Degradation of Essential Service Water (ESW) Check Valves Supplying Cooling to the EDGs

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 actions to address SSC performance or condition problems in terms of the following:

- 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/or re-classification, and
- appropriate performance criteria for SSCs classified as (a)(2) and/or appropriate and adequate goals and corrective actions for SSCs classified as (a)(1).

In addition, the inspectors verified that maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization.

b. Findings

b.1 Failure to Correct Conditions Causing Repetitive Load Swings on the Plant's Emergency Diesel Generators (EDGs)

The inspectors identified a finding of very low safety significance (Green) associated with a self-revealed event. The licensee failed to take timely and effective corrective actions to address obsolete and degrading EDG governing system components that adversely affected the reliability and availability of the Unit 2 'AB' EDG. The inspectors determined that this issue was a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," and therefore dispositioned this finding as a Non-Cited Violation.

Discussion

On December 7, 2003, the Unit 2 'AB' EDG experienced unexpected load oscillations during surveillance testing. With the engine fully loaded at 3500 kilo-watts (kW) for approximately 40 minutes, engine load decreased to 2250 kW, then increased to approximately 3700 kW, then decreased to 2250 kW, and then began oscillating about 300 kW around 2250 kW. Operators then manually shut down the engine. To correct the cause of these load oscillations, the licensee replaced both the electronic governing module (EGM) and the governor hydraulic actuator (EGB). After consulting with the vendor, the licensee's troubleshooting team determined that the most likely cause of the load swings was a problem with the EGM. The licensee replaced the EGB because the actuator was approaching the end of its recommended service life, and replacing it would preclude the need to perform additional governing system maintenance and tuning later.

Following replacement of the governing system components, the engine was started to perform tuning of the new governing module and actuator. During this time, one of the engine's twelve fuel injector pumps seized. The licensee replaced the fuel injector pump and injector. The licensee subsequently determined that erosion of the plunger assembly generated small metallic particles that migrated into the small gap between the plunger and the barrel, galling the surface and ultimately seizing the fuel injector pump. Based upon a review of maintenance history and operating experience, the licensee determined that this was an isolated failure for this fuel injector pump. Upon restoring the fuel oil system to operation, a fuel leak was discovered at the new fuel injector pump. The licensee replaced the associated high pressure fuel line. The leak continued, which necessitated another fuel injector pump and injector replacement. This corrected the fuel leak and testing of the engine continued. The licensee subsequently determined that a slight difference in the fuel injector pump end fitting led to a misalignment between the pump and the fuel lines, which resulted in the fuel leaks.

Additional problems were encountered afterwards that complicated the recovery effort. Two other component failures (i.e., a speed droop knob on the EGB and a high trim potentiometer on the new EGM) and the need for additional troubleshooting prevented completion of corrective maintenance and testing activities within the 72-hour allowed outage time of TS 3.8.1.1.b. The licensee requested and received an emergency license amendment for an additional 72 hours to accomplish restoration of the EDG to preclude a required unit shutdown.

The licensee’s root cause evaluation determined that the root cause for the failures experienced on the Unit 2 ’AB’ EDG was the failure of plant personnel to recognize and take action to prevent the potential impact of obsolete equipment on plant operation. The evaluation also identified that the relatively short 72-hour allowed outage time had limited the willingness and capability of plant personnel to perform EDG maintenance on-line, resulting in the deferral of work on the EDGs to an outage or addition of work to the maintenance backlog. The licensee concluded that the most likely failure mechanism resulting in the initial engine load transient was the age-related component failure of the amplifier gain circuit in the EGM. The licensee noted that a number of the problems encountered with the Unit 2 ’AB’ EDG in December 2003 (e.g., EGM module failure, seized fuel injector pump, difficulties in tuning the engine following governor replacement, and problems with spare parts) were recurrences of previous events. The licensee’s root cause evaluation highlighted three other events involving the EDGs. The inspectors concluded that the licensee’s root cause evaluation was thorough and reached reasonable conclusions. The corresponding corrective actions were reviewed and found to appropriately address the causes.

The inspectors previously reviewed a similar issue with load oscillations due to governing component failures affecting the Unit 2 ’CD’ EDG on November 2, 2002, and on January 23, 2003, and concluded that the failure to identify the cause and take corrective actions to prevent repetitive Unit 2 ’CD’ EDG load oscillations was a finding of very low safety significance and a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," (NCV 05000316/2003006-01). To address the problem with obsolete and degrading EDG governing system components, the licensee initiated a plan to upgrade the existing EGM modules with newly designed electronic governors. The licensee installed one of the new electronic governors on the Unit 1 ’CD’ EDG during the Fall 2003 refueling outage and scheduled future upgrades for the remaining three EDGs during upcoming outages.

The inspectors determined that the licensee’s failure to assure that timely and effective corrective actions were taken to address obsolete governing system components to preclude repetition of unexpected load oscillations on the plant’s EDGs was a licensee performance deficiency warranting a significance evaluation. The inspectors also concluded that this finding affected the cross-cutting issue of problem identification and resolution.

Analysis

The inspectors assessed this finding using the Significance Determination Process (SDP). The inspectors reviewed the samples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and determined that there were no examples related to this issue. Consistent with the guidance in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," the inspectors determined that this finding was more than a minor safety concern because it was associated with the Configuration Control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences since the EDG was taken out of service to correct the problem.

The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." In accordance with the "SDP Phase 1 Screening Worksheet for IE [Initiating Events], MS [Mitigating Systems], and B [Barrier Integrity] Cornerstones," the inspectors determined that since Unit 2 was not shut down prior to exceeding the 72-hour allowed outage time for the Unit 2 'AB' EDG, the finding represented an actual loss of safety function of a single train of safety-related equipment for greater than its TS allowed outage time and a Phase 2 SDP evaluation was warranted. The inspectors utilized the "Loss of Offsite Power" Phase 2 SDP Worksheet and solved only those sequences that involved the EDG with a duration of 3-30 days, since the total unavailability of the Unit 2 'AB' EDG was about 106 hours. The inspectors also utilized the "Dual Unit LOOP With Loss of Emergency AC Bus Train or the Associated EDG" SDP worksheet and increased the initiating event frequency by two orders of magnitude to account for the unavailable EDG and solved all worksheet sequences. Based on the results of both SDP worksheets, the inspectors determined that the finding was potentially of low to moderate safety significance (White). The regional Senior Reactor Analyst (SRA) reviewed these results and determined that the SDP worksheets were potentially conservative since the initial results represented an unavailable EDG for 30 days as opposed to the 4.4 days of actual unavailability.

The SRA performed a Phase 3 risk assessment using the risk achievement worth value for the Unit 2 'AB' EDG failing to run and an unavailability duration of 106 hours. This calculation determined that the finding was of very low safety significance (Green). The SRA reviewed the licensee's risk evaluation for this same issue which was presented in the licensee's emergency license amendment request and determined that the license amendment was granted, in part, due to the low safety significance of the extended unavailability and no net increase in core damage frequency.

Enforcement

10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to the above, the licensee failed to take effective corrective action to address obsolete and degrading EDG governing system components to prevent repetitive load swings on the plant's EDGs, a significant condition adverse to quality. Specifically, following engine load swings affecting the Unit 2 'CD' EDG on November 2, 2002, and on January 23, 2003, the licensee failed to implement effective corrective actions to preclude recurrence of engine load swings on the Unit 2 'AB' EDG on December 7, 2003, for the same cause. Because of the very low safety significance, this violation is being treated as a Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000316/2004002-01). The licensee entered this violation into their corrective action program as Condition Report (CR) 03341015. The licensee subsequently restored the Unit 2 "AB" EDG to an operable status by replacing a failed electronic governing module.

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 five maintenance and operational activities affecting safety-related equipment:

- Unit 1 CD EDG Planned Preventive Maintenance
- Unit 1 West Containment Spray Pump Suction Flushing Line Leak and Suction Flushing Line Replacement
- Unit 2 Maintenance Risk Review for Significant Planned Switchyard Work and Power Supply Availability
- Unit 2 Containment Sump Level Indicators Repair
- Unit 2 Turbine Impulse Pressure 2-MPC-254-V1 Root Valve Leak and Repair

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. The maintenance associated with the Unit 1 West containment spray pump suction flushing line was emergent work to repair a section of piping that had developed a minor through-wall leak. The maintenance associated with the Unit 2 containment sump level indicators was emergent work to restore one of the three TS leak detection methods to identify RCS leakage inside containment. The Unit 2 turbine impulse pressure root valve was also an emergent work activity to repair a steam leak on the valve.

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. 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.

b. Findings

No findings of significance were identified.

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

.1 Declaration of an Unusual Event Due to the Unit 2 North Seal Water Injection Filter Leak

a. Inspection Scope

The inspections reviewed the licensee's response to the Unit 2 North seal water injection filter event that occurred on December 19, 2003. On December 19, 2003, at 6:48 p.m., the Control Room received positive notification that a single stream of water was emanating from the upper flange of the Unit 2 North seal water injection filter. The leak was estimated to be 30 gpm. At 6:53 p.m., the Shift Manager declared an Unusual Event on Unit 2 due to RCS leakage in excess of 10 gpm (Emergency Classification S-8). At 7:29 p.m., the Unit 2 North seal water injection filter was isolated and bypassed; however, a small amount of leakage remained due to a manual isolation valve leak-by. By 7:40 p.m., the Unit 2 South seal water injection filter had been placed in service and the bypass line closed and at 8:12 p.m. all leakage from the Unit 2 North seal water injection filter had been stopped. The Unusual Event was terminated at 8:15 p.m. Licensee personnel estimated that approximately 2600 gallons of volume control tank inventory had been lost to the dirty sump tank as a result of this event.

Following the event, the inspectors reviewed control room logs, computer data, operator statements, plant drawings, procedures, CRs, the D. C. Cook UFSAR, the D. C. Cook Emergency Plan and associated procedures, TS and other plant documents to determine the adequacy of the event response.

b. Findings

No findings of significance were identified.

.2 Unit 2 Reactor Trip Due to Human Performance Error

a. Inspection Scope

On December 30, 2003, an automatic reactor trip of Unit 2 occurred due to the unplanned closure of the number 22 and 23 steam generator feedwater isolation valves. The feedwater isolation valve closure originated from an abnormality in the Control Room Instrument Distribution (CRID) 120 Volt Alternating Current (AC) power system. Technicians were landing leads on a residual heat removal system flow transmitter which was powered from the affected CRID power supply at the time of the event. An arc was observed during the lead landing procedure. Unit 2 subsequently tripped due to a feedwater-flow/steam-flow mismatch coincident with low steam generator water level in the number 22 steam generator. The inspectors reviewed the circumstances associated with this event, including the root cause evaluation and corrective actions.

b. Findings

(Closed) Licensee Event Report (LER) 50-316/2003-005-00: "Unit 2 Trip Due to Steam Flow/Feed Flow Mismatch."

The inspectors identified a finding of very low safety significance (Green) associated with this self-revealed event. A maintenance technician performing connection of energized leads in a terminal box caused an electrical fault and voltage transient in the CRID 120 Volt AC power system when he brought one lead in close proximity to the terminal box edge, causing an arc to ground. No violation of regulatory requirements was identified.

Discussion

The inspectors thoroughly examined the licensee's root cause evaluation and concluded the licensee had not neglected any likely factors. The root cause was determined to be the result of inattention on the part of the maintenance craftsman performing the connection of live leads in the terminal box for residual heat removal system flow controller 2-IFC-325. The craftsman brought the lead in close proximity to the terminal box edge and caused a ground fault. The current drawn as a result of the fault caused a voltage transient in the CRID 120 Volt AC power system, resulting in an unanticipated voltage drop and auto-transfer of CRID power to its alternate source. The voltage drop was below the design operating value for feedwater isolation relay 2-K666-X2-B. The opening of the relay caused the number 22 and 23 steam generator feedwater isolation valves to close, which resulted in the reactor trip. The root cause evaluation noted several contributing factors including:

(1) The procedure directed maintenance craftsmen to lift leads vice de-energizing and tagging the system.

(2) There was no protective insulation used (or required) to prevent grounding to the terminal box.

(3) The maintenance craftsman was not aware that the lead was energized from the CRID 120 Volt AC power system.

(4) There was no review of the appropriate drawings during job preparation.

The inspectors noted that the licensee's root cause evaluation did not treat this as an isolated event. In addition to analyzing the human performance aspects associated with the Unit 2 trip, the licensee analyzed common factors associated with station event clock resets in 2003 in conjunction with an Institute of Nuclear Power Operations (INPO) analysis of six specific clock resets, a related INPO Area for Improvement comment, and Category 1 and 2 CRs from 2003 to determine the organizational and programmatic influences. The licensee concluded that significant human performance related events had occurred due to a lack of manager knowledge regarding the fundamentals of a good self-improving culture.

The inspectors concluded that the root cause evaluation was thorough and that corresponding corrective actions appropriately addressed the root causes. Specific corrective actions to prevent recurrence directly related to the human performance aspects of the trip were:

(1) revision of the guidance on lifting and landing leads to require consideration of tagging as the first and preferred option, and to require insulating when tagging cannot be performed to de-energize the circuit;

(2) revision to the work planning standard to ensure that the above cautions are incorporated into the appropriate work orders; and

(3) verification that modified guidance of the critical look-ahead process was translated into procedural requirements.

The inspectors determined that the human performance error resulting in the Unit 2 reactor trip was a licensee performance deficiency warranting a significance evaluation. The inspectors also concluded that this finding affected the cross-cutting area of human performance.

Analysis

The inspectors assessed this finding using the SDP. The inspectors reviewed the samples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and determined that there were no examples related to this issue. Consistent with the guidance in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," the inspectors determined that this issue was associated with the Human Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability since the human performance error caused a reactor trip. The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined that this finding was a licensee performance deficiency of very low safety significance because the finding: (1) did not contribute to the likelihood of a primary or secondary system loss-of-coolant accident initiator, (2) did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available, and (3) did not increase the likelihood of a fire, or internal or external flooding.

Enforcement

No violation of regulatory requirements was identified. This issue is considered to be a finding (FIN 05000316/2004002-02). The licensee entered this finding into their corrective action program as CR 03365009.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following five 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 02037084, "2-ESW-141, All Internal Parts of the Valve Except Rubber Insert Are Missing"
- CR 04024007, "2-QT-134-AB Starter Has an Open (Burned) Coil"
- CR P-00-17063, "R5 Radiation Monitor High Radiation and Auto Swap of Bypass Damper"
- CR 03298001, "Three Lower Inlet Doors Exceed Acceptance Criteria for Opening Force"
- CR 04063027, "Some Reverse Direction Local Leak Rate Tests at Cook Nuclear Plant Do Not Comply with 10 CFR 50, Appendix J Requirements"

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 operator work-around listed below to identify any potential affect on the functionality of mitigating systems or on the operators' response to initiating events:

- Jumpering Out the P-12 Interlock to Steam Dump Control to Enhance Speed of Cooldown When Below 540 Degrees Fahrenheit

The inspectors selected this issue to review as a potential operator work-around in order to understand how this task is accomplished and the potential effect on plant operations. The inspectors reviewed selected procedures and documents.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

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

- Unit 1 AB EDG Starting Air Valve Replacement and Routine Instrument Calibration
- Unit 2 East Component Cooling Water Pump Motor Lubrication
- Unit 2 AB EDG Jacket Water Pump Repair and Routine Instrument Calibration

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.

In addition, the inspectors verified that post maintenance testing problems were entered into the corrective action program with the appropriate significance characterization.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

.1 Unit 2 Forced Outage

a. Inspection Scope

On December 30, 2003, the licensee entered a forced outage on Unit 2 following an automatic reactor trip caused by the unplanned closure of the number 22 and 23 steam generator feedwater isolation valves. The feedwater isolation valve closure originated from a momentary ground in the CRID 120 Volt AC power system. Unit 2 subsequently tripped due to a feedwater-flow/steam-flow mismatch coincident with low steam generator water level in the number 22 steam generator. The licensee maintained the unit in Mode 3 (Hot Standby) to verify proper operation of the affected CRID electrical bus and perform additional maintenance work. The licensee performed a reactor startup and synchronized the unit to the grid on January 4, 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 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 three 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.

- Unit 1 West Residual Heat Removal Operability Test Modes 1-4
- Unit 1 Main Turbine and Feed Pump Turbine Valve Functional Checks
- Unit 1 West Containment Spray System Operability Test

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.

- 1-TM-03-109-R0, "Install Time Delay to Eliminate/Reduce Nuisance Alarms for the Reactor Coolant Pump #2 Seal Leak-off Flow Annunciator"
- 2-TM-04-12-R0, "Disable 2-SV-334-4 Non-essential Service Water from Reactor Coolant Pump 4 Motor Air Coolers Outlet Safety Valve"

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 and operations 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.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

.1 Inspection Planning

a. Inspection Scope

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

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.2 Walkdowns of Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors conducted walkdowns of selected ARMs in the Unit 1 and Unit 2 Auxiliary Buildings to verify they were located as described in the UFSAR, to assess their material condition and to determine if they were optimally positioned relative to the potential source(s) of radiation they were intended to monitor. The inspectors reviewed high alarm setpoints for selected ARMs and for selected process radiation monitors for consistency with UFSAR information and for compliance with TSs and procedures. Walkdowns were also conducted of those areas where portable survey instruments were calibrated/repaired and maintained for RP staff use to determine if those instruments designated "ready for use" were sufficient in number to support the radiation protection program, had current calibration stickers were operable and were in good physical condition. Additionally, the inspectors observed the licensee's portable survey instrument calibration units and the radiation sources used for instrument checks, and discussed their use with RP staff to determine if they were used adequately. Licensee personnel were also observed performing source checks of selected instruments as they were logged out for use.

These reviews represented one partial inspection sample.

b. Findings

No findings of significance were identified.

.3 Calibration and Testing of Radiation Monitoring Instrumentation

a. Inspection Scope

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

- Units 1 and 2 Containment High Range Area Monitors (two monitors per unit);
- Unit 2 Reactor Coolant Filter Cubicle ARM;
- Unit 1 In-Core Instrument Room ARM;

- Unit 1 Containment Building Continuous Air Monitors (two monitors);
- Unit 1 Upper Containment ARM;
- J. L. Shepherd Model M89 Portable Survey Instrument Calibrators (two units);
- Portable survey instruments used for underwater surveys (two instruments);
- Portal monitors used at various radiological and protected area egress locations (three units);
- Personnel contamination monitors used at radiological egress locations (two units); and
- Whole body counter (one of two units).

The inspectors determined what actions were taken when, during calibration or source checks, an instrument was found significantly out of calibration or was beyond as-found acceptance criteria. Should that occur, the inspectors verified that the licensee's actions would include a determination of the instruments's previous usages and the possible consequences of that use since the prior calibration. The RP department's instrument "use history analysis" program was reviewed to assess its development and its viability as a tool to evaluate an instrument's performance. The inspectors discussed with RP staff the plant's 10 CFR Part 61 source term information to determine if the calibration and instrument check sources used were representative of the plant source term and that difficult to detect nuclides were scaled into whole body count dose determinations.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed licensee CRs and any special reports that involved personnel contamination monitor alarms due to personnel internal exposures to verify that identified problems were entered into the corrective action program for resolution. Licensee self-assessments, audits, and CRs were also reviewed to verify that problems with radiation protection instrumentation and self-contained breathing apparatus were identified, characterized, prioritized, and resolved effectively using the corrective action program.

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

1. Initial problem identification, characterization, and tracking;
2. Disposition of operability/reportability issues;
3. Evaluation of safety significance/risk and priority for resolution;

4. Identification of repetitive problems;
5. Identification of contributing causes; and
6. Identification and implementation of effective corrective actions.

The inspectors determined if the licensee's self-assessment and/or audit activities had identified and addressed repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

These reviews represented three inspection samples.

b. <u>Findings</u>

No findings of significance were identified.

.5 <u>Radiation Protection Technician Instrument Use</u>

a. <u>Inspection Scope</u>

The inspectors selectively verified that calibrations for those portable survey instruments recently used and for those designated for use had not lapsed. Also, the inspectors reviewed records of portable survey instrument response checks for selected instruments used during the licensee's refueling outage in October 2003, to determine if instrument source checks were completed both prior to instrument use and upon return of the instrument to the storage area after each shift, as required by the licensee's procedure. The inspectors also discussed instrument calibration methods and source response check practices with radiation protection staff and observed staff complete survey instrument operability checks prior to use.

These reviews represented one inspection sample.

b. <u>Findings</u>

No findings of significance were identified.

.6 <u>Self-Contained Breathing Apparatus Maintenance and Staff Qualifications</u>

a. <u>Inspection Scope</u>

The inspectors reviewed aspects of the licensee's respiratory protection program for compliance with the requirements of Subpart H of 10 CFR Part 20, and to determine if self-contained breathing apparatus (SCBA) were properly maintained and ready for emergency use. The inspectors reviewed surveillance records and the operability status of SCBAs staged and ready for use in the plant, and assessed the licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions. The inspectors verified that all emergency response operations staff including control room staff on the active duty roster were trained, respirator fit tested, and medically certified to use SCBAs consistent with the licensee's emergency plan and with the requirements of 10 CFR 50.47. The inspectors also reviewed the respiratory protection training lesson plan to assess its overall adequacy, to assess compliance with Subpart H of 10 CFR Part 20 and to verify that personal SCBA air bottle change-out was adequately covered.

The inspectors walked down the SCBA air bottle filling station and selected SCBA equipment storage locations in various areas of the plant, and examined several SCBA units to assess their condition to verify that air bottle hydrostatic tests and regulator calibrations were current, and to verify that bottles were pressurized to meet procedural requirements. The inspectors reviewed records of SCBA equipment inspection and functional testing and observed a member of the licensee's staff complete a functional test to determine if these activities were performed consistent with the licensee's procedure. The inspectors also ensured that the required, periodic air cylinder hydrostatic testing was up to date, and that the Department of Transportation required retest air cylinder markings were in place for several randomly selected SCBA units. Additionally, the inspectors reviewed training certificates for those licensee staff authorized to perform maintenance and repair of SCBA pressure regulators to determine if those personnel that performed maintenance on components vital to equipment function were qualified.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Cornerstone: Public Radiation Safety

.1 Radiation Safety Strategic Area

a. Inspection Scope

The inspectors sampled the licensee's submittals for the performance indicator and periods listed below. The inspectors used performance indicator definitions and guidance contained in Revision 2 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," to verify the accuracy of the performance indicator data. The following performance indicator was reviewed:

- Radiological Effluent TS/Offsite Dose Calculation Manual Radiological Effluent Occurrence

The inspectors reviewed the licensee's CR database and selected CRs generated between July 2003 and February 2004, to identify any potential occurrences such as unmonitored, uncontrolled or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous and liquid effluent monthly summary data, the results of associated offsite dose calculations and quarterly performance indicator verification records generated between July 2003 and January 2004, to determine if indicator results were accurately reported. Additionally, the inspectors discussed with the environmental technical staff its methods for quantifying effluents and determining effluent dose.

b. Findings

No findings of significance were identified.

Cornerstone: Initiating Events

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

a. Inspection Scope

The inspectors verified the Unplanned Scrams per 7000 Critical Hours and the Unplanned Scrams with Loss of Normal Heat Removal performance indicators for both units. The inspectors reviewed each LER from April 1, 2003, through December 31, 2003, determined the number of scrams that occurred, evaluated each of the scrams against the performance indicator definitions, and verified the licensee's calculation of critical hours for both units.

b. Findings

No findings of significance were identified.

The inspectors noted that the Unit 2 Unplanned Scrams with Loss of Normal Heat Removal performance indicator crossed the Green-to-White threshold of greater than 2.0 during the third quarter of 2002. A supplemental inspection was performed for the White performance indicator using Inspection Procedure 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area," and documented in NRC Inspection Report 05000316/2003014. The inspectors also noted that as a result of a Unit 2 reactor trip on December 28, 2003, the Unit 2 Unplanned Scrams per 7000 Critical Hours performance indicator crossed the Green-to-White threshold of greater than 3.0 during the fourth quarter of 2003. As a result of the second White performance indicator, the NRC will conduct a supplemental inspection using Inspection Procedure 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area." Refer to Section 4OA5.2 of this report for the resolution of reporting discrepancies previously identified with the Unit 2 Unplanned Scrams with Loss of Normal Heat Removal performance indicator.

.3 Unplanned Power Changes per 7000 Critical Hours

a. Inspection Scope

The inspectors verified the Unplanned Power Changes per 7000 Critical Hours performance indicator for both units. The inspectors reviewed power history data for both operating units from April 1, 2003, through December 31, 2003, determined the number of power changes greater than 20 percent full power that occurred, evaluated each of those power changes against the performance indicator definition, and verified the licensee’s calculation of critical hours for both units.

b. Findings

No findings of significance were identified.

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 program as a result of the 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 Annual Sample Review

a. Inspection Scope

The inspectors selected the following two issues for in-depth review:

- CR 03336036, "Rework During U1C19 Root Cause Evaluation"
- CR 03311009, "Operations Cross-Cutting Human Performance Issues"

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

- consideration of the extent of condition, generic implications, common cause and previous occurrences;
- classification and prioritization of the resolution of the problem, commensurate with safety significance;
- identification of the root and contributing causes of the problem; and
- identification of corrective actions which were appropriately focused to correct the problem.

The inspectors discussed the corrective actions and associated CR evaluations with site personnel.

b. <u>Findings</u>

No findings of significance were identified. However, the inspectors had the following observations regarding the licensee's root cause evaluation and corrective actions for the two Crs.

b.1 <u>Refueling Outage Rework</u>

Condition Report 03336036 documented that during the execution of the U1C19 refueling outage, there were an unacceptably high number of significant rework events. The rework added 125 hours to the outage duration.

Many of the corrective actions associated with CR 03336036 were vague or narrowly focused lacking specific actions. Examples included:

- Corrective Action 1-2: Senior maintenance leadership will select a top performing plant to benchmark for maintenance standards. A benchmarking team will then visit and develop equivalent maintenance standards for the Cook plant.

- Corrective Action to Prevent Recurrence 3-1: Interim standards for high quality instrumentation and control technician performance will be developed, communicated and reinforced to the use of human error prevention tools.

- Corrective Action 11-2: Develop and implement planning standards for conducting walk downs of power production and outage work packages. The standards are to establish ownership for the quality and completeness of prepared work packages.

The inspectors reviewed the two corrective actions that were completed. The inspectors identified that Corrective Action 11-2 (see above) was closed by the responsible department with no changes to the existing standards. A briefing was made to available staff detailing the existing pre-planning walkdown requirements, with no attendance roster to assure all personnel requiring the briefing received it. With no change to the standards for walk downs, it was difficult to determine if the contributing cause, identified in the root cause determination for this CR, was adequately addressed. Because several corrective actions lacked examples of the specific standards that needed to be changed, added, or "benchmarked" they were considered vague or narrowly focused. These corrective actions were not defined well enough to assure the actions the responsible departments will take would be expected and correct to address the contributing cause.

b.2 <u>Operations Cross-Cutting Human Performance Issues</u>

The root cause evaluation for CR 03311009, "Operations Cross-cutting Human Performance Issues," collectively analyzed several recent events that involved operations configuration control or procedure use issues resulting in unanticipated system responses or consequences. The inspectors thoroughly examined the licensee's root cause evaluation and concluded the licensee had not neglected any likely factors. The corresponding corrective actions were reviewed and found to appropriately address the causes with one exception.

The licensee noted that previous operator errors had generally been treated as isolated incidents without trending or common cause analysis performed and that the most common corrective actions were reactionary. These corrective actions included distributing "Lessons Learned" information, updating the pre-job briefing data base, and counseling by supervisors. The licensee found that these corrective actions were of limited effectiveness and were not long lasting. The licensee noted that there was a significant reduction in operator human performance errors immediately following the implementation of an operations department human performance improvement initiative in March 2003. The licensee found a definite cause and effect relationship in that the intensive emphasis on standards resulted in a significant decline in errors and that the lack of follow through for the initiative later in the year resulted in a return to lowered standards and increased errors due to poor work practices.

The licensee concluded that a contributing cause for the operator human performance issues analyzed in the root cause evaluation was that previous human performance initiatives were not sustained. The licensee identified two corrective actions to address this contributing cause. The first action was to develop a new human performance initiative plan. The second action was to benchmark another utility to develop and implement a tool to assist with management identification and correction of operator standards deficiencies. The inspectors noted that both of these actions were essentially new initiatives and that the concern identified with sustaining previous human performance initiatives was not specifically resolved.

.3 Cross-Reference to Problem Identification and Resolution Findings Documented Elsewhere in the Report

Section 1R12 of this report describes a finding where licensee personnel failed to take effective corrective actions to address obsolete and degrading EDG governing system components to prevent repetitive load swings on the plant's EDGs that adversely affected the reliability and availability of the engines.

4OA3 Event Response (71153)

.1 (Closed) LER 50-315/2002-008-00: "Failure to Complete Unit Shutdown as Required by TS 3.6.5.1." During the performance of periodic surveillance testing in the Unit 1 ice condenser with the unit in Mode 1 (Power Operation) on April 25, 2002, the licensee identified an ice basket with an "as-found" end of cycle weight not meeting the minimum 1144 pounds required by TS 3.6.5.1.d. The licensee failed to recognize at that time that this condition constituted a failure to meet the Limiting Condition for Operation (LCO) for TS 3.6.5.1 and failed to comply with the 48-hour action requirement to restore the ice bed to an operable status or be in at least Mode 3 (Hot Standby) within the next 6 hours and Mode 5 (Cold Shutdown) within the following 30 hours. The licensee discovered this non-compliance on June 4, 2003, during its extent of condition review for LER 50-316/2003-004-00. The licensee reported this event as a condition which was prohibited by the plant's TSs in accordance with 10 CFR 50.73(a)(2)(i)(B). The licensee determined that the apparent cause for this event was human error and implemented reasonable corrective actions. The inspectors concluded that this event was a licensee performance deficiency warranting a significance evaluation. The inspectors also concluded that this finding affected the cross-cutting issue of human performance.

The inspectors assessed this finding using the SDP. The inspectors reviewed the samples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and determined that there were no examples related to this issue. Consistent with the guidance in IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," the inspectors determined that this failure to recognize entry into the LCO for TS 3.6.5.1 and the failure to comply with the TS LCO action requirement could become a more significant safety concern if left uncorrected and was therefore more than a minor concern. Specifically, the failure to correctly implement the requirements of TS 3.6.5.1 could reasonably result in the failure to identify a degraded or inoperable ice bed. Because the ice condenser is integral with the reactor containment design, the inspectors concluded that this issue was associated with the barrier integrity cornerstone. The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined that this finding was a licensee performance deficiency of very low safety significance because the finding did not represent an actual open pathway in the physical integrity of reactor containment or an actual reduction of the atmospheric pressure control function of the reactor containment.

The inspectors concluded that this event constituted a violation of TS 3.6.5.1. A licensee-identified Non-Cited Violation is documented in Section 4OA7.1 of this report. This LER is closed.

.2 (Closed) LER 50-316/2003-004-00: "Weight of Ice Basket Below Minimum Allowed in TS 3.6.5.1." During the performance of periodic surveillance testing in the Unit 2 ice condenser on April 26, 2003, the licensee identified an ice basket with an "as-found" end of cycle weight not meeting the minimum 1144 pounds required by TS 3.6.5.1.d. The inspectors verified that the licensee complied with the action requirement by entering Mode 5 (Cold Shutdown) within the required time. The licensee reported this event as a condition which was prohibited by the plant's TSs in accordance with 10 CFR 50.73(a)(2)(i)(B). The inspectors concluded that this event did not constitute a violation of NRC requirements. This LER is closed.

4OA4 Cross-Cutting Aspects of Findings

.1 Cross-Reference to Human Performance Findings Documented Elsewhere in the Report

Section 1R14.2 of this report describes a finding where a human performance error by a maintenance craftsman resulted in a Unit 2 reactor trip.

Section 4OA3.2 of this report describes a finding where licensee personnel failed to properly recognize that a condition identified during ice condenser basket weighing in Unit 1 required entry into TS LCO 3.6.5.1 for an inoperable ice condenser bed. This resulted in a failure to comply with the 48-hour action requirement to restore the ice bed to an operable status or shutdown the unit.

4OA5 Other

.1 Reactor Containment Sump Blockage (TI 2515/153)

NRC Bulletin 2003-01

a. Inspection Scope

The inspectors reviewed the licensee's response in AEP:NRC:3054-12, dated August 7, 2003, to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors (PWRs)." The Bulletin informed PWR licensees that NRC-sponsored research had identified the potential susceptibility of PWR recirculation sump screens to debris blockage, and the potential for additional adverse effects due to debris blockage of containment drainage flow paths necessary for emergency core cooling system (ECCS) and containment spray (CTS) system recirculation. Licensees were given two options in responding to the Bulletin. The licensee chose Option 2, describing interim measures taken to reduce the risk to ECCS and CTS recirculation functions, while proceeding with evaluations to determine full compliance.

The inspectors assessed the response elements and verified their implementation. The inspection guidance in Temporary Instruction (TI) 2515/153, "Reactor Containment Sump Blockage (NRC Bulletin 2003-01)" Sections 03.02 and 04.02, both titled "Responses Describing Interim Measures," were used to direct the inspection. Section 04.03 was also used to review the implementation of condition assessments following the guidance of NEI 02-01, "Condition Assessment Guidelines: Debris Sources Inside PWR Containments," Revision 1. The inspection involved interviews with licensee personnel and extensive review of licensee training records, procedures, inspection results and corrective actions.

b. Observations and Findings

The licensee performed detailed containment inspections to quantify potential debris sources, evaluate coatings, assess post-accident drainage flow paths, and evaluate the sump screens for gaps and obstructions, in both Unit 1 and Unit 2, before 2001. Significant corrective actions were implemented for adverse findings. Some containment design changes were made. Repeat inspections have been performed at least every subsequent refueling outage to address debris, coatings, flow paths and screens.

The licensee responded to Bulletin 2003-01 in three categories: measures identified in the Bulletin that were implemented; measures not identified in the Bulletin that were implemented; and Bulletin candidate measures that were not fully implemented, with justifications for not implementing. Each category is discussed in more detail below.

Overall, the inspectors determined that the licensee had taken the actions described in its response to the Bulletin. Though termed "interim," these involved training, program, and procedure activities which may be continued indefinitely. The licensee's response did not state a commitment date by which time final analyses would be completed and full compliance verified. The Bulletin did not request a commitment date.

Measures Identified in the Bulletin That Have Been Implemented

Operator Training: The training records demonstrated that all 94 licensed operators received training on the plant procedure for loss of emergency coolant recirculation flow during the period from September 30 - December 30, 2003. The training exceeded the simple procedure review described in the licensee's letter by including a discussion of NRC Bulletin 2003-01 and the licensee's response.

Aggressive containment cleaning and foreign material controls: The activities described in the licensee's response letter concerning foreign material exclusion (FME) controls, cleanliness controls, and inspections to verify cleanliness, appeared adequate. The inspectors had two observations:

- The licensee was implementing the FME activities as described with one exception. The licensee's letter stated, "The ice condenser is treated as a high risk FME area, requiring additional controls." The ice condenser upper plenum was so treated but, in some cases, the lower plenum was not. A logic matrix in the FME procedure was used to assign an FME risk level for work in the lower plenum during outages in May 2003 (Unit 2) and November 2003 (Unit 1) and the area was categorized "standard risk" for FME. This did not significantly affect FME controls; in fact, the purpose of these work activities was to find and remove foreign materials from the ice condensers. The licensee documented this as an inaccurate statement in correspondence to the NRC, and entered it into the corrective action program in CR 04014037.

- The procedure for cleanliness inspections by the Operations group specified each area was to be inspected "...by a team of at least two people," documented as initial inspection (INIT) and independent verification (IND VER). Assigning two persons as a team to inspect for cleanliness was not consistent with the licensee's procedure for independent verification, which addressed equipment configuration control and mandated separation. The licensee individual responsible for the procedure agreed that the second-person initials should be labeled as something other than "IND VER."

Ensuring containment drainage paths are unblocked: The ice condenser containment design included numerous and complex drainage flow paths. The inspectors verified that the drainage paths were all individually identified and inspected, as described in the licensee's letter. Inspection documentation showed the inspections were satisfactorily completed at the times or on the frequency specified.

Ensuring sump screens are free of adverse gaps and breaches: As described by the licensee, a maintenance procedure performed at least each 18 months required verification that the "...wire mesh screen does not contain rips, tears, openings, or gaps that would allow debris greater than approximately 1/4 inch to pass through or around...". However, NRC Inspection Report 05000315/2003012;05000316/2003012 documented a recent example of a licensee failure to adequately implement this procedure during an inspection of the Unit 1 lower containment sump. Corrective actions were performed prior to plant re-start.

Measures Not Identified in the Bulletin That Have Been Implemented (Plant Specific)

Control of Fibrous Insulation: The licensee developed and implemented revised design specifications to prohibit fibrous insulating material within credible Zones of Influence of high energy line breaks. Much of the pre-existing fibrous insulating material was removed before 2000. The licensee had also implemented detailed controls for insulation repair or replacement.

Recirculation Sump Protection Program: The program, its associated standards, its characterization of potential debris, and its assessment of relative impact were as described by the licensee. Although developed in 2000, the program identified some plant-specific equipment and materials beyond those addressed in industry-recommended guideline NEI 02-01, "Condition Assessment Guidelines: Debris Sources Inside PWR Containments," September 2002.

Safety-Related Coatings Program: The program had been developed and implemented as described, including inspection by an ANSI-qualified Level II coatings inspector, detailed documentation of findings, and removal of loose or degraded coatings. The program required that the inspection results be evaluated by licensee experts, which was being accomplished; however, the evaluations were only qualitative in nature. Licensee experts stated during interviews that the quantity, type and location of loose coatings found after recent operating cycles was too insignificant to justify detailed quantitative analyses. The total volume of coatings materials, removable by aggressive scraping after a full operating cycle, was said to be well under 5 gallons.

Debris Generation and Transport Study: The licensee funded a first-generation study performed by a consultant before 2000. This study adapted methodologies developed to assess BWR pump suction strainer blockage issues. Although it was specific to Unit 1, it was considered generally applicable to Unit 2 based on the similarities of the two containments. A second-generation study was underway at the time of the inspection to broaden and refine the previous results.

Effect of Small Debris Downstream of the Sump Screens: The licensee analyzed the potential effects of small debris downstream of the sump screens which could be drawn into the ECCS pump suction lines and pass through various ECCS components during recirculation. The analyses concluded that the ECCS pump bearings, the pressure reducing orifices (replacements for the original-equipment high pressure throttle valves), and the CTS spray nozzles would not be adversely affected by any debris capable of passing through the sump screens. Sump protection practices were in place to ensure that larger debris (e.g. sizeable flakes of coating) could not originate inside the lower containment sump or the recirculation sump.

Measures Identified in the Bulletin That Have Not Been Implemented

Procedure changes to delay the switch-over to containment sump recirculation, if appropriate: The licensee did not find it appropriate to modify the applicable procedures as an interim compensatory measure. The licensee determined that delayed switch-over could result in conditions outside the plant design basis safety analyses and could create conditions that would make optimal recovery more challenging. This position was consistent with the current recommendations of the Westinghouse Owners Group.

Actions to ensure alternative water sources are available: The licensee did not modify the applicable procedures, as an interim compensatory measure, to direct anticipatory refilling of the refueling water storage tank (RWST) or otherwise to promptly provide additional inventory for core injection or containment spray. Existing procedures do provide directions for RWST refill or use of alternate makeup sources, which are available and identified, if successful recirculation cannot be verified.

Inspection of the Containment Sumps and Condition Assessments

Between 1999 and 2000, licensee personnel performed condition assessments and inspections of both containments using challenging criteria and standards developed for the purpose after significant issues affecting containment conditions and sump recirculation capability were identified. The licensee's programs and procedures significantly pre-dated NEI's "Condition Assessment Guidelines: Debris Sources Inside PWR Containments," which was issued in September 2002. As such, they did not address all the issues in the same manner or to the same degree as the NEI guidance. For example, the licensee's assessment did not provide for a pre-walkdown review by the assessment team of design basis and licensing information. It did require that the team include the licensee's most knowledgeable personnel in these areas. Retrieval and review of construction and maintenance records involving coatings and insulation were not required. Coatings were addressed in a separate assessment process, which was generally more detailed and challenging than what was specified in the NEI guidelines. That process has continued each outage since. Focus was not directed to high energy line break areas, zones of influence, or other uniquely vulnerable areas, except fibrous insulation was aggressively removed from zones of influence. The licensee inspected in all "readily accessible areas." Documentation requirements self-imposed by the licensee did not specify all the details later recommended by NEI. On the other hand, the licensee's approach to identification of "foreign material" was highly detailed, went beyond the list of items contained in the NEI guidance, and included unique, plant-specific materials such as Styrofoam insulation.

Sump Related Modifications

As previously noted, the licensee completed some containment modifications prior to 2000. These resulted from earlier condition assessments and the "first generation" study of debris generation and transport. At the time of the inspection, a "second generation" study was in progress to improve understanding of potential vulnerabilities and to identify any additional needed changes in programs or plant design. Validation of information gathered during the earlier, extensive condition assessments was in progress to provide input to the new studies. No information had yet been found to be invalid. During interviews, the licensee's experts indicated that they could not predict that any new, risk-significant issues would be identified, necessitating prompt modifications to the plant design, or major changes to existing programs and procedures. Therefore, advance preparations to expedite plant modifications had not been made.

.2 <u>(Closed) Unresolved Item 05000316/2003006-02</u>: "Unplanned Scrams with Loss of Normal Heat Removal Performance Indicator Questions."

a. <u>Inspection Scope</u>

The inspectors previously opened this Unresolved Item to track resolution of reporting questions involving three Unit 2 reactor trips that were not reported for the Unplanned Scrams with Loss of Normal Heat Removal performance indicator. The inspectors reviewed the reporting discrepancies to close the issue.

b. <u>Findings</u>

<u>Introduction</u>

The inspectors identified a Severity Level IV Violation of 10 CFR 50.9, "Completeness and Accuracy of Information," because the licensee failed to accurately report two Unit 2 reactor trips in the performance indicator for Unplanned Scrams with Loss of Normal Heat Removal. The inspectors dispositioned this finding as a Non-Cited Violation.

<u>Discussion</u>

Reporting of performance indicator data to the NRC is a program in which all licensees of operating reactor plants participate. In preparation for the start of implementation of the reactor oversight process (ROP), licensees were requested to submit historical performance indicator data. This data was submitted on January 21, 2000, using NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision D. On March 29, 2000, the NRC issued Regulatory Issues Summary (RIS) 2000-08, "Voluntary Submission of Performance Indicator Data." The purpose of this RIS was to inform licensees of the start of initial implementation of the ROP and to provide direction on the process to be used by licensees to voluntarily submit performance indicator data to the NRC as part of the ROP. The RIS indicated that PI data should be submitted quarterly and in accordance with NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

As a result of excessive RCS cooldown following Unit 2 reactor trips, operators previously took action to manually isolate the main steam lines to arrest the cooldown. On these occasions, closing the main steam isolation valves resulted in the loss of the normal heat removal path to the main condenser. Plant operators subsequently maintained RCS temperature using the steam generator atmospheric dump valves. There were four Unit 2 reactor trips on October 7, 2001; May 12, 2002; July 22, 2002; and February 5, 2003; where operators manually isolated the main steam lines to stabilize RCS temperature. The licensee originally reported only the May 2002 reactor trip as an Unplanned Scrams with Loss of Normal Heat Removal performance indicator occurrence. This reactor trip was reported because the licensee considered the main condenser to be unavailable without an auxiliary steam supply to maintain condenser vacuum, and not because the main steam isolation valves were closed shortly after the trip. The other three reactor trips were not reported as occurrences for the performance indicator because licensee personnel believed that the exception in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2, for operator actions to control the reactor cooldown rate was applicable.

Two inspector feedback forms and two licensee Frequently Asked Question (FAQ) forms were previously submitted to address interpretation questions associated with the October 2001 and July 2002 reactor trips. Final resolution of the July 2002 reactor trip FAQ was approved by the NRC staff during a May 22, 2003 public meeting. The staff concluded that the July 2002 trip should be counted in the performance indicator as an Unplanned Scram with Loss of Normal Heat Removal occurrence. Final resolution of the FAQ for the October 2001 reactor trip was pending. During a public meeting with NEI on July 24, 2003, the NRC staff concluded that this reactor trip should also be counted in the performance indicator as an Unplanned Scram with Loss of Normal Heat Removal occurrence; however, NEI and licensee representatives present disputed the decision.

In the performance indicator data submitted for the first quarter of 2003, the licensee included a comment in the data report addressing the two FAQs submitted for the October 2001 and July 2002 reactor trips. The comment also referenced the February 2003 reactor trip. The inspectors believed that this trip should also be counted in the performance indicator as an Unplanned Scram with Loss of Normal Heat Removal occurrence and submitted a feedback form to resolve the question.

The performance indicator crossed the Green-to-White threshold of greater than 2.0 during the second quarter of 2003 due to the final resolution of the July 2002 reactor trip FAQ and a reactor trip that occurred on April 24, 2003, which were both reported. A supplemental inspection was performed for the White performance indicator using Inspection Procedure 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area," and was documented in NRC Inspection Report 05000316/2003014.

The licensee reported the October 2001 and February 2003 reactor trips for the Unplanned Scrams with Loss of Normal Heat Removal performance indicator on January 21, 2004, in the performance indicator data submitted for the fourth quarter of 2003. As a result, the reported data reflected that the performance indicator crossed the Green-to-White threshold during the third quarter of 2002. Inasmuch as the reporting issue has been resolved, this Unresolved Item is closed.

The inspectors determined that the licensee’s failure to accurately report two of the three Unit 2 reactor trips in the performance indicator for Unplanned Scrams with Loss of Normal Heat Removal was a licensee performance deficiency that impacted the regulatory process. Although the licensee did not initially include the February 2003 reactor trip as a performance indicator occurrence, it was identified as an open reporting question in the performance indicator data submitted for the first quarter of 2003 and was therefore not considered to be a reporting discrepancy.

Analysis

The inspectors concluded that this issue was not suitable for evaluation by the SDP; however, it was reviewed using the guidance in Section IV of the NRC Enforcement Policy because the licensee's failure to accurately report performance indicator data impacted the NRC's ability to carry out its mission. The inspectors reviewed Supplement VII, "Violation Examples - Miscellaneous Matters," of the "General Statement of Policy and Procedures for NRC Enforcement Actions," NUREG-1600, (Enforcement Policy) and determined that inaccurate or incomplete performance indicator data submitted to the NRC by a Part 50 licensee that would have caused a performance indicator to change from Green to White was a Severity Level IV Violation.

Enforcement

The reporting of performance indicator data to the NRC is a program in which all licensees of operating reactor plants participate. The information is used by the NRC to assess plant performance and plan supplemental inspection activities. 10 CFR 50.9, "Completeness and Accuracy of Information," requires, in part, that information provided to the Commission by a licensee shall be complete and accurate in all material respects. Contrary to the above, the licensee failed to accurately report two Unit 2 reactor trips on October 7, 2001, and July 22, 2002, in performance indicator data reports submitted to the NRC for the Unplanned Scrams with Loss of Normal Heat Removal Performance Indicator on January 17, 2002, and October 21, 2002, respectively. The inaccurate reporting of this performance indicator data adversely impacted the NRC's ability to assess plant performance since the performance indicator would have crossed the Green-to-White threshold much sooner than was actually reported by the licensee (i.e., third quarter of 2002 rather than second quarter of 2003), which would have allowed the NRC to review the circumstances that led to this degraded performance in a more timely manner. This violation is being treated as a Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000316/2004002-03). The licensee entered this violation into the corrective action program as CR 04071023.

.3 Spent Fuel Material Control and Accounting at Nuclear Power Plants (TI 2515/154)

The inspectors completed Phase I and Phase II of the subject TI and provided the appropriate documentation to NRC management as required by the TI.

b. 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 March 29, 2004. 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 Meeting

The inspector presented the results of the radiation monitoring instrumentation and protective equipment inspection to Mr. J. Jensen and other members of licensee management at the conclusion of the inspection on March 5, 2004. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

4OA7 Licensee-Identified Violation

The following violation of very low safety significance was identified by the licensee and was a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Manual, NUREG-1600, for being dispositioned as a Non-Cited Violation.

.1 Unit 1 TS 3.6.5.1 required, in part, that the ice bed shall be operable with each ice basket containing at least 1144 pounds of ice (end-of-cycle) in Modes 1, 2, 3 and 4. With the ice bed inoperable, restore the ice bed to operable status within 48 hours or be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours. Contrary to the above, on April 25, 2002, with Unit 1 in Mode 1, the licensee weighed and discovered that ice basket 24-1-7 contained 1099 pounds of ice. The licensee subsequently failed to restore the ice bed to an operable status within 48 hours or be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours. This was a violation of TS 3.6.5.1. Because of the very low safety significance, this violation is being treated as a Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy. This issue was discussed in Section 4OA3.2 of this report. The licensee entered this violation into their corrective program as CR 03155022.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

P. Cowan, System Engineering Manager
M. Finissi, Plant Manager
J. Jensen, Site Vice President
M. Nazar, Senior Vice President, Chief Nuclear Officer
T. Noonan, Acting Plant Engineering Director
K. Rollins, Maintenance Director
R. Serocke, Radiation Protection Manager
L. Weber, Performance Assurance Director
J. Zwolinski, Design Engineering & Regulatory Affairs Director

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000316/2004002-01	NCV	Failure to Correct Conditions Causing Repetitive Load Swings on the Plant's Emergency Diesel Generators (Section 1R12)
05000316/2004002-02	FIN	Unit 2 Trip Due to Steam Flow/Feed Flow Mismatch (Section 1R14.2)
05000316/2004002-03	NCV	Unplanned Scrams with Loss of Normal Heat Removal Performance Indicator Reporting Failure (Section 4OA5.2)

Closed

05000/316/2004002-01	NCV	Failure to Correct Conditions Causing Repetitive Load Swings on the Plant's Emergency Diesel Generators (Section 1R12)
50-316/2003-005-00	LER	Unit 2 Trip Due to Steam Flow/Feed Flow Mismatch (Section 1R14.2)
50-315/2002-008-00	LER	Failure to Complete Unit Shutdown as Required by TS 3.6.5.1 (Section 4OA3.1)
50-316/2003-004-00	LER	Weight of Ice Basket Below Minimum Allowed in TS 3.6.5.1 (Section 4OA3.2)
50-316/2003006-02	URI	Unplanned Scrams with Loss of Normal Heat Removal Performance Indicator Questions (Section 4OA5.2)
05000316/2004002-02	FIN	Unit 2 Trip Due to Steam Flow/Feed Flow Mismatch (Section 1R14.2)
05000316/2004002-03	NCV	Unplanned Scrams with Loss of Normal Heat Removal Performance Indicator Reporting Failure (Section 4OA5.2)

Discussed

05000316/2003006-01	NCV	Failure to Correct 2CD Emergency Diesel Generator Load Oscillations (Section 1R12)

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.

<u>1R01</u> <u>Adverse Weather Protection</u>

- PMI-5055, "Winterization/Summarization," Revision 1
- PMP-5055-001-001, "Winterization/Summarization," Revision 0
- 12-IHP-5040-EMP-004, "Plant Winterization and De-Winterization," Revision 4a
- CR 04026039, "No Calibrations Can Be Performed Due to Low Temperature in Standards Lab," January 26, 2004
- CR 0402234, "1-XDC-801 (Circulating Water Traveling Screen Differential Pressure Transmitter) Is Indicating Zero Differential Pressure. Suspect That Its Sensing Line(s) Are Frozen," January 22, 2004
- CR 04023072, "Refueling Water Storage Tank (1-TK-33) Temperature Above Notification Limit of 91 Degrees Fahrenheit," January 23, 2004
- CR 04022041, "Shower/Eyewash Station Found Frozen," January 22, 2004
- CR 01318056, "Contrary to PMP 2010.PRC.003, Section 3.1, the Winterization Program Was Completed Without Revising PMI-5055," November 14, 2001
- CR 02087029, "Reviewed Winterization Program Per CR 01318056 Action 1 and Determined that Two Procedure Enhancements are Necessary," March 28, 2002

<u>1R04</u> <u>Equipment Alignment</u>

- D. C. Cook Unit 2 TSs and Bases
- D. C. Cook Updated Final Safety Analysis Report, Revision 18.1
- 01-OHP-4021-032-008AB, "Operating Diesel Generator 1AB Subsystems" Revision 4
- Attachment 6, Diesel Generator 1AB Automatic Start Alignment
- Lineup Sheet 1, Diesel Generator 1AB Lube Oil System Valves
- Lineup Sheet 2, Diesel Generator 1AB Jacket Water System Valves
- Lineup Sheet 3, Diesel Generator 1AB Starting Air System Valves
- Lineup Sheet 4, DG1AB Fuel Oil System Valves
- 02-OHP-4021-008-002, "Placing Emergency Core Cooling System in Standby Readiness," Revision 12d, Change 4
- CR 03363011, "During Corrective Action Review Board Review of Significant Event Report 01-03 (Piping Ruptures Cause by Hydrogen Explosions), a Concern on the Answer to Significant Operating Experience Report 97-1 (Potential Loss of High Pressure Injection and Charging Capability from Gas Intrusion)," December 29, 2004
- CR 04010010, "2-ICM-260 Has Metal Filing Around the Packing Gland and the Bonnet Nut," January 10, 2004
- OP-2-5142-44, "Flow Diagram Emergency Core Cooling (Safety Injection System)," Revision 44
- 12-OHP-4021-028-011, "Auxiliary Building Ventilation," Revision 13
- 01-OHL-5030-SOM-005, "Unit 1 Tours - Unit 1 Auxiliary Tour," Revision 2

- CR 04051054, "1-HV-AX-2 (Unit 1 Auxiliary Building Exhaust Fan #2) High Efficiency Particulate Filter Differential Pressure Is 0.2 Psid Which Is below the Minimum Specification of 0.7 Psid," February 20, 2004
- OP-12-5148A-27, "Flow Diagram Auxiliary Building Ventilation," Revision 27
- OP-12-5148-61, "Flow Diagram Auxiliary Building Ventilation Units 1 & 2," Revision 61
- 12-OHP-4021-028-011, "Auxiliary Building Ventilation," Revision 13
- 01-OHP-4021-055-003, "Placing a Main Feed Pump In Service," Revision 18 Change 1
- OP-1-5106-49, "Flow Diagram Feedwater," Revision 49

1R05 Fire Protection

- D. C. Cook Fire Hazards Analysis, Units 1 and 2, Revision 10
- D. C. Cook UFSAR, Section 9.8.1, "Fire Protection System," Revision 18
- D. C. Cook Units 1 and 2 Probabilistic Risk Assessment, Fire Analysis Notebook, February 1995
- D. C. Cook Administrative Technical Requirements Manual, Revision 32
- PMP-2270-CCM-001, "Control of Combustibles," Revision 1
- PMP-5020-RTM-001, "Restraint of Transient Material," Revision 1
- PMP-2270-WBG-001, "Welding, Burning and Grinding Activities," Revision 0b
- PMI-2270, "Fire Protection," Revision 26
- 12-PPP-2270-066-001, "Portable Fire Extinguisher Inspections," Revision 0b
- CR 04038011, "NRC Was Doing a Walkdown of the U-1 Control Room Cable Vault and Found a Ladder and Debris," February 7, 2004
- Drawing 12-5975-4, "Fire Hazard Analysis Plan El. 601'-0," 609'-0," 620'-6," to 625'-10" Units 1 & 2," Revision 4
- Drawing 12-5984-6, "Fire Hazard Analysis Sections "N-N," "P-P," "Q-Q," & "R-R" Units 1 & 2," Revision 6
- Drawing 12-5980-4, "Fire Hazard Analysis Section s D-D, E-E, & F-F Units 1 & 2," Revision 4

1R06 Flood Protection Measures

- Job Order R0237140-01 "Perform Annual Inspection of Turbine Room Sump Pit," March 12, 2004
- Job Order 01331011-02, "12-XJ-55 Replace Expansion Joint," February 27, 2004
- Job Order Number 04048044 Activity 01, "12-DR-129, Investigate/Repair Valve," February 19, 2004
- Job Order Number 02309012 Activity 01, "12-DR-129, Open Sump for Valve Inspection/Mfg Info," February 17, 2004
- Job Order Number R0228910 Activity 01, "Clean Turbine Room Sump Pp Motors Air Screens," February 16, 2004
- Job Order Number R0223805 Activity 01, "Perform Maintenance/Calibrate 12-DFR-700," February 23, 2004

1R12 Maintenance Effectiveness

- Letter from J. Jensen, American Electric Power, to the U.S. NRC, Subject: "Emergency License Amendment Request for One-time Extension of Allowed Outage Time for the Unit 2 AB Emergency Diesel Generator," December 9, 2003

- Letter from M. Shuaibi, US NRC, to M. Nazar, American Electric Power, Subject: "Donald C. Cook Nuclear Plant, Unit 2 - Issuance of Emergency Amendment Regarding One-time Allowed Outage Time Extension for AB Emergency Diesel Generator (TAC NO. MC1498), December 10, 2003
- Root Cause Evaluation, "Emergency Diesel Generator Multiple Equipment Failures Require a One-time Allowed Outage Time License Amendment," February 19, 2004
- Shift Manager's Logs, December 7, 2003 through December 11, 2003
- 02-OHP-4030-219-022E, "East Essential Service Water System Test," Revision 2a
- 02-OHP-4030-STP-027CD, "CD Diesel Generator Operability Test (Train A)," Attachment 14, "Alternate ESW Supply Valve Testing," Revision 21
- "Pump and Valve Inservice Test Program for Donald C. Cook Nuclear Plant Third 10 Year Interval," Revision 3, December 20, 2001
- ASME/ANSI OMa-1988, "Inservice Testing of Valves in Light-Water Reactor Power Plants," 1988
- CR 03341015, "Emergency Diesel Generator Multiple Equipment Failures Require a One-time Allowed Outage Time License Amendment," December 9, 2003
- CR 03150010, "2-ESW-141 Check Valve Was Stuck in the Open Position," May 30, 2003
- CR 03139099, "Check Valve 2-ESW-143 Failed Its Generic Letter 86-03 Exam - Stuck in the Open Position," May 19, 2003
- CR 02037084, "2-ESW-141 - All Internal Parts of the Valve Except Rubber Insert Are Missing," February 6, 2002
- CR 03034033, "CR 02037084 Did Not Have a Past Operability Performed Although the Condition Evaluation Determined a Safety Function was Lost," February 3, 2003
- CR 03297012, "Check Valve 1-ESW-111 Failed As-found Inspection," October 24, 2003
- CR 02037085, "2-ESW-142 Observed 'Ding' on Edge of Disc and Seating Surface of Valve, Spring Found Broken and Installed Incorrectly," February 6, 2002
- CR 02045035, "Observed Deficiencies for Check Valve 2-ESW-143 During Engineering Examination," February 5, 2002
- CR 02120071, "Evaluation for CR 02045035 Identified Potential Binding Problem with Valve Discs for ESW Valves," April 30, 2002
- CR 03034043, "CR 02037084 Non-conformance Evaluation Determined that Missing Valve Parts in the ESW System Did Not Constitute a Non-conformance. This Is an Incorrect Conclusion," February 3, 2003
- CR P-00-095474, "A Small Disc Spring Was Broken on 1-ESW-112," July 5, 2000
- CR 04042027, "NSAL 02-7 Inspections Were Performed on DB-50 Inertial Latched But Never Were Formally Documented or Results Dispositioned," February 11, 2004
- CR 02109035, "Westinghouse Advisory Letter NSAL-02-07 Recommends That All DB-50 Circuit Breakers Be Inspected," April 19, 2004
- CR 03127007, "Both Spare Reactor Trip Breakers and the Spare Control Rod Drive Motor Generator Output Breaker Requires an Inspection of the Inertial Latch per NSAL-02-07," May 7, 2003
- Job Order R0230258-01, "Clean/Inspect/Test Breaker 1-52-RTB," September 23, 2003
- Job Order R0211675-01, "Clean/Inspect/Test Breaker 1-52-RTB/Interlock Testing," May 20, 2002
- Job Order R0230256-01, "Clean/Inspect/Test Breaker 1-52-BYB," October 21, 2003
- Job Order R0211529-01, "Clean/Inspect/Test Breaker 1-52-BYB/Interlock Testing," May 20, 2002

- Nuclear Safety Advisory Letter, NSAL-02-7, "DB-50 Breaker Failure to Close," April 8, 2002
- CR 01039046, "During Troubleshooting Under 01024055-01, 5 Pieces of Foreign Material Were Found in Reactor Trip Bypass Breakers Auxiliary Switch Cubicle Side Disconnects," February 8, 2001
- CR P-00-08857, "The Cell Switch for 2-52-RTA is Binding Up and Remaining in the Mid Position," June 16, 2000
- Job Order R0230257-01, "Clean/Inspect/Test Breaker 1-52-BYA," October 21, 2003
- Job Order R0211676-01, "Clean/Inspect/Test Breaker 1-52-BYA/Interlock Testing," May 20, 2002
- Job Order R0230255-01, "Clean/Inspect/Test Breaker 1-52-RTA," October 23, 2003
- Job Order R0211528-01, "Clean/Inspect/Test Breaker 1-52-RTA/Interlock Testing," May 20, 2002
- 12-IHP-5021-EMP-010, "Reactor Trip/Bypass DB-50 Circuit Breaker Maintenance," Revision 4
- 12-OHP-4021-082-018, "Racking In and Out Reactor Trip, Reactor Trip Bypass, and Motor Generator Set Output Breakers," Revision 7
- 01-IHP-4030-STP-411, "Train 'B' Reactor Protection System and Engineered Safeguards Feature Reactor Trip Breaker and Solid State Protection System Automatic Trip/Actuation Logic Functional Test," Revision 7
- 01-OHP-4024-110 Drop 50, Annunciator Response "Reactor Protection Train B Trouble," Revision 8
- OP-1-98223-25, "Control Rod Drive Motor Generator Sets #1N & Reactor Trip Breakers Elementary Diagram," Revision 25
- OP-1-98370-7, "Solid State Reactor Protection & Safeguard System Tester Switches & Alarm Train A Elementary Diagram," Revision 7
- OP-1-98390-6, "Solid State Reactor Prot. & Safeguard System Tester Switches & Alarm Train B Elementary Diagram," Revision 6
- Unit 1 Control Room Logs, January 6, 2004
- CR 04006051, "General Warning Received Unexpendedly During Routing Surveillance," January 6, 2004

<u>1R13</u> <u>Maintenance Risk Assessments and Emergent Work Evaluation</u>

- PMP-2291-OLR-001, "On-Line Risk Management," Revision 5
- PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 48, Week 10, January 18, 2004 through January 25, 2004
- PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 48, Week 12, February 1, 2004, through February 7, 2004
- PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 49, Week 1, February 8, 2004, through February 14, 2004
- PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 49, Week 3, February 22, 2004, through February 28, 2004
- Online Integrated 4 Day Schedule; January 13 through17, 2004

- CR 04057001, "It Is Suspected That There is a Weld Crack at 1" to 12" Weld Joint Upstream of 1-CTS-140W, West Containment Spray Pump Suction Flushing Connection Shutoff Valve, Due to a Small Amount of Dry Boric Acid Found There," February 26, 2004
- CR 04057048, "Clearance # 1040387 Was Written and Verified With an Inappropriate Valve Selected as an Isolation Point," February 26, 2004
- OP-1-5144-37, "Flow Diagram Containment Spray Unit No. 1," Revision 37
- Unit 1 Control Room Logs, February 26, 2004 - February 27, 2004
- Job Order 04057001-01, "1-CTS-140W: Repair Weld Defect at 1" Branch Conn." February 27, 2004
- Job Order 04057001-02, "1-CTS-140W: Repair Weld Defect at 1" Branch Conn." February 27, 2004
- Job Order 04057001-03, "1-CTS-140W: Repair Weld Defect at 1" Branch Conn." February 27, 2004
- CR 04038003, "2-MPC-254-V1, 2-MPC-254 and 2-MPR-253 Root Shutoff Valve, Has a Packing Leak of About 1 Drop Per Minute," February 7, 2004
- 02-OHP-4022.013.016, "Turbine First Stage Impulse Pressure Instrument Malfunction," Revision 1a
- OP-2-99013-1, "Steam Generator 2 & 4 Mismatch Channel 2 Functional Diagram," Revision 1
- OP-2-99014-2, "Steam Generators 3 & 4 Mismatch Channel 1 Functional Diagram," Revision 2
- OP-2-99033-01, "Upper & Lower Containment Ch 1, 2, 3 & Turbine Impulse Ch 1, 2 Pressure Functional Diagram," Revision 1
- CR 04034001, "While Performing Shiftly Surveillance It Was Noted 2-NLI-311, Lower Containment Sump Train A Level Indicator Transmitter, Was Failed Low," February 2, 2004
- CR 04033073, "While Performing Shiftly Surveillance It Was Noted 2-NLA-310, Lower Containment Sump Train B Level Alarm Transmitter, Was Failed Low," February 2, 2004

1R14 Personnel Performance During Non-routine Plant Evolutions

- Root Cause Evaluation, "December 30, 2003 Reactor Trip and Common Factors Assessment of Station Clock Resets, INPO AFI HU.1-1, INPO Common Cause Analysis, and Category 1 and 2 CRs from 2003," February 13, 2004
- Licensee Event Report 50-316-2003-005-00, "Unit 2 Trip Due to Steam Flow/Feed Flow Mismatch," February 17, 2004
- Shift Manager's Logs, December 30, 2003
- Event Notification Worksheet EN 40419, "Unit 2 Automatic Trip," December 30, 2003
- PMP 4010-TRP-001, Data Sheet 9, "Unit 2 Reactor Trip Review Report," December 30, 2003
- CR 03364029, "Unit 2 Reactor Automatically Tripped from 100 Percent Power Due to a Low Steam Generator Level Coincident with Feed Flow Less than Steam Flow," December 30, 2003
- CR 03364032, "Perform Checks As Necessary to Ensure Good Operation of CRID IV Inverter Based on Transfer to Alternate Source Just Prior to Unit 2 Trip," December 30, 2003

- CR 03365009, "Perform a Root Cause Investigation Associated with the Human Performance Aspects Exhibited During the Execution of Work Involving the West Residual Heat Removal Flow Transmitter IFI-325," December 31, 2003
- D. C. Cook Unit 2 TSs and Bases
- D. C. Cook Updated Final Safety Analysis Report, Revision 18.1
- PMP-2080-EPP-107 Data Sheet 1, "Shift Manager Initial Notification List," Revision 18
- PMP-7030-001-001, "Prompt NRC Notification," Revision 7
- Unit 2 Control Room Logs, December 19, 2003
- Unit 2 Plant Process Computer Data (Charging Pump Discharge Header Flow, Volume Control Tank Level, Pressurizer Pressure, Pressurizer Level), December 19, 2003
- Plant Operator Statements for Unusual Event of December 19, 2003
- OP-2-5129-41, "Flow Diagram CVCS-Reactor Letdown and Charging Unit No. 2," Revision 41
- OP-2-5128A-52, "Flow Diagram Reactor Coolant Unit 2 Sheet 2 of 2," Revision 52
- RQ-S-2821, "Focus on Standards" Requalification Training, Revision 0
- RQ-S-2851, "RCP Malfunction" Requalification Training, Revision 0
- RQ-S-2832, "Steam Generator Tube Leak with Subsequent Rupture" Licensed Operator Requal, Revision 0
- RQ-S-2782, "Small Loss Of Coolant Accident/Loss of All AC Power" Requalification Training, Revision 0
- RQ-S-2751, "Small Break Loss Of Coolant Accident/Loss of Emergency Coolant Recirc." Requalification Training, Revision 0
- RQ-C-2781, "Emergency Operating Procedures Background/OHI-4023" Licensed Operator Requal, Revision 0
- RQ-C-2733, "CVCS System Review" Requalification Training, Revision 0
- RQ-S-2644, "Loss Of Cooling Accident - Emergency Core Cooling System Recirculation" Licensed Operator Requalification Training, Revision 1
- RO-C-AOP-2, "Abnormal Operating Procedures - Day 2" Initial License Training, Revision 2
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- CR 03353066, "2-QC-107N was Returned to Service at 1615. At Approximately 1845 Leakage of Approximately 30 gpm was Identified Coming From the Cover of the Filter," December 19, 2003
- CR 03354001, "The Unit 2 North Seal Water Injection Filter Sprayed on the Detector Box for 2-ERA-8408," December 19, 2003
- CR 03354002, "Due to a Leak on Seal Injection Filter 1-QC-107N, Operations Had to Take Manual Control of Charging Header Flow and Increased the Flow to 160 gpm for 12-13 minutes," December 20, 2003
- CR 03358029, "2-QC-107N O-Ring Retainer Plate was Found Damaged and Not Suitable for Re-installation," December 24, 2003
- CR 03358021, "This CR is to Document the Results of a Quick Hit Self Assessment to be Performed in January, 2004 for Operations Emergency Plan Response," December 24, 2003
- CR 03363005, "ESAT to Assess Unusual Event Declaration Made on December 19, 2003," December 29, 2003
- CR 03365004, "2-QC-107N: the O-Ring Installed in the Top Groove of Retainer Plate Was Found Severely Extruded when the Cover was Removed," December 31, 2003

- CR 04027048, "Training Request for Radiation Monitor System Training on VRS-2503 for Both Operations and Radiation Protection," January 24, 2004
- CR 04029006, "Training Request: This Training Request is to Use the December 2003 Unit 2 Seal Injection Filter Leakage Event Classification Procedure," January 29, 2004
- CR 04033061, "Unit 2 Reactor Coolant Pump North Seal Water Injection Filter Possibly has the Wrong Type of O-Ring Backing Ring Installed," February 2, 2004
- CR 04043004, "Training Request to Incorporate Lessons Learned from Quick Hit Self Assessment for Unit Seal Water Injection Filter Leak," February 12, 2004
- CR 0404482, "No Procedural Guidance Exists for Termination from an Unusual Event," February 13, 2004
- CR 04044093, "This CR is to Perform an Aggregate Evaluation of Issues Related to the Unusual event Declaration on December 19, 2003," February 13, 2004
- CR 04075060, "A More Thorough Evaluation Needs to be Done of the RP Aspects Relative to the Seal Water Injection Filter Leak that Occurred on December 19, 2003
- CR 04075015, "Improvement Items Related to the Aggregate Evaluation of Issues Related to the Unusual Event Declaration on December 19, 2003 for the Unit 2 Seal Water Injection Filter Leak," March 15, 2004
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- DC Cook RADSERV Parameter Data Sheet for VRA-2503 Unit 2 Vent Stack Iodine
- 02-OHP-4024-211 Drop 48, "PPC-RMS U1 CT Alarm or Abnormal," Revision 7
- 12-OHP-4024-139 Drop 22, "Radiation Unit Vent Effluent Monitor," Revision 10c
- 02-OHP-4024-211 Drop 49, "PPC-RMS U2 CT Alarm or Abnormal," Revision 7
- DNA History Plot of VRA-2503 for December 19, 2003
- 12-THP-6010-RPP-706, "Gaseous Monitor Alarm Response," Revision 5b
- 02-OHP-4024-207 Drop 18, "RCP 1 Seal Water Injection Flow Low," Revision 7
- 02-OHP-4024-207 Drop 38, "RCP 2 Seal Water Injection Flow Low," Revision 7
- 02-OHP-4024-207 Drop 78, "RCP 3 Seal Water Injection Flow Low," Revision 7
- 02-OHP-4024-207 Drop 98, "RCP 4 Seal Water Injection Flow Low," Revision 7
- 02-OHP-4022-002-001, "Malfunction of a Reactor Coolant Pump," Revision 10
- PMP-6010-OSD-001, "Off-site Dose Calculation Manual," Revision 17a
- PMI-6010, "Radiation Protection Plan," Revision 13a
- DC Cook Emergency Plan, Planning Standard B, "Emergency Response Organization," Revision 19
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1R15 Operability Evaluations

- PMP 7030-OPR-001, "Operability Determinations," Revision 8
- D. C. Cook Nuclear Plant Updated Final Safety Analysis Report, Revision 18
- D. C. Cook Plant TSs and Bases
- Non-conformance Evaluation (Use-As-Is) Pressure/Thermal Binding of Air-operated Valve Diaphragm Containment Isolation Valves," November 21, 2003
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- 10 CFR 50.59 Evaluation 2003-1263-00, "Use-As-Is Evaluation for CR 00295013 and CR 00279011," Revision 0
- D. C. Cook Nuclear Plant Engineering Specification ES-CIV-0306-QCN, "Containment Isolation System Licensing/Design Basis Requirements," Revision 0
- CR 02037084, "2-ESW-141, All Internal Parts of the Valve Except Rubber Insert Are Missing," February 6, 2002
- CR 03298001, "Three Lower Inlet Doors Exceed Acceptance Criteria for Opening Force," October 25, 2003
- CR 04063027, "Some Reverse Direction Local Leak Rate Tests at Cook Nuclear Plant Do Not Comply with 10 CFR 50 Appendix J Requirements," March 3, 2004
- CR 00295013, "Hydraulic Locking of Containment Isolation Valves Can Occur Due to System Alignment or Containment Isolation Valve Closure Sequence," October 21, 2000
- CR 00279011, "The Evaluation for CR 00-6696 Improperly Evaluated the Possibility of Hydraulic Locking in Non-essential Service Water Containment Isolation Valves," October 5, 2000
- CR P-99-17063, "High Radiation and Auto Swap of Bypass Damper," June 28, 1999
- CR 04026013, "Replacement of Starter for 2 AB Emergency Diesel Auxiliary Jacket Water Heater QT-134-AB Starter ABD-B-1D Contactor," January 26, 2004
- CR 04024007, 2-QT-134-AB Starter Has an Open (Burned) Coil," January 24, 2004
- 02-OHP-4-24-219 Drop 49, "Diesel Generator 2AB Room Temperature Low," Revision 8
- 02-OHP-4-24-219 Drop 36, "Diesel Generator 2AB Valve Gear Lube Oil Failure," Revision 8
- 02-OHP-4-24-219 Drop 33, "Diesel Generator 2AB Jacket Water Temp Low," Revision 8
- 02-OHL-5030-SOM-006, "Unit 2 Turbine Tour," Revision 4, January 23, 2004 through January 25, 2004
- Unit 2 Control Room Logs, January 24-25, 2004

1R16 Operator Workarounds

- CR 04062040, "Outage Optimization Procedure Change to 1 and 2-OHP-4021-052-001, Operation of Steam Dump System to Get All Nine Valves Open During the Cooldown," March 2, 2004
- 01-OHP-4021-052-001, "Steam Dump Control System Operation," Revision 7a
- OP 1-98537-9, "Steam Dump Control System Elementary Diagram, Revision 9
- PS-2-92474-4, "Auxiliary Relay Cabinet ARA-1 Wiring Diagram," Revision 4
- PS1-92474-4, "Auxiliary Relay Cabinet ARA-1 Wiring Diagram," Revision 4
- PS-2-92478-6, "Auxiliary Relay Cabinet ARB-1 Wiring Diagram," Revision 6
- PS-1-92478-5, "Auxiliary Relay Cabinet ARB-1 Wiring Diagram," Revision 5
- OP 1-98395-2, "Reactor Protection and Safeguards Steam Dump Test Schemes Elementary Diagram," Revision 2
- OP-2-98395-2, "Reactor Protection and Safeguards Steam Dump Test Schemes Elementary Diagram," Revision 2
- OP-2-98509-13, "Steam Dump Control & Turbine Trips Logic Diagram," Revision 13
- OP-1-98509-11, "Steam Dump Control & Turbine Trips Logic Diagram," Revision 11
- OP-2-98537-7, "Steam Dump Control System Elementary Diagram," Revision 7

1R19 Post Maintenance Testing

- CR 04058005, "1AB Diesel Generator Did Not Stop Properly When Run-Stop Switch was Placed In Stop," February 27, 2004
- Unit 2 Control Room Logs, February 26, 2004 - February 27, 2004
- Job Order R0234467-01 "1-VTS-802, Replace, Calibrate and PMT 10A Frequency" February 26, 2004
- Job Order R0205985 -06, "1-OME-150-AB, Replace Starting Air Valves," February 26, 2004
- Job Order R0205985-04, "1-OME-150-AB, Replace Starting Air Valves," February 26, 2004
- Job Order 04047038-02, "1-QT-518-AB, Replace Jacket Water Surge Tank Float Valve," February 26, 2004
- Job Order R0095163-04, "1-QT-133-AB, Inspect Jacket Water Surge Tank Per TIP Program," February 26, 2004
- Job Order R0206125-06, "1-QT-529 and 1-QT-140-AB, Clean Air Maze and Blower," February 26, 2004
- Job Order R0074866-02, "Calibrate Pressure Switch 1-CPA-312," February 27, 2004
- Job Order R0074873-03, "Slow Start to PMT 1-POV-1/2-AB," February 27, 2004
- Job Order R0205985-03, "PMT for 1-DGAB Starting Air Valves," February 27, 2004
- Job Order R0074873-04, "PMT for Valve 1-POV-4-AB," February 27, 2004
- Job Order R0074873-05, "Fast Starts to PMT 1-POV-1/2-AB," February 27, 2004
- 01-OHP-4021-032-001AB, "Diesel Generator 1AB Operation," Revision 6a, February 26, 2004
- Unit 2 Technical Data Book Figure 2-19.1, "Power Operated Valve Stroke Time," Revision 61
- Unit 2 Technical Data Book Figure 2-15.1, "Safety Related Pump Inservice Test Hydraulic Reference," Revision 66
- Unit 2 Technical Data Book Figure 2-19.8, "Safety Related Throttled Valves," Revision 29
- Unit 2 Technical Data Book Figure 2-15.2, "Safety Related Pump Inservice Test Vibration Reference," Revision 56
- CR 04036003, "Annunciator 219 Drop 24, Diesel Generator 2AB Lube Oil Filter DP High Came In When the Diesel Was Running During a PMT Run," February 5, 2004
- Job Order 03067001-01, "2-T-131-6 Repair/Replace Trap," February 4, 2004
- Job Order R0235470-02, "2-T-131-5, Open, Inspect, Repair As Needed," February 5, 2004
- Job Order R0243429-02, "2-SV-16-AB Setpoint Test," February 5, 2004
- Job Order R0251405-01, "2-QT-102-AB, Inservice Expansion Joint Inspection," February 5, 2004
- Job Order R0235426-04, "2-QR-22-AB1/AB2, Perform PM Task 10, Attachment 6," February 4, 2004
- Job Order R0097132-02, "Calibrate Pressure Indicator 2-LPI-241," February 4, 2004
- Job Order R0097136-02, "Calibrate Pressure Indicator 2-LPI-243," February 4, 2004
- Job Order R0235277-01, "Perform Cycling of 2-ESW-216A," February 5, 2004
- Job Order R0235470-04, "2-T-131-5, Verify Operability," February 5, 2004
- Job Order R0235461-02, "2-QT-111-AB, Run Pump to Verify Proper Operation," February 5, 2004

- 02-OHP-4030-STP-027AB, "AB Diesel Generator Operability Test (Train B)," Revision 19
- CR 04036002, "U-2 Jacketwater Pump (2-QT-130-AB1) Has a Small Leak Coming from the Shaft Seal," February 5, 2004
- CR 04033066, "Jacketwater Pumps on all EDG Systems Have Incorrect Gasket Material," February 3, 2004
- CR 04033058, Degraded Tank Protective Coatings Was Found on 2-QT-141-AB2," January 31, 2004
- 02-OHP-4030-216-020E, "East Component Cooling Water Loop Surveillance Test," Revision 1a, Change 2
- CR 04013075, "East Component Cooling Pump Aux Lube Oil Pump Will Not Stay Off When the Control Switch is in Auto and Oil Pressure Is Normal," January 13, 2004

<u>1R20</u> <u>Refueling Activities</u>

- D. C. Cook Nuclear Plant Unit 2 TSs and Bases
- D. C. Cook Nuclear Plant UFSAR, Revision 18
- Shift Manager's Logs, December 30, 2003 through January 4, 2004
- CR 03364032, "Perform Checks As Necessary to Ensure Good Operation of CRID IV Inverter Based on Transfer to Alternate Source Just Prior to Unit 2 Trip," December 30, 2003

<u>1R22</u> <u>Surveillance Testing</u>

- Job Order R0245359-01, "1-PP-9W-MTR, Perform Motor Thermography," February 26, 2004
- Job Order R0247471-01, "1-IFI-220, Calibrate Flow Indicator," February 26, 2004
- Job Order R0254757-06, "109.007W West Containment Spray System Oper Test Remove/Install Flange at 1-CTS-135W," February 26, 2004
- CR 04057005, "Procedure Change Recommendation for 01-OHP-4030-109-007W Step 4.13," February 26, 2004
- 01-OHP-4030-109-007W, "West Containment Spray System Operability Test," Revision 4a Change 0, February 26, 2004
- 01-OHP-4030-114-034, "Local Valve Position Verification Test," Data Sheet 21, Revision 1, February 26, 2004
- OP-1-5144-37, "Flow Diagram Containment Spray Unit No. 1," Revision 37
- 01-OHP-5030-050-001, "Main Turbine and Feed Pump Turbine Valve Functional Checks," Revision 4a
- 01-OHP-4030-117-050W, "West Residual Heat Removal Train Operability Test Modes 1-4," Revision 0
- OP-1-1543-63, "Flow Diagram Emergency Core Cooling (RHR) Unit No. 1," Revision 63

<u>1R23</u> <u>Temporary Modifications</u>

- 1-TM-03-109-R0, "Install Time Delay to Eliminate/Reduce Nuisance Alarms for the Reactor Coolant Pump #2 Seal Leak-off Flow Annunciator," Revision 0
- 2-TM-04-12-R0, "Disable 2-SV-334-4 Non-essential Service Water from Reactor Coolant Pump 4 Motor Air Coolers Outlet Safety Valve," Revision 0
- 12-EHP-5040-MOD-001, "Temporary Modifications," Revision 11

- PMP-2350-SES-001, "10 CFR 50.59 Reviews," Revision 1A
- 01-OHP-4022-002-001, "Malfunction of a Reactor Coolant Pump," Revision 11
- 01-OHP-4024-107, "Annunciator Response: Reactor Coolant," Revision 11
- Letter from J. Stang, US NRC to R. Powers, American Electric Power, Subject: "Donald C. Cook Nuclear Plant, Units 1 and 2 - Issuance of Amendments (TAC NOS. MB0154 and MB0155)," September 28, 2001
- D. C. Cook UFSAR, Revision 18
- Westinghouse Technical Bulletin ESBU-TB-93-01-R1, "Revised Procedures for Reactor Coolant Pump Shutdown with No. 1 Seal Leakage Outside Operating Limits," October 10, 1995
- Job Order 04071001-04, "2-SV-334-4 - Gag Valve and Install Temporary Modification," March 16, 2004
- CR 04071001, "Safety Valve 2-SV-334-4, Non-essential Service Water from Reactor Coolant Pump 4 Motor Air Coolers Is Leaking By," March 10, 2004
- CR 04077004, "During Documentation of Condition on 2-SV-334-4, Non-essential Service Water from Reactor Coolant Pump 4 Safety Valve, Operations Reviewers Failed to Identify TS 4.0.5," March 17, 2004

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

- Updated Final Safety Analysis Report; Chapter 7.8, Post Accident Monitoring Instrumentation, and Chapter 11.3, Radiation Monitoring System; Revision 17
- Listing of Radiation Protection Instrumentation and Radiation Monitoring System Monitors and Associated Operational Status; February 2004
- 12-THP-6010-RPI-805; Radiation Monitoring System Setpoints; Revision 14a
- 12-THP-6010-RPC-534; Calibration of the Canberra Fastscan Whole Body Counter; Revision 2
- 12-THP-6010-RPC-534; Data Sheet 1 and Associated Calibration Data and Graphs for Calibration of Fastscan Whole Body Counter # 2
- 02-IHP-6030-IMP-411/02-IHP-6030-IMP-412; Records of Channel Calibration for Unit 2 High Range Containment Radiation Monitors VRA-2310 (Train A)/VRA-2410 (Train B); August 2, 2003 (Train A) and January 31, 2003 (Train B)
- 01-IHP-6030-IMP-311/01-IHP-6030-IMP-312; Records of Channel Calibration for Unit 1 High Range Containment Radiation Monitors VRA-1310 (Train A)/VRA-1410 (Train B); May 5, 2003 (Train A) and May 2, 2003 (Train B)
- 02-IHP-4030-213-031A/02-IHP-4030-213-031B; Records of Channel Functional Tests for Unit 2 High Range Containment Radiation Monitors VRA-2310/VRA 2410; January 15, 2004 (Train A) and January 8, 2004 (Train B)
- 01-IHP-4030-113-031A/01-IHP-4030-113-031B; Records of Channel Functional Tests for Unit 1 High Range Containment Radiation Monitors VRA-1310/VRA 1410; January 17, 2004 (Train A) and January 8, 2004 (Train B)
- 12-THP-6010-RPP-500; Radiation Protection Instrumentation; Revision 2
- 12-THP-6010-RPP-566; Source Characterization and Verification for the J. L. Shepherd Models M89 and M142-S; Revision 5b
- 12-THP-6010-RPP-566; Data Sheet 1, Shepherd Model 89 Exposure Rate Verification Data Sheet; Instrument Nos. M89-1 and M89-2; January 29, 2004
- Victoreen, Inc. Calibration Certificate for Cesium-137 Source in Model No. 878-10 Calibrator; May 8, 1986

- 12-THP-6010-RPC-572; Calibration of the Gamma-40 and Gamma-60 Portal Monitors; Revision 3
- 12-THP-6010-RPC-572; Data Sheet 1, Portal Monitor Calibration Data Sheet; Monitor # POR-454, May 1, 2003 and Monitor # POR-1402; February 11, 2004
- 12-THP-6010-RPC-593; Calibration of the Eberline PM-7 Personnel Monitor; Revision 1
- 12-THP-6010-RPC-593; Data Sheet 1, Eberline PM-7 Calibration Data Sheet; Monitor # PM7-5; November 13, 2003
- 12-THP-6010-RPC-810; Eberline Radiation Monitoring System Channel Restoration; Revision 5
- 12-THP-6010-RPC-810; Data Sheets 1 and 2, RMS Channel Restoration; Monitor # 2-ERA-8300, July 18, 2003, Monitor # 1-ERS-7400, November 10, 2002, Monitor # 1-ERS-1300, May 5, 2003, Monitor # 1-ERS-1400, April 29, 2003, Monitor # 1-VRS-1200, April 23, 2003
- 12-THP-6010-RPC-590; Calibration of the APTEC PMW-3 Personnel Monitor; Revision 3
- 12-THP-6010-RPC-590; Data Sheet 1, APTEC PMW-3 Calibration Data Sheet; Monitor # PMW-3, November 17, 2003 and Monitor # PMW-8, April 5, 2003
- 12-THP-6010-RPC-513; Data Sheet 1, RO-7 Calibration Data Sheet; Instrument # RO7-804, January 6, 2004 and Instrument # RO7-625, April 1, 2003
- Radiation Protection Department Self-Assessment Report (SA-2002-RPS-001); RP Instrumentation Program Implementation; February 13, 2003
- Performance Assurance Field Observation (FO-04-B-002); RP Actions Following a Ventilation Line-Up Which Created a Potentially Unmonitored Release Pathway; February 2, 2004
- Performance Assurance Audit Report (PA-03-07); Radiation Protection; March 11, 2003
- Performance Assurance Audit Report (PA-03-14); Emergency Planning; August 21, 2003
- Lesson Plan for General Employee Training; Course GE-L-3002, Initial SCBA Training; November 1, 2002
- D. C. Cook Qualification Matrices for Course GE-L-3004; SCBA Requalification Training; February 27, 2004
- Matrix of Individuals and Qualification Status for Emergency Response Operations Staff; March 3, 2004
- SPP-2281-RES-201; Maintenance and Repair of Respiratory Devices; Revision 0
- Records of Monthly Inspection and Quarterly Functional Test of SCBA Equipment; January 2003 - February 2004
- 12-THP-6010-RPP-009; Emergency Plan Respiratory Protection Inventory; Revision 17
- MSA Training Certificate for D. C. Cook Staff Authorized to Repair SCBA Equipment; January 15, 2003
- CR 03261019; Emergency Plan Respiratory Protection Inventory Not Conducted on a Quarterly Basis as Required; September 18, 2003
- CR 03276030; RP Instruments Removed from Calibration Facility Without Being Issued; October 3, 2003
- CR 03281020; Use History Analysis for RSO-785 Failing As-Found Portion of a Calibration; October 8, 2003
- CR 04064025; SCBA Inspection Records Deficient; March 4, 2004
- CR 04065066; Area Radiation Monitor Detection Limits Don’t Match Typical Range in UFSAR; March 5, 2004

- CR 04064038; Fixed Area Radiation Monitors May Not be Optimally Located; March 4, 2004

4OA1 Performance Indicator Verification

- Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 2
- PMP-7110.PIP.001, "Regulatory Oversight Program Performance Indicators," Revision 1
- PMP-7030-CAP-001, "Corrective Action Program Process Flow," Revision 16
- PMP-2291-PLN-001, "Work Control Activity Planning Process," Section 3.3.1, Revision 10 and Revision 13
- Letter from M. Finissi, American Electric Power, to the US NRC, Subject: "Cook Unit 1 and 2 -- 2Q2003 -- PI Data Elements (CR)," July 23, 2003
- Letter from M. Finissi, American Electric Power, to the US NRC, Subject: "Cook Unit 1 and 2 -- 3Q2003 -- PI Data Elements (QR and CR)," October 22, 2003
- Letter from J. Jensen, American Electric Power, to the US NRC, Subject: "Cook Unit 1 and 2 -- 4Q2003 -- PI Data Elements (QR and CR)," January 21, 2004
- Licensee Event Reports, April 1, 2003 through December 31, 2003
- Control Room Logs, April 1, 2003 through December 31, 2003
- Root Cause Analysis for CR 0336036 Rework During U1C19; February 6, 2004
- Summary of Monthly Dose Calculations and Dose Projections from Liquid and Gaseous Effluents; July 2003 - January 2004
- CR 03336036; "Rework During U1C19," December 2, 2003

4OA2 Identification and Resolution of Problems

- Root Cause Evaluation (CR 03311009), "Operations Cross-cutting Human Performance Issues," February 6, 2004
- Root Cause Evaluation (CR 03336036), "Rework During U1C19 Root Cause Evaluation"

4OA3 Event Follow-up

- Unit 1 TS 3.6.5.1, "Ice Bed," Amendments 234 and 280
- Unit 2 TS 3.6.5.1, "Ice Bed," Amendments 217 and 262
- LER 50-315/2002-008-00, "Failure to Complete Unit Shutdown as Required by TS 3.6.5.1," August 1, 2003

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- 12-EHP-4030-010-262, "Ice Condenser Surveillance and Operability Evaluation," Revisions 1 and 2
- Shift Manger's Logs, April 25, 2002 through April 26, 2002
- Letter from R. P. Powers, Indiana and Michigan Power Company, to the US NRC, Subject: "Donald C. Cook Nuclear Plant Unit 1 and Unit 2, License Amendment Request to Revise Limiting Condition for Operation for Weight of Ice in Ice Basket," September 3, 2003
- Letter from M. A. Shuaibi, US NRC, to M. K. Nazar, Indiana and Michigan Power Company, Subject: "Donald C. Cook Nuclear Plant Unit 1 and Unit 2 - Issuance of Amendment (TAC NOS. MC0616 and MC0617), "October 10, 2003

- CR 03155022, "Missed Reportability Call," June 4, 2003
- CR 02115002, "Unit 1 Ice Basket 24-1-7 As-found Weight Was Below the TS and Structural Analysis Limit When Weighted for U1C18," April 25, 2002
- CR 03125096, "Several Ice Condenser Baskets Were Discovered With Weights Outside Their Procedural Acceptance Criteria," April 26, 2003

4OA5 Other Activities

- NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors," June 9, 2003
- Letter: AEP:NRC:3054-12, "Donald C. Cook Nuclear Plant Units 1 and 2, Response to Nuclear Regulatory Commission Bulletin 2003-01 Regarding Debris blockage of Recirculation Sump," August 7, 2003
- Nuclear Energy Institute, "Condition Assessment Guidelines: Debris Sources Inside PWR Containment," September 2002
- Los Alamos National Laboratory: LA-UR-03-0880, "Knowledge Base for the Effect of Debris on Pressurized Water Reactor Emergency Core Cooling Sump Performance," February 2003
- Los Alamos National Laboratory: LA-UR-02-7562, "The Impact of Recovery From Debris-Induced Loss of ECCS Recirculation on PWR Core Damage Frequency," February 2003
- EHI-5201, "Containment Recirculation Sump Protection Program," Revision 1, May 15, 2000
- 12-EHP-5065.SRC.003, "Assessment of Containment Debris Sources," Revision 0, May 15, 2000
- PMP-2220-001-001, "Foreign Material Exclusion," Revision 4, September 10, 2003
- 12-PMP-4010-CAC-001, "Containment Access Control," Revision 2, December 20, 2002
- AEP Design Information Transmittal #S-00408-01, September 13, 2002
- 12-CHP5021.CCD.023, "Thermal Insulation in Containment," Revision 0, January 25, 2000
- 01-OHP-4030-001-002, "Containment Inspection Tours," Revision 18, September 3, 2003
- 02-OHP-4030-001-002, "Containment Inspection Tours," Revision 15, September 3, 2003
- 12-MHP-4030-031-001, "Inspection of Lower Containment And Recirculating Sumps," Revision 2, May 25, 2003
- Job Order R0211448, "Inspection of Lower Containment Recirculating Sump," Performed on Unit 1, May 29 through 31, 2002
- Job Order R0226775, "Recirculating Sump, Surveillance Inspection and Closeout," Performed on Unit 2, June 9 through 11, 2003
- Job Order RO230975-02, "Perform Surveillance Inspection of Lower Containment Sumps," Performed on November 15 through16, 2003
- Job Order RO230975-06, "Inspection of Lower Containment Recirculating Sump," Performed on November 16, 2003
- CR 03320061, "In the Unit 1 Recirculating Sump Corrosion was Found on Pipe Stantion Mounting Bolting at Floor," November 16, 2003
- CR 03320060, "Lower Containment Sump 1-PP-38B Screen Wire Mesh...Has Small Gap at Top...Left and...Bottom of Right..Section," November 16, 2003

- E-Mod/CMM No. 1-CMM-30090, Revision 0, Unit 1, "Partial Removal of the Lower Portion of the Abandoned-in-Place Instrument Guard Pipe Assemblies in the Unit 1 Containment Recirculating Sump," November 18 through 19, 2003
- 1-MHP-4030-010-006, "Ice Condenser Floor Drains and Flapper Valves Surveillance," Revision 1, August 17, 2001
- Job Order R0225596-01, "Unit 2, Ice Condenser Floor Drain and Flapper Valve Surveillance," Performed May 20 through 22, 2003
- Job Order R0229909, "Perform Floor Drain and Flapper Valve Surveillance," (Unit 1) Performed November 16 through 17, 2003
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- 12-EHP-5065.SRC.001, "Condition Assessment of Safety-Related Coatings," Revision 0, October 13, 1999
- 12-EHP-5065.SRC.002, "Management and Evaluation of Non-conforming Coatings," Revision 0, October 13, 1999
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- Job Order R0210857-02, "Containment Coating Inspection (Pre-Outage) - Upper Containment"
- Job Order R0210857-03, "Containment Coating Inspection - Regen Heat Exchanger Room"
- Job Order R0210857-04, "Containment Coating Inspection - Reactor Coolant Drain Tank Area"
- Job Order R0210857-05, "Containment Coating Inspection in Reactor Pit"
- Job Order R0210857-06, "Containment Coating Inspection in Reactor Sumps"
- Job Order R0210857-07, "Provide Painter Support to Remove Loose Coatings"
- CR 02150074, "Containment Coatings Inspection Results Indicates Future Maintenance is Required," May 30, 2002
- CR P-99-28896, "Deficient Safety-Related Coatings were Identified in the Unit 2 Containment," December 10, 1999
- CR 02150019, "While Performing Recirculating Sump Inspection (3) Bolts were Found to be Missing on Lower Brackets of Instrumentation Columns and Small Areas of Peeling Coatings were Identified on the Walls," May 30, 2002
- Job Order C0048406, "Prep, Prime, Touch up Paint Plenum Interior Area 1-HV-CLV-4"
- Job Order 03198040-05, "1-HV-CLV-3 Apply Coatings"
- Job Order C0048407, "Prep, Prime, Touch Up Paint Plenum Interior Area 1-HV-CLV-2"
- Job Order C0048408, "Prep, Prime, Touch Up Paint Plenum Interior Area 1-HV-CLV-1"
- Job Order C0050988, "Perform Touch Up Painting After New Motor Installed," May 30, 2002
- Job Order R0226345-01, "Perform Containment Protective Coatings Inspection - Lower Containment"
- Job Order R0226345-02, "Perform Containment Protective Coatings Inspection - Upper Containment"
- Job Order R0226345-03, "Containment Coating Inspection Regen Heat Exchanger Room"
- Job Order R0226345-04, "Containment Coating Inspection RCDT Area"
- Job Order R0226345-05, "Containment Coating Inspection in Reactor Pit"
- Job Order R0226345-06, "Containment Coating Inspection in Reactor Sumps"
- CR 03161025, "Unit 2 Containment Coatings Inspection Results Indicate Future Maintenance is Required," June 10, 2003

- CR 02050081, "Containment Coatings Inspection Results Indicates Future Maintenance is Required," February 19, 2003
- Job Order 02169071, "Put Coating on Component Spelled Out in WR"
  - Activity -01: Control Rod Drive Mechanism Vent Platform
  - Activity -02: Pressurizer Doghouse
  - Activity -03: Elevation 612 Above Pressure Relief Tank Piping
  - Activity -04: Reactor Head Vent Pipe Support
  - Activity -05: Reactor Cavity Pit
  - Activity -06: Elevation 612 Accumulator Rooms
  - Activity -07: Elevation 612 Instrument Room
  - Activity -08: Ice Condenser Glycol Piping
  - Activity -09: Upper Containment, Containment Spray Pipe Support, Elevation 745
  - Activity -10: Upper Containment, Elevation 701
  - Activity -11: Remove Additional Discrepant Coatings
- Job Order R0230787-01, "Containment Coatings Inspection Lower Containment" performed October 22 through 25, 2003
- Job Order R0230787-02, "Containment Coatings Inspection (Pre-Outage)" Performed September 15 through16, 2003
- Job Order R0230787-03, "Containment Coatings Inspection Regen HX"
- Job Order R0230787-04, "Containment Coatings Inspection RCDT Area"
- Job Order R0230787-05, "Containment Coatings Inspection in Reactor Pit"
- Job Order R0230787-06, "Containment Coatings Inspection in Reactor Sumps"
- Job Order R0230787-07, "Provide Painter Support to Remove Loose Coatings," Performed November 16 through 20, 2003
- 01-OHP-4023-ECA-1.1, "Loss Of Emergency Coolant Recirculation," Revision 7, October 3, 2002
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- 12-EHP-SP-069; Siemens Fuel Rod Hi-Mag/Eddy Current Examination; Revision 0; January 12, 1995
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- 12-EHP-SP-073; Fuel Assembly Reconstitution Fuel Rod Examination; Revision 1, August 1996
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- 12-OHP-4050-FHP-006; Fuel and Insert Handling in the Spent Fuel Pool; Revision 3a; May 3, 2002
- 12-OHP-4050-FHP-008; Fuel Handling Work Station Job Descriptions and Miscellaneous Data Sheets; Revision 3; November 6, 2003
- PMP-220-001-001; Foreign Material Exclusion; Revision 4; September 10, 2003
- 1-EHP-SP-070; Ultrasonic Testing of Unit 1 Fuel; Rev 2a; December 20, 2003
- 2-EHP-SP-070; Ultrasonic Testing of Unit 2 Fuel; Rev 1b; September 12, 2003
- 12-OHP-4050-FHP-046; Control of Loads Over Fuel Pool; Revision 1; September 19, 2003
- Failed Fuel Data Base Output
- AEP-1 Pin Basket From Nuclear Fuel Accounting System Output
- AEP-2 Pin Basket From Nuclear Fuel Accounting System Output
- AMP-1 Pin Basket From Nuclear Fuel Accounting System Output
- Current Spent Fuel Pool Map, May 23, 2003

LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents and Management System
AC	Alternating Current
AEP	American Electric Power
ARM	Area Radiation Monitor
ASME	American Society of Mechanical Engineers
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
CRID	Control Room Instrument Distribution
CST	Condensate Storage Tank
CTS	Containment Spray
CVCS	Chemical and Volume Control System
DC	Direct Current
DG	Diesel Generator
DR	Discrepancy Report
DRP	Division of Reactor Projects
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EDY	Effective Degradation Years
EGB	Governor Hydraulic Actuator
EGM	Electronic Governing Module
EHP	Electrical Maintenance Head Procedure
EOP	Emergency Operating Procedure
ESW	Essential Service Water
ESF	Engineered Safety Feature
FAQ	Frequently Asked Question
gpm	Gallons-Per-Minute
IHP	Instrument Maintenance Head Procedure
IMC	Inspection Manual Chapter
JPM	Job Performance Measure
kV	Kilovolts
kW	Kilowatts
LER	Licensee Event Report
MHP	Maintenance Head Procedure
MT	Magnetic Particle Testing
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
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
PWR	Pressurized Water Reactor

RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RO	Reactor Operator
ROP	Reactor Oversight Process
RP	Radiation Protection
RPS	Reactor Protection System
RPV	Reactor Pressure Vessel
RWST	Refueling Water Storage Tank
SAT	Systematic Approach to Training
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
SRA	Senior Reactor Analyst
SRO	Senior Reactor Operator
SSCs	Structures, Systems, and Components
STP	Surveillance Test Procedure
TI	Temporary Instruction
TS	Technical Specification
U1C19	Unit 1 Cycle 19 Refueling Outage
UFSAR	Updated Final Safety Analysis Report