UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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May 5, 2010

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

SUBJECT: D. C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2 INTEGRATED INSPECTION REPORT; 05000315/2010002; 05000316/2010002

Dear Mr. Jensen:

On March 31, 2010, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your D. C. Cook Nuclear Power Plant, Units 1 and 2. The enclosed report documents the inspection results, which were discussed on April 21, 2010, with Mr. L. Weber and other members of your staff.

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

The report documents one NRC-identified finding and one self-revealed finding of very low safety significance (Green). The NRC-identified finding was determined to involve a violation of NRC requirements. Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at D. C. Cook. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at D.C. Cook. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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

Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 6
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000315/2010002; 05000316/2010002
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-315; 50-316
License Nos:	DPR-58; DPR-74
Report Nos.	05000315/2010002; 05000316/2010002
Licensee:	Indiana Michigan Power Company
Facility:	D. C. Cook Nuclear Power Plant, Units 1 and 2
Location:	Bridgman, MI
Dates:	January 1 through March 31, 2010
Inspectors:	J. Lennartz, Senior Resident Inspector P. LaFlamme, Resident Inspector T. Briley, Reactor Engineer T. Go, Health Physics Inspector M. Holmberg, Senior Reactor Inspector J. Jandovitz, Project Engineer D. McNeil, Senior Operations Engineer M. Mitchell, Health Physics Inspector A. Shaikh, Reactor Inspector C. Zoia, Operations Engineer
Approved by:	Jamnes L. Cameron, Chief Branch 6 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000315/2010002; 05000316/2010002; 01/01/2010 – 03/31/2010 D.C. Cook Nuclear Power Plant, Units 1 & 2; Problem Identification and Resolution

The inspection was conducted by resident and regional inspectors. The report covers a 3-month period of resident inspection. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated July 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance was self-revealed for the failure to implement procedures for using mobile cranes and the failure to use human error prevention tools. Consequently, a mobile crane boom contacted and severed the middle phase of an overhead 12 kilovolt line in the owner controlled area 'W' yard. This caused a loss of power to the fire pump house, which rendered the electric fire pump inoperable. This finding was entered into the licensee's corrective action program as Action Request (AR) 00860140. No violation of NRC requirements occurred.

  This finding was more than minor because it was related to the external factors attribute (fire) of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability of systems that respond to initiating events. Specifically, the electric fire pump was rendered inoperable and unavailable when power was lost to the fire pump house, which degraded the fire protection defense-in-depth strategies. The finding was of very low safety significance because the fire protection system performance was not affected in that both diesel-driven fire pumps were operable. This finding was associated with a cross cutting aspect in the area of human performance – work practices (H.4(c)). (Section 4OA2.3)

- Green. The inspectors identified one finding of very low safety significance with an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action." Specifically, licensee personnel failed to implement corrective actions for water intrusion into vaults below motor control centers containing safety-related cabling in a timely and effective manner. Consequently, safety-related cabling was exposed to a water environment that if left uncorrected could result in subsequent cable degradation. For corrective action, the licensee performed an inspection of all cable vaults throughout the plant. Also, licensee personnel initiated a root cause evaluation to focus on the leadership and organizational failures associated with the response to the wetted cables in the 1-ABD-A cable vault and the thoroughness of the extent of condition evaluation. This issue was entered into the licensee's corrective action program as CR AR 2010-2558.

  This finding affected the Mitigating Events cornerstone and was more than minor because the issue could become a more significant safety concern if left uncorrected. Specifically, failure to implement corrective actions for water intrusion into cable vaults could result in subsequent degradation of safety-related cabling. This finding was of very low safety significance because the finding does not constitute a design or qualification deficiency, did not result in a loss of system safety function, and did not

meet the seismic, flooding, and severe weather screening criteria. This finding was associated with a cross-cutting aspect in the area of problem identification and resolution – corrective action program (P.1(c)). (Section 4OA2.4)

B. Licensee-Identified Violations

Two violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and the licensee's corrective action tracking numbers are listed in Section 4OA7.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full power until March 3 when the unit was shut down to Mode 3, Hot Standby, to commence Cycle 23 refueling outage. Unit 1 was in Mode 5, Cold Shutdown, when the inspection period ended.

Unit 2 was at full power the entire inspection period.

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1. REACTOR SAFETY

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- Unit 2 east and west motor driven auxiliary feed water trains;
- Unit 2 west containment spray and spray add system; and
- Unit 1 AB emergency diesel generator.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report (UFSAR), Technical Specification (TS) requirements, outstanding work orders (WOs), condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the Corrective Action Program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

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

b. Findings

No findings of significance were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

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

- Fire Zone 45, Unit 2 engineering safety system and motor control center rooms;
- Fire Zone 127, Unit 1/2 technical support center uninterruptable power supply inverter and battery rooms;
- Fire Zone 29E, Unit 1 motor control center for essential service water pumps;
- Fire Zone 6N/M/S, Unit 1/2 auxiliary building elevation 587 west end;
- Fire Zone 32, auxiliary building cask handling elevation 609; and
- Fire Zone 42C, Unit 1 emergency power supply motor control room elevation 609.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a

plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted six quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings of significance were identified.

1R06 Flooding (71111.06)

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the condensate feed water system and auxiliary feed water system. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant areas to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Unit 2 reactor cable tunnel quadrants three and four

This inspection constituted one internal flooding sample as defined in IP 71111.06-05.

b. Findings

No findings of significance were identified.

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's inspections and maintenance of the 1AB emergency diesel generator air after cooler heat exchangers. The inspectors verified

that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations as compared against the acceptance criteria; and reviewed action requests (ARs) regarding heat sink problems to verify that the problems were entered into the licensee's CAP with the appropriate characterization. Select ARs were reviewed to verify that corrective actions were appropriate. Documents reviewed for this inspection are listed in the Attachment to this document.

This annual heat sink performance inspection constituted one sample as defined in IP 71111.07-05.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection Activities (71111.08)

For Unit 1, from March 9 through March 23, 2010, the inspectors conducted a review of the implementation of the licensee's Inservice Inspection (ISI) Program for monitoring degradation of the reactor coolant system, steam generator (SG) tubes, risk-significant piping and components, and containment systems. Additionally, the inspection included selected portions of Temporary Instruction (TI) 2515/172, "Reactor Coolant System (RCS) Dissimilar Metal Butt Welds," to assess licensee activities associated with the mitigation of the RCS hot and cold leg nozzle welds using mechanical stress improvement (MSIP).

The inspections described in Sections 1R08.1, 1R08.2, R08.3, IR08.4, and 1R08.5 below, count as one inspection sample as defined by IP 71111.08-05.

.1 Piping Systems Inservice Inspection

a. Inspection Scope

The inspectors observed the following nondestructive examinations required by the American Society of Mechanical Engineers, (ASME) Section XI Code, and/or 10 CFR 50.55a to evaluate compliance with the ASME Code, Section XI, applicable ASME Code Case and Section V requirements, and if any indications and defects were detected, to determine if these were dispositioned, in accordance with the ASME Code or an NRC approved alternative requirement:

- Manual ultrasonic examination (UT) of a 14-inch diameter pressurizer surge line pipe to pipe weld (1-RC-5-02S); and
- Manual UT of the 3-inch diameter chemical and volume control system pipe to elbow welds (1-CS-92-25S and 1-CS-92-26S).

The inspectors observed the following nondestructive examinations conducted as part of the licensee's industry initiative inspection programs for managing primary water stress corrosion cracking (PWSCC) in reactor coolant system components to determine if the examinations were conducted in accordance with the licensee's augmented inspection

program, industry guidance documents and associated licensee examination procedures and if any indications and defects were detected, to determine if these were dispositioned in accordance with approved procedures and NRC requirements.

- Automated UT and Eddy Current testing (ET) of hot leg (HL) and cold leg (CL) nozzle-to-safe-end welds (1-RPV-2-01 and 1-RPV-1-02), in accordance with Materials Reliability Program (MRP)-139 "Primary System Piping Butt Weld Inspection and Evaluation Guidelines."

The licensee had not identified any examinations during the previous outage with relevant/recordable conditions/indications accepted for continued service, so this inspection procedure attribute was not applicable.

The inspectors reviewed weld related documents to determine if the licensee applied the pre-service nondestructive examination and acceptance criteria required by the construction Code. Additionally, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to determine if the weld procedures were qualified in accordance with the requirements of the ASME Code, Section IX for the following:

- Class 2 weld for replacement of SG Number 4 stop valve MRV-240, Inlet Condensation Drain Shutoff Valve (1-MS-135-4)

b. Findings

No findings of significance were identified.

.2 Reactor Pressure Vessel Upper Head Penetration Inspection Activities

a. Inspection Scope

For the replaced Unit 1 vessel head, an examination was not required this outage pursuant to 10 CFR 50.55a(g)(6)(ii)(D), so the inspectors did not conduct a review in this area.

b. Findings

No findings of significance were identified.

.3 Boric Acid Corrosion Control

a. Inspection Scope

The inspectors performed visual examinations of the Unit 1 RCS and emergency core cooling systems within containment to determine if these visual examinations focused on locations where boric acid leaks can cause degradation of safety significant components. Specifically, the inspectors looked for boric acid leakage on the RCS loop piping including the reactor coolant pumps and the RCS piping within the pressurizer enclosure.

The inspectors reviewed the following licensee evaluations of reactor coolant system connected components with boric acid deposits to determine if degraded components

were documented in the corrective action program. The inspectors also evaluated corrective actions for any degraded reactor coolant system components to determine if they met the ASME Section XI:

- CR 00839231; BA 13 Shaft Seal Of Reactor Coolant Pump (RCP) Number 3;
- CR 00841127-01; BA Number 12 RCP Seal; and
- CR 00860898; Valve 1-CS-320.

The inspectors reviewed the following work orders related to evidence of boric acid leakage to determine if the corrective actions completed were consistent with the requirements of the ASME Code Section XI and 10 CFR Part 50, Appendix B:

- WO 55328661-01; 1-PP-45-3 - RCP Repair Mechanical Seal Leak;
- WO 55322828-08; 1-PP-45-3 - Refurbish Mechanical Seal Package;
- WO 55330867-01; 1-PP-45-2 - RCP Clean Up Dry Boric Acid In Bowl;
- WO 55330807-03; 1-PP-45-3 - Clean off Boric Acid Residue; and
- WO 55352774-01; 1-CS-320 - Buildup of Boric Acid on Pipe Cap (inactive).

b. Findings

No findings of significance were identified.

.4 Steam Generator Tube Inspection Activities

a. Inspection Scope

The Unit 1 SGs were replaced in 2000, and no examinations were required this refueling outage pursuant to TS requirements 3.4.17 “Steam Generator Tube Integrity,” and 5.5.7 “Steam Generator Program.” Therefore, the licensee did not conduct SG tube examinations and only a portion of the NRC inspection procedure could be completed for this review area. Specifically, from March 8 – 25, 2010, the inspectors performed an on-site review of documentation related to the SG ISI program to determine if:

- the size of SG tube flaws/degradation predicted by the licensee’s Operational Assessment would remain within structural integrity limits until the next scheduled tube inspection (e.g., until the end of the next operating cycle); and
- primary-to-secondary leakage (e.g., SG tube leakage) was below 3 gallons-per-day or the detection threshold during the previous operating cycle.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI/SG related problems entered into the licensee’s corrective action program and conducted interviews with licensee staff to determine if:

- the licensee had established an appropriate threshold for identifying ISI/SG related problems;
- the licensee had performed a root cause (if applicable) and taken appropriate corrective actions; and
- the licensee had evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity.

The inspectors performed these reviews to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" requirements. The corrective action documents reviewed by the inspectors are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On January 13-14, 2010, the inspectors observed several licensed operators perform job performance measures in the plant and in the plant's simulator during licensed operator requalification examinations. The inspectors verified that operator performance was adequate, that evaluators were identifying and documenting operator performance problems, and that the examinations were being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures; and
- control board manipulation.

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

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

b. Findings

No findings of significance were identified.

Biennial Licensed Operator Requalification Inspection

Completion of Sections .2 through .10 constituted one biennial licensed operator requalification inspection sample as defined in IP 71111.11B.

.2 Facility Operating History (71111.11B)

a. Inspection Scope

The inspectors reviewed the plant's operating history from January 2008 through December 2009 to identify operating experience that was expected to be addressed by the Licensed Operator Requalification Training (LORT) program. The inspector verified that the identified operating experience had been addressed by the facility licensee in accordance with the station's approved Systems Approach to Training (SAT) program to satisfy the requirements of 10 CFR 55.59(c). The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.3 Licensee Requalification Examinations

a. Inspection Scope

The inspectors performed an inspection of the licensee's LORT test/examination program for compliance with the station's SAT program which would satisfy the requirements of 10 CFR 55.59(c)(4). The reviewed operating examination material consisted of four operating tests, each containing two dynamic simulator scenarios and six job performance measures. The written examinations reviewed consisted of four written examinations which were Part B, Administrative Controls/Procedure Limits examinations. The station does not use Part A, Static Simulator examinations. Each written examination contained approximately 37 questions. The inspectors reviewed the annual requalification operating test and biennial written examination material to evaluate general quality, construction, and difficulty level. The inspectors assessed the level of examination material duplication from week-to-week during the current year operating test. The examiners assessed the amount of written examination material duplication from week-to-week for the written examination administered in 2008. The inspectors reviewed the methodology for developing the examinations, including the LORT program 2-year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.4 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed the administration of a requalification operating test to assess the licensee's effectiveness in conducting the test to ensure compliance with 10 CFR 55.59(c)(4). The inspectors evaluated the performance of one shift crew (2 simulator crews) in parallel with the facility evaluators during three dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility

evaluators during the administration of several job performance measures. The inspectors assessed the facility evaluators' ability to determine adequate crew and individual performance using objective, measurable standards. The inspectors observed the training staff personnel administer the operating test, including conducting pre-examination briefings, evaluations of operator performance, and individual and crew evaluations upon completion of the operating test. The inspectors evaluated the ability of the simulator to support the examinations. A specific evaluation of simulator performance was conducted and documented in the section below titled, "Conformance with Simulator Requirements Specified in 10 CFR 55.46." The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.5 Examination Security

a. Inspection Scope

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

b. Findings

A Senior Reactor Operator on the examination security agreement with examination specific knowledge provided evaluations for another operator that was preparing to take his biennial written examination and annual operating test. It was verified by training department personnel that the Senior Reactor Operator had not revealed any examination specific information to the operator during the course of the evaluations. The operator was placed on the security agreement and directed not to discuss any evaluations covered by the Senior Reactor Operator on the security agreement with any other operators. The operator was required to take the same examination administered to the Senior Reactor Operator on examination security because he had no examination information for that examination. This examination security issue was documented in AR 00862681. Because no examination material was exposed to unauthorized personnel, no compromise or violation of examination security occurred. However, all examination security issues are required to be documented.

.6 Licensee Training Feedback System

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee's processes for revising and maintaining its LORT Program up-to-date, including the use of feedback

from plant events and industry experience information. The inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions. This evaluation was performed to verify compliance with 10 CFR 55.59(c) and the licensee's SAT program. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.7 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous biennial requalification examinations and the training from the current examination cycle to ensure that they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans. This evaluation was performed in accordance with 10 CFR 55.59(c) and with respect to the licensee's SAT program. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.8 Conformance with Operator License Conditions

a. Inspection Scope

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

b. Findings

No findings of significance were identified.

.9 Conformance with Simulator Requirements Specified in 10 CFR 55.46

a. Inspection Scope

The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements as prescribed in 10 CFR 55.46, "Simulation Facilities." The inspectors also reviewed a sample of simulator performance test records (i.e., transient tests, malfunction tests, steady state tests, and core performance tests), simulator discrepancies, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy process to ensure that simulator fidelity was maintained. Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions as well as on nuclear and thermal hydraulic operating characteristics. The inspectors conducted interviews with members of the licensee's simulator staff about the configuration control process and completed the IP 71111.11, Appendix C, checklist to evaluate whether or not the licensee's plant-referenced simulator was operating adequately as required by 10 CFR 55.46(c) and (d). The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.10 Annual Operating Test Results (71111.11B)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the biennial written examination, the individual Job Performance Measure operating tests, and the simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from January 5, 2010, through February 5, 2010, as part of the licensee's operator licensing requalification cycle. These results were compared to the thresholds established in Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and Inspection Procedure 71111.11, "Licensed Operator Requalification Program." The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the licensees 10 CFR 50.65 (a)(3) periodic evaluation (PE) that was completed for the fourth quarter in 2007 thru the first quarter of 2009. The inspectors verified that the PE was completed within the time constraints of the

maintenance rule; that the licensee reviewed (a)(1) goals, (a)(2) performance criteria and effectiveness of corrective actions; and that industry operating experience was taken into account where practicable. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly maintenance effectiveness sample as defined in IP 71111.12-05.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

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

- Activities during the week of January 11, 2010, which included: planned Unit 2 east essential service water pump motor replacement and preventive maintenance on the pump discharge valve; and, emergent maintenance to repair a steam leak on the turbine driven auxiliary feedwater pump steam supply vent valve 2-MS-421 and to replace a voltage regulator in Train B distributed ignition system.
- Planned maintenance during the week of January 25, 2010, which included Unit 2 west essential service water pump replacement, Unit 2 containment spray surveillance testing, Unit 1 component cooling water pump preventive maintenance and Unit 1 charging pump motor preventive maintenance.
- Emergent maintenance on the supplemental diesel generators during the weeks of February 15 and February 22, 2010.
- Planned maintenance on March 15-16, 2010, which included Unit 1 essential service water dual pump outage to allow divers to clean the pump bays.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These maintenance risk assessments and emergent work control activities constituted four samples as defined in IP 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- AR 00849398, Small break loss of coolant accident assessment of reduced recirculation flow with residual heat removal system spray in service;
- AR 09353013, Unit 1 SG stop valve 1-MRV-230 dump valve 1-MRV-231 leak-by;
- AR 00861425, Over-thrust condition on east residual heat removal mini-flow line shutoff valve;
- AR 00089572, Essential Service Water (ESW) water hammer;
- AR 2010-1678, Un-wedging over-thrust condition;
- AR 00813401, Gaps in the barrier between the turbine building and the screen house; and
- AR 2010-1804, Reactor vessel core support lug bolting anomalies.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted seven samples as defined in IP 71111.15-05.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications (71111.18)

.1 Permanent Plant Modifications

a. Inspection Scope

The following engineering design packages were reviewed and selected aspects were discussed with engineering personnel:

- EC-0000049339, ESW Pump Reliability Upgrade Project for Unit 2 West Pump, 2-PP-7W
- EC-0000049543, Generic Letter (GL) 2008-01 Vent Modification for the Unit 1 reactor coolant system high point vents on the RCP seal return lines.

The inspectors reviewed the design change package to verify the adequacy of the associated 10 CFR 50.59 safety evaluation screening, consideration of design parameters, implementation of the modification, and post-modification testing. The inspectors also verified that relevant procedures were properly updated and observed portions of ongoing and completed work activities to verify that installation was consistent with the design control documents.

The primary reason for the ESW modification, which included removing an 8-foot section from the pump suction column and installing a vortex suppressor at the bottom of the pump bowl, was to reduce pump vibration. The primary reason for the vent modification on the RCP seal return lines was to provide an adequate venting path during system fill which was performed in response to GL 2008-01 to address gas accumulation in the emergency core cooling system. Documents reviewed in the course of this inspection are listed in the Attachment to this report.

Also, additional activities were performed during the evaluation of the engineering design package associated with TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems." These activities are described in paragraph .2 of this section.

This inspection constituted two permanent plant modification samples as defined in IP 71111.18-05.

b. Findings

No findings of significance were identified.

.2 Permanent Plant Modifications associated with Temporary Instruction 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems."

a. Inspection Scope and Documentation

The following engineering design package associated with the scope of GL 2008-01, "Managing gas accumulation in emergency core cooling, decay heat removal, and containment spray systems," was reviewed and selected aspects were discussed with engineering personnel:

- EC-0000049543, GL 2008-01 Vent Modification for the Unit 1 reactor coolant system high point vents on the RCP seal return lines.

The inspectors verified that the licensing basis verification documents have either been updated or are in the process of being updated to reflect the modifications associated with the licensee's resolution of GL 2008-01. Specifically, the inspectors verified that the licensee's resolution has been incorporated into the UFSAR and is currently being evaluated for incorporation into the TS and TS Bases.

In addition, the inspectors verified that the drawings were up-to-date with respect to recent hardware changes and that any discrepancies between as-built configurations and the drawings were documented and entered into the CAP for resolution.

Similarly, the inspectors verified that Piping and Instrumentation Diagrams accurately described the subject systems, that they were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations, the isometric drawings, and the Piping and Instrumentation Diagrams were documented and entered into the CAP for resolution.

Documents reviewed are listed in the Attachment to this report.

This inspection effort counts towards the completion of TI 2515/177 which will be closed in a later inspection report.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- Unit 2 control room air conditioning system south train humidifier heating element replacement;
- Unit 2 distributed ignition system Train B voltage regulating unit replacement;
- Unit 2 west essential service water pump replacement;
- Unit 1/2 supplemental diesel generator control interface software update;
- Unit 1 west centrifugal charging pump following impeller and mechanical seal replacement;
- Unit 1 AB emergency diesel generator (EDG) 18-month maintenance;
- Unit 1 CD EDG electronic governor replacement; and
- Unit 1 CD battery charger, 1-BC-CD2, 10-year preventive maintenance to replace internal components.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TS, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various

NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

On March 3, 2010, Unit 1 was shut down and Cycle 23 refueling outage commenced. The inspectors began refueling outage inspection activities, which are expected to be completed and documented during the next inspection period. An inspection sample was not completed this inspection period.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- Unit 2 Train A distributed ignition system surveillance test (routine);
- Unit 2 Train B distributed ignition system surveillance test (routine);
- Unit 1 east control room pressurization and cleanup surveillance test (routine);
- Unit 1 and Unit 2 reactor coolant system leak rate test (reactor coolant system leak detection);
- Unit 1 main steam safety valve setpoint verification with lift assist device (in-service test);
- Unit 1 residual heat removal system valve interlock verification test (routine); and
- Unit 1 containment isolation valve local leak rate test surveillance (containment isolation valve).

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

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency were in accordance with TSs, the UFSAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for in-service testing activities, testing was performed in accordance with the applicable version of Section XI, ASME code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted four routine surveillance testing samples, one in-service testing sample, one reactor coolant system leak detection sample, and one containment isolation valve sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2RS01 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted a partial sample as defined in 71124.01.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed all licensee Performance Indicators (PIs) for the Occupational Exposure Cornerstone for followup. The inspectors reviewed the results of radiation protection program audits (e.g., licensee's quality assurance audits or other independent audits). The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed the results of the audit and operational report reviews to gain insights into overall licensee performance.

b. Findings

No findings of significance were identified.

.2 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors determined if there have been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors evaluated whether the licensee has assessed the potential impact of these changes and has implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

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

The inspectors conducted walkdowns of the facility, including radioactive waste processing, storage, and handling areas to evaluate material conditions and performed independent radiation measurements to verify conditions.

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

- Mechanical Stress Improvement Process;
- Refueling Activities;
- Containment Scaffolding;
- Shielding Activities; and
- Valve Maintenance Activities.

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

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

The inspectors selected the following air sample survey records to assess whether the samples were collected and counted in accordance with licensee procedures.

- Reactor Coolant Pump 11;
- Containment During Cavity Flood-up; and
- Refuel Floor During Fuel Transfers.

The inspectors observed work in potential airborne areas and evaluated whether air samples were representative of the breathing air zone. The inspectors evaluated whether continuous air monitors were located in areas with low background to minimize false alarms and were representative of actual work areas. The inspectors assessed whether the licensee had a program for monitoring levels of loose surface contamination in areas of the plant with the potential for the contamination to become airborne.

b. Findings

No findings of significance were identified.

.3 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors selected three containers holding nonexempt licensed radioactive materials that may cause unplanned or inadvertent exposure of workers, and assessed whether they are labeled and controlled in accordance with 10 CFR 20.1904, “Labeling Containers,” or met the requirements of 10 CFR 20.1905(g).

The inspectors reviewed the following radiation work permits (RWPs) used to access high radiation areas (HRAs) and evaluated the specified work control instructions or control barriers.

- RWP 101106 U1C23 Reactor Nozzle Pits/Sandbox Reactor Cavity Mechanical Stress Improvement Process Activities;
- RWP 101100 Refuel Cavity Decontamination Activities;
- RWP 101142 Containment Scaffolding;

- RWP 101153 Containment Radiation Protection Activities; and
- RWP 101145 Valve Maintenance.

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

b. Findings

No findings of significance were identified.

.4 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

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

b. Findings

No findings of significance were identified.

.5 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

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

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

The inspectors assessed whether radiation monitoring devices were placed on the individual's body consistent with licensee procedures. The inspectors' evaluation whether the dosimeter was placed in the location of highest expected dose or that the

licensee is properly employing an NRC-approved method of determining effective dose equivalent.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel in high-radiation work areas with significant dose rate gradients. During the on-site inspection there were no work areas with significant dose rate gradients.

The inspectors reviewed RWPs for work within airborne radioactivity areas with the potential for individual worker internal exposures. There were no airborne radioactivity work areas. For selected RWPs, the inspectors evaluated airborne radioactive controls and monitoring, including potentials for significant airborne levels (e.g., grinding, grit blasting, system breaches, entry into tanks, cubicles, reactor cavities).

The inspectors inspected the posting and physical controls for selected HRAs and very high radiation areas (VHRAs), to verify conformance with the Occupational Performance Indicator (PI).

b. Findings

No findings of significance were identified. However, a violation of minor safety significance was identified by the inspectors. Specifically, two administratively locked high radiation areas were discovered unlocked during routine radiation protection (RP) surveillance walkdowns. Unlocked gates were discovered on Unit 1 and Unit 2 at 633' elevation letdown heat exchanger room. The event was discovered by RP staff on June 11, 2009. The licensee's follow-up investigation found that an RP technician performing a routine survey of the room on June 10, 2009, failed to physically challenge the gates when the RP technician exited the areas. The investigation found that no other personnel entered either room after the RP technician completed the routine radiological surveys on June 10, 2009. The licensee concluded that the RP technician who left the gates unlocked relied on the automatic closure mechanism to secure the gates behind him. One gate was not fully latched and the other was partially blocked by a chain attached to the gate.

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

a. Inspection Scope

The inspectors reviewed special areas that have the potential to become very high radiation areas during certain plant operations (e.g., thimble withdrawal into the reactor cavity sump; fuel transfer from the cavity to the spent fuel pool). The inspectors discussed these areas with first-line health physics supervisors to assess whether the communication beforehand with the HP group would allow for corresponding timely actions to properly post, control, and monitor the radiation hazards including re-access authorization. The inspectors assessed the licensee controls for very high radiation areas, and areas with the potential to become a very high radiation area, to ensure that an individual was not able to gain unauthorized access to the very high radiation area.

b. Findings

No findings of significance were identified.

.7 Radiation Worker Performance (02.07)

a. Inspection Scope

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

b. Findings

No findings of significance were identified.

.8 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

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

b. Findings

No findings of significance were identified.

.9 Problem Identification and Resolution (02.09)

a. Inspection Scope

The inspectors assessed whether problems associated with radiation monitoring and exposure control were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee corrective action program. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring and exposure controls. The inspectors assessed the licensee's process for applying operating experience to their plant.

b. Findings

No findings of significance were identified.

2RS02 Occupational As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls (71124.02)

This inspection constitutes a partial sample as defined in IP 71124.02-5.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed pertinent information regarding plant collective exposure history, current exposure trends, and ongoing or planned activities in order to assess current performance and exposure challenges. The inspectors reviewed the plant's 3-year rolling average collective exposure.

The inspectors reviewed the site-specific trends in collective exposures (using NUREG-0713, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities," and plant historical data) and source term (average contact dose rate with reactor coolant piping) measurements (using Electric Power Research Institute TR-108737, "BWR Iron Control Monitoring Interim Report," issued December 1998, and/or plant historical data, when available).

The inspectors reviewed site-specific procedures associated with maintaining occupational exposures ALARA, which included a review of processes used to estimate and track exposures from specific work activities.

b. Findings

No findings of significance were identified.

.2 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors selected five work activities of the highest exposure significance, some with greater than 5 person-rem of exposure. The inspectors determined whether the licensee reasonably grouped the radiological work into work activities, based on historical precedence, industry norms, and/or special circumstances. The inspectors reviewed the ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements.

The inspectors assessed whether the licensee's planning identified appropriate dose mitigation features; considered alternate mitigation features; and defined reasonable dose goals. The inspectors evaluated whether the licensee's ALARA assessment had taken into account decreased worker efficiency from use of respiratory protective devices and/or heat stress mitigation equipment (e.g., ice vests). The inspectors determined whether the licensee's work planning considered the use of remote technologies (such as teledosimetry, remote visual monitoring, and robotics) as a means to reduce dose and the use of dose reduction insights from industry operating experience and plant-specific lessons learned. The inspectors evaluated the integration of ALARA requirements into work procedure and RWP documents.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

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

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

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

b. Findings

No findings of significance were identified.

.4 Radiation Worker Performance (02.05)

a. Inspection Scope

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

b. Findings

No findings of significance were identified.

.5 Problem Identification and Resolution (02.06)

a. Inspection Scope

The inspectors assessed whether problems associated with ALARA planning and controls were being identified by the licensee at an appropriate threshold and are properly addressed for resolution in the licensee corrective action program.

b. Findings

No findings of significance were identified.

Cornerstones: Occupational and Public Radiation Safety

2RS05 Radiation Monitoring Instrumentation (71124.05)

This inspection constitutes partial sample as defined in IP 71124.05.

.1 Inspection Planning and Identification of Instrumentation (02.01)

a. Inspection Scope

The inspectors reviewed the plant's UFSAR to identify radiation instruments associated with monitoring area radiological conditions including airborne radioactivity, process streams, effluents, materials/articles, and workers. Additionally, the inspectors reviewed the instrumentation and the associated TS requirements for post-accident monitoring instrumentation including instruments used for remote emergency assessment.

The inspectors obtained a listing and review of in-service survey instrumentation including air samplers and small article monitors, along with instruments used to detect and analyze workers' external contamination. Additionally, the inspectors also reviewed personnel contamination monitors and a portal monitor including whole-body counters (WBCs) to detect workers' internal contamination. From a review of the list, the inspectors were to determine if the licensee had an adequate number and type of instruments to support plant operations.

The inspectors obtained and reviewed through a smart sampling of the licensee's independent evaluation reports of the radiation monitoring program since the last inspection. This review included audits of the licensee's onsite calibration facility.

The inspectors obtained and reviewed copies of the procedures that govern instrument source checks and calibrations, and focused on instruments used for monitoring transient high radiological conditions, including instruments used for underwater surveys and area radiation monitors. These procedures were reviewed for the basis of alarm set-point values, as provided in the TSs, UFSAR, and the set-point basis as provided in the offsite dose calculation manual (ODCM).

b. Findings

No findings of significance were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors performed walkdowns of the following five effluent radiation monitoring systems (liquid and airborne system):

- Westinghouse liquid process monitor;
- Mid range noble gas monitors;
- Eberline Sample Particulate Iodine and noble gas area monitors;
- Unit 1 east and west component cooling water radiation monitors; and
- Victoreen containment monitors.

The inspectors also inspected the flow measurement devices and all accessible point-of-discharge liquid and gaseous effluent monitors of the selected systems. The inspectors also verified that effluent/process monitor configurations aligned with ODCM descriptions and none of the monitors were out-of-service or degraded.

The inspectors selected a minimum of 10 portable survey instruments during the inspection to verify calibration and source check stickers and to assess instrument material condition and operability. The inspectors observed licensee staff demonstrated source checks for various types of portable survey instruments and the source checks were performed at the appropriate scales (low and high range). The inspectors walked down a minimum of 18 area radiation monitors and continuous air monitors to determine whether they are appropriately positioned to the areas they were intended to monitor. Selectively, the inspectors compared monitor response via local or remote control room indications with actual area conditions for consistency.

The inspectors selected three personnel contamination monitors, portal monitors, and small article monitors, and verified that the periodic source checks were performed in accordance with the manufacturer's recommendations and licensee procedures.

b. Findings

No findings of significance were identified.

.3 Calibration and Testing Program (02.03)

Process and Effluent Monitors

a. Inspection Scope

The inspectors selected five effluent monitor instruments (such as gaseous and liquid) and verified that channel calibration and functional tests were performed consistent with radiological effluent TS/ODCM. The inspectors verified that: (a) the licensee calibrated its monitors with National Institute of Standards and Technology (NIST) traceable sources; (b) the primary calibrations were adequately represented the plant nuclide mix; (c) when secondary calibration sources were used, the sources were verified by the primary calibration; and (d) the licensee's channel calibrations encompassed the instrument's alarm set-points. Additionally, inspectors also verified that effluent monitor

alarm set-points were established as provided in the ODCM and station procedures and any changes to effluent monitor set-points were evaluated.

b. Findings

No findings of significance were identified.

Laboratory Instrumentation

a. Inspection Scope

The inspectors reviewed laboratory analytical instruments used for radiological analysis such as proportional counters, liquid scintillation counters and gamma spectroscopy using high purity germanium. The inspectors verified that the licensee calibrated these instruments with NIST traceable sources and that correction factors were properly applied by the licensee in their output verification.

b. Findings

No findings of significance were identified.

Whole Body Counter

a. Inspection Scope

The inspectors reviewed the methods and sources used to perform whole body counter functional checks before daily use of the instrument and determined that check sources were appropriately aligned with the plant's isotopic mix, which the licensee verified annually. The inspectors also reviewed whole body counter calibration records for 2009, and verified that calibration sources were representative of the plant source term and that appropriate calibration phantoms were used.

b. Findings

No findings of significance were identified.

Post-Accident Monitoring Instrumentation

a. Inspection Scope

The inspectors selected containment high-range monitors, reviewed the calibration documentation, and verified that an electronic calibration was completed for all range decades above 10 rem/hour. The inspectors also verified that at least one decade at or below 10rem/hour was calibrated using an appropriate radiation source. The inspectors determined if the calibration acceptance criterion was adequate for the intended purpose of the instruments. The two high-range effluent monitors selected were relied upon by the licensee in their emergency operating procedures, as a basis for triggering emergency action levels and subsequent emergency classifications, or to make protective action recommendations during an accident. The inspectors evaluated the calibration and availability of these instruments. In addition, the inspectors reviewed and performed a walkdown of the licensee's post-accident iodine effluent samples. During

the inspection, the inspectors also observed electronic and radiation calibration of a process monitor.

b. Findings

No findings of significance were identified.

Portal Monitors, Personnel Contamination Monitors and Small Article Monitors

a. Inspection Scope

Inspectors selected one to two of each type of these instruments used onsite, and verified that the alarm set-point values were reasonable under the circumstances to ensure that licensed materials were not released from the site. The inspectors reviewed the calibration documentation for the instrument selected and discussed the calibration methods with the licensee's calibration instrument department staff to determine consistency with the manufacturer's recommendations.

b. Findings

No findings of significance were identified.

Portable Survey Instruments, Area Radiation Monitors, Electronic Dosimeters, and Air Samplers/Continuous Air Monitors

a. Inspection Scope

The inspectors reviewed calibration documentation for several portable survey instruments, ARMs, electronic dosimetry and air samplers or CAMs. Calibration methods and detector measurement geometry, as applicable, were evaluated to determine whether the calibration methods used for these instruments was consistent with the licensee's procedures.

The inspectors verified that the licensee took appropriate corrective action for any instruments that failed to meet calibration acceptance criteria. For those failed instruments, the inspectors verified that the licensee evaluated the possible consequences of instrument use since the previous successful calibration or source check.

b. Findings

No findings of significance were identified.

Instrument Calibrator

a. Inspection Scope

The inspectors reviewed the current output value spreadsheets for the licensee's portable survey and area radiation monitors instrument calibrator units, to verify that the licensee periodically measures calibrator output over the range of the instruments used through measurements by ion chamber/electrometer devices. This measuring device is calibrated by a facility using NIST traceable sources, the inspectors verified that

correction factors for these measuring devices were properly applied by the licensee in their output verification.

b. Findings

No findings of significance were identified.

Calibration and Check Sources

a. Inspection Scope

The inspectors reviewed the licensee's 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," source term to determine if the calibration sources used were representative of the types and energies of radiation encountered in the plant.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution (02.04)

a. Inspection Scope

The inspectors reviewed documentation to verify that problems associated with radiation monitoring instrumentation are being identified by the licensee at an appropriate threshold and are properly addressed for resolution in the licensee's corrective action program. The inspectors referenced Inspection Procedure 71152, "Identification and Resolution of Problems," for additional guidance. In addition to the above, the inspectors verified whether the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring instrumentation were appropriate.

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. Staff members were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety-significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of Non-Cited Violations tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

The inspectors determined if the licensee's self-assessment activities were identifying and addressing repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours PI for both units from the first quarter of 2009 through the fourth quarter of 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Inspection Reports for the period of January 1, 2009, through December 31, 2009, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI for both units from the first quarter of 2009 through the fourth quarter of 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC Integrated Inspection Reports for the period of January 1, 2009, through December 31, 2009, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two unplanned scrams with complications samples as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours PI for both units from the first quarter of 2009 through the fourth quarter of 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports, and NRC Integrated Inspection Reports for the period of January 1, 2009, through December 31, 2009, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

.4 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures PI for both units from the first quarter of 2009 through the fourth quarter of 2009. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" definitions and guidance, were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, issue reports, event reports, and NRC Integrated Inspection Reports for the period of January 1, 2009, through December 31, 2009, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

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

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

.3 Selected Issue Follow-up Inspection: AR 00861410 Root Cause Evaluation

a. Inspection Scope

The inspectors selected the following for an in-depth review:

- AR 00860140, Root Cause Analysis Report, Mobile Crane Severed 12 kilo volt (KV) Line in W-Yard, November 2009

The inspectors discussed the evaluations and associated corrective actions with licensee personnel and verified the following attributes during their review of the root cause evaluation:

- complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- 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.

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

b. Findings

Introduction: A finding of very low safety significance was self-revealed for the failure to implement procedures for using mobile cranes to move material and the failure to use human error prevention tools. Consequently, a mobile crane boom contacted and severed an overhead 12KV line while moving materials in the owner controlled area. This caused a loss of power to the fire pump house and the electric fire pump, which rendered the electric fire pump inoperable. No violation of regulatory requirements occurred.

Description: On November 4, 2009, during night shift, a mobile crane struck the middle phase of a 12KV line while moving materials in the owner controlled area “W” yard. The line was severed, which caused a loss of power to several onsite buildings including the fire pump house. The loss of power to the fire pump house caused the east diesel-driven fire pump to start on low fire header pressure due to loss of power to the pegging pump and rendered the electric fire pump inoperable as per Technical Requirements Manual 8.7.5, Fire Suppression Water System. The electric fire pump was returned to an operable status approximately 14 hours later when power was restored to the fire pump house, which satisfied Technical Requirements Manual 8.7.5 action requirements. The east and west diesel-driven fire pump remained operable the entire time.

Further investigation determined that several human errors, inappropriate decisions, and broken barriers (e.g., procedures, training, oversight, and work management) all contributed to this incident. Licensee supervisory oversight of the supplemental workers

performing the task was lacking, which the inspectors concluded was considered a primary contributor. Also, the crane operator qualification/training was considered to be ineffective because the need to verify adequate clearance for overhead lines and obstacles that could be inadvertently contacted was not considered.

The procedures specific to mobile crane use and rigging (PMP-5020-MHP-001, "Lifting and Rigging Program," Revision 11, and MHI-5027, "Operation of Mobile Cranes," Revision 5), were not used because the workers decided to use the mobile crane when the equipment designated for use in the work order task (rental SkyTrack fork lift) was not available in the field. However, supervision was not consulted, potential new hazards were not considered, and a new pre-job brief was not conducted for the change.

Consequently, no signal person or spotter was focused on the boom when raising or backing up; the job hazard analysis did not identify overhead power lines in the work area; and lighting in the area was not adequate for performing mobile crane activities at night. As a result, the workers did not see the overhead power lines and the crane boom contacted and severed the middle phase of the 12KV line.

Analysis:

The inspectors concluded that the failure to implement plant procedures for using a mobile crane and the failure to use human error prevention tools was a licensee performance deficiency that warranted an evaluation in accordance with the significance determination process.

The inspectors reviewed the samples of minor issues in Inspection Manual Chapter (IMC) 0612, "Power Reactors Inspection Reports," Appendix E, "Examples of Minor Issues," and determined that there were no examples related to this issue. Using the guidance contained in IMC 0612, Appendix B, "Issue Screening," the inspectors determined that the performance deficiency was more than minor because it was associated with the fire external factors attribute and affected the mitigating system cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the failure to implement plant procedures for using mobile cranes and the failure to use human error prevention tools resulted in a crane boom contacting and severing an overhead 12KV line. Consequently, power was lost to the fire pump house, which rendered the electric fire pump inoperable and unavailable.

In accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," Table 3b, the inspectors determined the finding degraded the fire protection defense-in-depth strategies. Therefore, the inspectors evaluated the finding using IMC 0609, Appendix F, "Fire Protection Significance Determination Process." The inspectors assumed a LOW degradation rating for this finding in step 1.2, because system performance was not affected as both diesel-driven fire pumps remained operable to provide water to the station's fire protection system, if required. Therefore, the finding screened as Green (very low safety significance).

Cross Cutting Aspect

The inspectors concluded that this finding has a cross cutting aspect in the area of human performance – work practices. Licensee personnel failed to ensure supervisory and management oversight of contract workers using a mobile crane such that nuclear safety was supported (H.4(c)).

Enforcement:

Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement. This issue was entered into the licensee's corrective action program as AR 00860140. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as a finding (FIN 05000315/2010002-01; 05000316/2010002-01, Failure to Implement Plant Procedures for Using a Mobile Crane.)

.4 Selected Issue Follow-up Inspection: Condition Report 00864717

a. Inspection Scope

The inspectors selected the following for an in-depth review:

- Water intrusion into cable vaults containing safety-related cabling.

The inspectors discussed the evaluations and associated corrective actions with licensee personnel and verified the following attributes during their review of CRs that were generated for water intrusion into cable vaults:

- complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- 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.

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

b. Findings

Introduction

The inspectors identified a finding of very low safety significance (Green) with an associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action." Specifically, licensee personnel failed to implement corrective actions for water intrusion into vaults containing safety-related cabling in a timely and effective manner.

Description

On February 8, 2010, during the performance of an auxiliary building tour, the inspectors identified water in the vault below motor control center 1-ABV-A on the 587 foot elevation in the auxiliary building, which contained safety-related cabling. The inspectors notified the licensee of the water present in the cable vault and the issue was entered into the licensee's corrective action program as AR 00864717. Subsequent investigation performed by the inspectors revealed that a history of water intrusion into cable vaults throughout the plant existed. Several CRs and work requests generated since 2001 identified water in cable vaults containing safety and non-safety related cabling. The inspectors noted that AR 00116111 generated on September 20, 2005, identified water present in two cable vaults that had been previously identified and entered into the licensee's corrective program in 2001.

The inspectors reviewed several additional CRs and noted that AR 00846761 generated on February 20, 2009, documented licensee identified submerged cabling in the 1-ABD-A cable vault located in the Unit 1 AB EDG room. The inspectors noted that per the AR, the condition had been previously identified in 2008. On February 8, 2010, the inspectors conducted a walkdown and noted that water was still present. Subsequent review by the inspectors revealed that the licensee's extent of condition consisted only of reviewing previously performed and documented walkdowns of cable vaults throughout the plant. In addition, the inspectors verified with licensee personnel that plant walkdowns to look for water in cable vaults had not been performed during the extent of condition evaluation. Therefore, the inspectors determined the extent of condition evaluation was inadequate.

Additionally, the inspectors noted that although some corrective actions were taken to address the water intrusion issue, actions did not include subsequent walkdown inspections to verify that water intrusion into cable vaults had been mitigated appropriately. Consequently, timely and effective corrective actions had not been implemented to address the long history of water intrusion into cable vaults containing safety-related cabling.

Analysis

The inspectors determined that failure to implement corrective actions in a timely and effective manner to prevent water intrusion into cable vaults containing safety-related cabling was a licensee performance deficiency that warranted an evaluation in accordance with 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 Screening," the inspectors determined that this issue could become a more significant safety concern if left uncorrected and was therefore more than minor. Specifically, failure to implement corrective actions for water intrusion into cable vaults could result in subsequent degradation of safety-related cabling.

Because this issue involved safety-related cabling which could affect systems required for safe shutdown, the inspectors concluded that this finding was associated with the

Mitigating System cornerstone. The inspectors performed a Phase 1 SDP review using the guidance provided in IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." Using the Mitigating System cornerstone column in Table 4a, "Characterization Worksheet for Initiating Events, Mitigating Systems, and Barrier Integrity cornerstones," the inspectors determined that this finding screened as Green, very low safety significance, because the finding does not constitute a design or qualification deficiency, did not result in a loss of system safety function, and did not meet the seismic, flooding, and severe weather screening criteria on Table 4b.

Cross-Cutting Aspect

The inspectors concluded that this finding has a cross-cutting aspect in the area of problem identification and resolution – corrective action program (P.1(c)). Licensee personal failed to thoroughly evaluate water intrusion into cable vaults containing safety-related cabling. Consequently, the resolution did not adequately address the cause and extent of condition.

Enforcement

The CFR, Title 10, Part 50 Appendix B, Criterion XVI, "Corrective Action," requires in part that conditions adverse to quality are promptly identified and corrected.

Contrary to the above, between February 20, 2009, and February 8, 2010, licensee personnel failed to implement corrective actions for water intrusion into vaults containing safety-related cabling in timely and effective manner. Consequently, safety related cabling was exposed to a water environment that if left uncorrected could result in subsequent cable degradation. For corrective action, the licensee performed an inspection of all cable vaults throughout the plant. Also, licensee personnel initiated a root cause evaluation to focus on the leadership and organizational failures associated with the response to the wetted cables in the 1-ABD-A cable vault and the thoroughness of the extent of condition evaluation. 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 finding was entered into the licensee's corrective action program as AR 20102558 (NCV 05000315/2010002-02; 05000316/2010002-02, Failure to Implement Corrective Actions in a Timely and Effective Manner).

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 (Open) NRC TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems (NRC Generic Letter 2008-01)"

a. Inspection Scope

During the Unit 1 refueling outage, on March 22 - 26, 2010, the inspectors conducted a walkdown of normally inaccessible portion of piping of the reactor coolant seal injection system in sufficient detail to reasonably assure the acceptability of the licensee's walk downs (TI 2515/177, Section 04.02.d). The reactor coolant pump seal injection system is part of the chemical volume and control system and is supplied by and returned to the high head safety injection centrifugal charging pumps. The inspectors also verified that the information obtained during the licensee's walkdown was consistent with the items identified during the inspector's independent walkdown (TI 2515/177, Section 04.02.c.3).

In addition, the inspectors verified that the licensee had isometric drawings that describe the reactor coolant pump seal injection system configurations and had acceptably confirmed the accuracy of the drawings (TI 2515/177, Section 04.02.a). The inspectors verified the following related to the isometric drawings:

- High point vents were identified.
- High points that do not have vents were acceptably recognizable.
- Other areas where gas can accumulate and potentially impact subject system operability, such as at orifices and check valves in horizontal pipes, were acceptably described in the drawings or in referenced documentation.
- All pipes and fittings were clearly shown.
- The drawings were up-to-date with respect to recent hardware changes and that any discrepancies between as-built configurations and the drawings were documented and entered into the CAP for resolution.

The inspectors verified that piping and instrumentation diagrams accurately described the subject systems, that they were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations, the isometric drawings, and the piping and instrumentation diagrams were documented and entered into the CAP for resolution (TI 2515/177, Section 04.02.b).

In addition, as documented in Section 1R18, the inspectors confirmed the acceptability of the described licensee's actions regarding a plant modification.

These inspection efforts count towards the completion of TI 2515/177 which will be closed in a later Inspection Report. The NRC staff (Office of Nuclear Reactor Regulation - NRR) completed their review of the licensee's GL 2008-01 responses as documented in letter dated February 26, 2010, accession number ML100540139. TI 2515/177 is intended to be confirmatory in nature.

Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.3 Reactor Coolant System Dissimilar Metal Butt Welds (TI 2515/172)

a. Inspection Scope

The NRC has issued several Bulletins and an Order since 2001 related to the occurrence of PWSCC in reactor coolant system components and welds containing Alloy 600/82/182. In September of 2005, the Electric Power Research Institute issued MRP-139 "Primary System Piping Butt Weld Inspection and Evaluation Guidelines." The MRP-139 provided licensee's with industry guidance for augmented volumetric examination of dissimilar metal butt welds (DMBW) in pressurized water reactor (PWR) primary systems containing Alloy 600/82/182 materials susceptible to PWSCC.

In April of 2008, the NRC performed a review of the Unit 1 DMBWs in accordance with TI 2515/172, "Reactor Coolant System Dissimilar Metal Butt Welds" to evaluate the licensee's implementation of MRP-139 for the Unit 1 DMBWs (reference NRC report 05000315/2008003; 05000316/2008003). Subsequently, the licensee developed revised plans for inspection and mitigation of the Unit 1 reactor vessel (RV) inlet and outlet nozzle DMBWs. Therefore, from March 8 – 25, 2010, the inspectors performed a review in accordance with select portions of TI 2515/172 as described below;

- Section 03.01 of TI/172 – Implementation of the Baseline MRP-139 Inspections. The inspectors conducted a review for the Units 1 RV inlet and outlet nozzle DMBWs, to determine if the licensee completed the baseline volumetric examinations in accordance with MRP-139.
- Section 03.02 of TI/172 – Evaluation of Volumetric Examinations. The inspectors observed licensee volumetric examinations of the Unit 1 RV inlet and outlet nozzle DMBWs to determine if these examinations were completed in accordance with Section 5.1 of MRP-139.
- Section 03.04 of TI/172 – MSIP. The inspectors observed the MSIP completed on the Unit 1 RV inlet and outlet nozzles to determine if the MSIP process applied was consistent with the MSIP design/qualification report. The inspectors also reviewed the licensee's basis for not performing volumetric and surface examinations of the RV inlet nozzle DMBWs prior to the application of MSIP.
- Section 03.06 of TI/172 – Inservice Inspection Program. The inspectors reviewed the licensee's inservice inspection program for the RV inlet and outlet nozzles to determine if these welds were placed in examination categories consistent with MRP-139 and to identify any deviations from MRP-139 examination requirements.

The documents reviewed by the inspector for this inspection are listed in the Attachment to this report.

b. Observations

Summary: D. C. Cook Unit 1 is a Westinghouse four loop design plant with DMBW's containing Inconel Alloy 82/182 material on six pressurizer nozzles and eight RV nozzles. By the end of 2006, the licensee had completed mitigation for each of the

Unit 1 pressurizer nozzle DMBWs by installation of a full structural weld overlay that included a performance demonstration initiative (PDI) qualified UT pre-service examination for the required weld volume. The licensee elected to perform MSIP on the eight Unit 1 RV nozzle DMBWs as a mitigation technique. The inspectors observed the licensee performing MSIP on hot and cold leg DMBWs and recorded relevant observations for the applicable TI 2515/172 questions as discussed below.

Based on the schedule of DMBW examinations under MRP-139, examinations were required for the Unit 1 hot leg DMBWs prior to the current refueling outage, but not performed. The licensee submitted their basis for this deviation from MRP-139 as discussed below.

In accordance with requirements of TI 2515/172, Revision 0, the inspectors evaluated and answered the following questions:

a. For MRP-139 Baseline Inspections:

1a. Have the baseline inspections been performed or are they scheduled to be performed in accordance with MRP-139 guidance?

No. For Unit 1, the DMBW's at pressurizer temperatures were mitigated using full structural overlays by the end of 2006, which complied with the MRP-139 schedule. The remaining Unit 1 DMBW's containing Inconel Alloy 82/182 material was the RV inlet and outlet nozzle-to-safe-end welds (four of each). Inspection of the RV inlet and outlet nozzle welds in March of 2010, complied with the MRP-139 schedule for the inlet nozzles, but not for the RV outlet nozzle welds. The RV outlet nozzle DMBWs were required to be inspected by December 31, 2009, and the licensee submitted a technical justification to Electric Power Research Institute for this deviation from the inspection schedule as discussed below in item 2.

1b. Were the baseline inspections of the pressurizer temperature DMBW's of the nine plants listed in 03.01.b completed during the spring 2008 outages?

Not Applicable. D. C. Cook Unit 1 was not among the population of nine plants scheduled for inspection and mitigation of DMBWs in the spring 2008 outages.

2. Is the licensee planning to take any deviations from the MRP-139 baseline inspection requirements of MRP-139? If so, what deviations are planned, what is the general basis for the deviation, and was the NEI- 03-08 process for filing a deviation followed?

Yes. The RV outlet nozzle DMBWs were required by MRP-139 to have been inspected by December 31, 2009. Instead, the licensee volumetrically examined these four welds with PDI qualified UT techniques in March of 2010.

On September 25, 2009, the licensee had submitted a technical justification to Electric Power Research Institute for the deviation from the MRP-139 inspection schedule required for Alloy 82/182 butt welds in piping greater than 14 inch nominal pipe size operating at hot leg temperatures (e.g., applicable to the four

RV outlet nozzle welds). The licensee's technical justification included credit for the following:

- implementing an enhanced leakage detection program in accordance with the Pressurized Water Reactor Owners Group recommendations;
- no visual indications of cracking detected during the bare metal visual examinations of these welds completed in 2008; and
- reduced normal operating pressures and temperatures since 1989 and the extended forced Unit 1 outage in 2009, which would be expected to reduce PWSCC growth rates.

b. For Each Examination Inspected, was the Activity:

1. Performed in accordance with the examination guidelines in MRP-139, Section 5.1, for unmitigated welds or mechanical stress improvement welds and consistent with NRC staff relief request authorization for weld overlaid welds?

   Yes. The inspectors observed the UT and ET of the Unit 1 HL nozzle DM weld 1-RPV-2-01 pre-MSIP and the CL nozzle welds 1-RPV-1-02 post MSIP. The UT examination was completed with PDI qualified procedures that met Section XI, Appendix VIII as modified and accepted by the NRC in a letter dated February 16, 2006. These examinations met the requirements of MRP-139 Section 5.1. Specifically, the licensee had confirmed the applicability of the qualified UT process to their site specific configurations as documented in WDI-TJ-1043 "Demonstration Report/Technical Basis Document: Ultrasonic Examination of Cook Unit 1 Reactor Pressure Vessel Nozzle to Safe-End Welds from the ID Surface Through a Welded Protective Layer." The inspectors noted that this document also identified potential limitations in examination of the HL and CL nozzle DM welds caused by the inside nozzle geometry, which had a step change in diameter created by a cladding layer. Coverage of the ultrasonic examinations ranged from 94.87 percent to 96.70 percent on the four outlet nozzle DM welds and from 96.79 percent to 99.71 percent on the four inlet nozzle DM welds.

2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)

   Yes. The licensee's contractors that completed UT of the HL and CL nozzle DMBWs were qualified to the applicable PDI requirements.

3. Performed such that deficiencies were identified, dispositioned, and resolved?

   Not applicable, no deficiencies were identified as a result of the inspections.

c. For Each Weld Overlay Inspected, was the Activity:

1. Performed in accordance with ASME Code welding requirements and consistent with NRC staff relief request authorizations? Has the licensee submitted a relief request and obtained NRR staff authorization to install the weld overlays?

Not Applicable. The licensee did not perform overlays during the Unit 1 refueling outage.

2. Performed by qualified personnel? (Briefly describe the personnel training/qualification process used by the licensee for this activity.)

   Not Applicable. The licensee did not perform overlays during the Unit 1 refueling outage.

3. Performed such that deficiencies were identified, dispositioned, and resolved?

   Not Applicable. The licensee did not perform overlays during the Unit 1 refueling outage.

d. For Each Mechanical Stress Improvement Used by the Licensee During the Outage, was the Activity Performed in Accordance with a Documented Qualification Report for Stress Improvement Processes and in Accordance with Demonstrated Procedures? Specifically,

1. Are the nozzle, weld, safe-end, and pipe configurations as applicable, consistent with the configuration addressed in the qualification report?

   Yes. Based on review of piping specifications, vessel specifications and as built drawings, the HL and CL nozzle configurations were consistent with configurations documented in the licensee's vendor MSIP qualification reports 4628-4-001-00 "Analytical Verification of MSIP For RV Hot Leg Nozzle Safe-End Weld DC Cook Unit 1" and 4628-4-002-00 "Analytical Verification of MSIP For RV Cold Leg Nozzle Safe-End Weld DC Cook Unit 1."

2. Does the SI qualification report address the location radial loading is applied, the applied load, and the effect that plastic deformation of the pipe configuration may have on the ability to conduct volumetric examinations?

   Yes. The licensee's vendor evaluated the effects of MSIP in qualification reports 4628-4-001-00, "Analytical Verification of MSIP For RV Hot Leg Nozzle Safe-End Weld DC Cook Unit 1," and 4628-4-002-00, "Analytical Verification of MSIP For RV Cold Leg Nozzle Safe-End Weld DC Cook Unit 1," which documented the results of 2d finite element analysis models. Specifically, these reports included tables and figures depicting the redistribution of residual pipe wall stresses based on the radial loading for a range of radial pipe displacements as measured by a permanent change in pipe circumference (e.g., plastic deformation). The licensee measured the pipe circumference following the application of MSIP to confirm that the expected change in pipe circumference had occurred. The licensee determined that MSIP was a maintenance activity that did not require review under 10 CFR 50.59 and hence, did not perform a written safety evaluation for this activity. However, the licensee had not considered the MSIP process with respect to application of original Construction Code requirements for bending and forming pipe. This issue is considered an unresolved item as discussed in Section C below.

No. The MSIP qualification reports did not address the effect of MSIP on the ability to conduct a volumetric examination. Because the majority of the plastically deformed piping occurred several inches away from the DM welds, the MSIP process did not effect the examinations, which were conducted from the inside diameter. However, the inspectors could not determine how the MSIP would effect future examinations conducted on the DM or adjacent similar metal pipe welds conducted from the outside diameter. The licensee reported that they intended to do all future examinations of the DM welds from the inside pipe surface.

3. Do the licensee's inspection procedure records document that a volumetric examination per the ASME Code Section XI, Appendix VIII was performed prior to and after application of the SI?

Yes. For the hot leg nozzle DMBWs, the licensee performed pre and post MSIP Section XI, Appendix VIII, qualified UT examinations (as modified by an NRC approved ASME Code relief request) without limitations from the inside surface of these piping welds.

No. For the cold leg nozzle DMBWs, the licensee performed only a post MSIP Section XI, Appendix VIII, qualified UT (as modified by an NRC approved ASME Code relief request) and an ET examination from the inside surface of these piping welds. Because only a post MSIP examination was completed for these welds, it was possible that weld cracks (if they existed) may have not been detected by the UT.

Specifically, NRC sponsored technical report, "Technical Letter Report Analysis of Ultrasonic Data on Piping Cracks at Ignalina Nuclear Power Plant Before and After Applying a Mechanical Stress Improvement Process JCN-N6319, Task 2," issued in February 2008, (reference ADAMS ML081270142) concluded that, "This limited data set suggests that performing MSIP may have a significant effect upon ultrasonic examination data. The use of MSIP on cracked welds should be carefully considered from the viewpoint of future inservice inspections. All cracks in a pipe where MSIP is applied will likely become more difficult to detect and show a shorter length after MSIP. Some cracks disappear completely after MSIP, even in a relatively easy-to-inspect material such as the titanium-stabilized stainless steel inspected during this study. Cracks are not "healed" by the MSIP process as the metal does not re-bond, and a crack may in fact have a higher growth rate if it exists in the tensile region caused by MSIP."

The ASME has issued ASME Code Case N-770, which has provisions to accept post-MSIP UT examinations for these particular nozzles if supplemented by ET. The Code Case specifies that the ET examination meet ASME Code Section XI, Appendix IV. The licensee's vendor provided a memorandum, WDI-TJ-1045, dated March 2010, which discussed how the ET examination performed met the intent of Appendix IV of Section XI. However, the inspectors noted deviations from Appendix IV with respect to the use of a +Point® probe, demonstration flaw sizes, and the use of an aluminum calibration standard.

However, these activities are governed by an industry initiative and MRP-139 does not require a pre-MSIP examination of these welds. In addition, use of the

Code Case is not required by NRC regulations. The inspector discussed this outcome with pertinent NRC Office of Nuclear Reactor Regulation staff, who routinely interact with industry representatives with respect to MRP-139, for their possible consideration in industry discussions.

e. For the Inservice Inspection Program:

1. Has the licensee prepared an MRP-139 Inservice Inspection Program? If not, briefly summarize the licensee's basis for not having a documented program and when the licensee plans to complete preparation of the program.

   This program review was previously completed by the NRC (reference NRC Report 05000315/2008003; 05000316/2008003).

2. In the MRP-139 Inservice Inspection Program, are the welds appropriately categorized in accordance with MRP-139? If any welds are not appropriately categorized, briefly explain the discrepancies.

   Yes. For the hot leg and cold leg nozzle DM welds after MSIP, no cracking was detected; therefore they were placed into the inspection Category C in accordance with MRP-139. However, the inspectors could not conclude that Category C (a mitigated non-cracked inspection category) was appropriate as discussed in Item d.3 above even though the CL nozzle DMBWs met the MRP-139 requirements to be placed into this inspection category.

3. In the MRP-139 Inservice Inspection Program, are the inservice inspection frequencies, which may differ between the first and second intervals after the MRP-139 baseline inspection, consistent with the inservice inspections frequencies called for by MRP-139?

   This program review was previously completed by the NRC (reference NRC Report 05000315/2008003; 05000316/2008003).

4. If any welds are categorized as H or I, briefly explain the licensee's basis of the categorization and the licensee's plans for addressing potential PWSCC.

   This program review was previously completed by the NRC (reference NRC Report 05000315/2008003; 05000316/2008003).

5. If the licensee is planning to take deviations from the inservice inspection "requirements" of MRP-139, what are the deviations and what are the general bases for the deviations? Was the NEI 03-08 process for filing deviations followed?

   Yes. The licensee was required by MRP-139 to complete a baseline examination for the Unit 1 hot leg DMBWs prior to the current refueling outage, but elected to not perform this baseline examination until the current outage. The licensee basis for this deviation is discussed in Item A.2 above and the licensee followed the NEI 03-08 process for this deviation.

c. Findings

c.1 Construction Code Requirements For Bending Not applied to MSIP of RCS Pipe

Introduction: The inspectors identified an unresolved item (URI) related to the licensee's decision to not apply the reactor coolant system construction Code requirements for bending/forming to the MSIP process used on the RCS HL and CL nozzles.

Description: On March 5, 2010, the licensee completed a 50.59 Applicability determination (2010-0062) for EC-0000048752 "MSIP for Reactor Pressure Vessel Hot and Cold Leg Nozzle Dissimilar Metal Welds." In this document, the licensee concluded that MSIP was a maintenance activity, which restored the applicable system, structure, or component to the as-designed condition. The RV inlet nozzles have a 27.5-inch inside diameter and contained a DM weld (Inconel 82/182), which joins the nozzle to a stainless steel safe-end that is welded to a cast stainless steel RCS pipe elbow. The RV outlet nozzles have a 29-inch inside diameter and contained a DM weld (Inconel 82/182), which joins the nozzle to a stainless steel safe-end that is welded to a centrifugally cast stainless steel pipe. From March 15 – 17, 2010, the licensee applied the MSIP process to the HL piping adjacent to the HL nozzle DM welds and on the CL pipe elbows adjacent to the nozzle DM welds. The MSIP process applied a radial pressure to permanently reduce the inside and outside diameter of the RCS piping by approximately ½ inch. This pipe forming operation, results in a compressive residual stress at the nearby DM nozzle welds which reduces the weld susceptibility to PWSCC.

On March 10, 2010, the inspectors identified that the licensee had not considered and hence not implemented the RCS construction Code requirements for bending or forming pipe. The RCS piping construction Code was (USAS B31.1 1967 Edition) identified in the UFSAR, Section 4.1.6, "Codes and Standards." Article 129, "Bending and Forming," of the B31.1 Code contained requirements for post bending examinations and heat treatment for stress relief. Specifically, Article 129.1 stated "Pipe may be bent to any radius which will result in a bend surface free of cracks, as determined by a method of inspection specified in the design, and substantially free of buckles." And Article 129.3.3 stated "Cold Bending and forming of carbon steel having a wall thickness of ¼ inch and heavier, and all ferritic alloy pipe in nominal pipe sizes of 4 inches and larger or ½ inch wall thickness or heavier, shall require a stress relieving treatment." The licensee did not perform inspections (PT of external and internal surfaces) in accordance with the applicable pipe and elbow design specifications following bending to verify that the surfaces were free of cracks or buckles. The licensee also did not perform a stress relief treatment for the piping areas subject to bending/forming.

The licensee provided a white paper, AEP-10-49, dated March 19, 2010, to support their decision to not apply these requirements. The summary is provided below:

> Applicable construction Codes for vessels and piping were reviewed in order to address the question of whether there are any requirements that would preclude the use of MSIP. The question was raised because of a concern whether a potential compliance issue with the original construction Code might be raised by application of MSIP. There were no rules found that would categorize MSIP as a bending or forming process, as described by the applicable Codes.

Even if the argument is made that MSIP is a forming operation, of sorts, the Code rules exempt the affected materials from any required post-forming heat treatment and retesting of mechanical properties. The piping and safe-end materials are exempt from post-forming heat treatment by the piping Code. They are also exempt in the vessel Code because they are exempt from impact test requirements. This exemption also eliminates the need for qualification of forming operations on austenitic stainless steel and non-ferrous materials. There are no additional Code requirements for re-examination of materials formed during fabrication. The ASME Section III rules for time of examination of piping, tubular products and fittings, which apply to the piping and safe-end, only require examination to be performed after the final heat treatment required by the material specification. No other requirements impose a re-examination of materials after fabrication operations. Strains imparted to the safe-end and weld region are in the austenitic stainless steel or non-ferrous nickel base weld metal of the weldment being mitigated. These materials are exempt from post-forming heat treatment requirements in the applicable piping and vessel Codes of construction.

This issue is a URI pending completion of NRC reviews to determine the applicability of the construction code requirements for the MSIP process (URI 05000315/2010002-03; Construction Code Requirements For Bending Not applied to MSIP of RCS Pipe).

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 21, 2010, the inspectors presented the inspection results to Mr. L. Weber, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The results of the licensed operator requalification training program inspection with Mr. L. Weber, Site Vice President, on January 29, 2010;
- The licensed operator requalification training biennial written examination and annual operating test results with Mr. B. Evans, Operations Training Manager, via telephone on February 17, 2010;
- Radiation monitoring instrumentation protective equipment and the close-out of the licensee-identified violations were discussed with Mr. L. Weber, Site Vice President on January 29, 2010.
- The results of the Radiological Hazard Assessment and Exposure Controls and the Occupational ALARA Planning and Controls program inspection with Mr. L. Weber, Site Vice President, on March 12, 2010.
- The results of the inservice inspection with Mr. R. Hruby, Site Support Services Vice President, and other members of the licensee staff on March 23, 2010.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

4OA7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- Technical Requirements Manual 8.7.10, Fire Rated Assemblies, states that all fire rated assemblies separating safe shutdown fire areas and associated penetration sealing devices shall be operable at all times or a fire watch shall patrol the affected area once per hour. Contrary to the above, on January 29, 2010, two auxiliary building freight elevator fire doors, which separated safe shutdown fire areas, were found propped open on the 573 and 650 elevations during the licensee's daily fire door inspection. Fire protection was not previously notified of this condition. Consequently, an hourly fire watch patrol was not established until approximately 15 hours after the doors were initially propped open. This incident was documented in the licensee's corrective action program as AR 00864154. Immediate corrective actions included adding the doors to the hourly fire watch tour. This violation was of very low safety significance because the violation does not affect the ability to reach and maintain hot shutdown conditions.

- Technical Specification 5.4.1 requires that written procedures be established, implemented, and maintained for activities provided in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Procedures specified in Regulatory Guide 1.33 include radiation protection procedures for access control into radiological areas which are provided by licensee procedure PMP-6010-RPP-003, "High, Locked High and Very High Radiation Areas Access," Revision 18. Section 3.7 of that procedure requires that high radiation areas be locked unless being accessed by workers and the workers verify the gate/door/ladder locks were locked upon exiting the area. Contrary to this requirement, between June 10 & 11, 2007, two high radiation areas were not locked and secured on the Unit 1 and Unit 2 letdown heat exchanger rooms. The problem was discovered by RP staff on June 11, 2007, during routine surveillance walkdowns. The licensee's follow-up investigation found that an RP technician performing a routine survey of the rooms on June 10, 2007, failed to physically challenge the gates when the individual exited the areas. The investigation found that no other personnel entered either room after the RP technician completed the surveys. The licensee concluded that the RP technician who left the gates unlocked relied on the automatic closure mechanism to secure the gates behind him. One gate was not fully latched and the other was partially blocked by a chain attached to the gate. The issue was documented in the licensee's corrective action program as AR 00814626. Corrective actions included enhanced oversight of high radiation area egress controls by RP supervision and improved postings on doors/gates. The finding was determined to be of very low safety significance because it was not an ALARA planning issue, there was no overexposure nor potential for an

overexposure, and the licensee's ability to assess worker dose was not compromised.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. Brown, Director of Chemistry, Environmental and Radiation Protection
M. Carlson, Engineering Director
R. Ebright, Director, Training
B. Evans, Operations Training Manager
D. Foster, Environmental General Supervisor
J. Gebbie, Plant Manager
R, Hall, ISI Program Engineer
J. Harris, Radiation Protection Supervisor
R. Hruby, Site Support Services Vice President
C. Hutchinson, Manager, Emergency Preparedness and Security
C. Lane, Engineering Manager
C. Moeller, Radiation Protection Manager
J. Newmiller, Licensing Activities Coordinator
J. Nimtz, Senior Licensing Activities Coordinator
S. Partin, Maintenance Manager
R. Pickard, Engineering Program Supervisor
D. Raye, Radiation Protection Instrument Supervisor
J. Ross, Operations Director
T. Vriezema, Simulator Supervisor
D. Walton, Emergency Preparedness Coordinator
L. Weber, Site Vice President
R. West, Licensing Activity Coordinator
J. Winnier, RMS System Engineer
C. Wohlgamuth, Environmental Supervisor, Radiological Environmental Monitoring Program Coordinator

Nuclear Regulatory Commission

Billy C. Dickson, Plant Support Team Branch Chief, DRS/RIII

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000315/2010002-01; 05000316/2010002-01,	FIN	Failure to Implement Plant Procedures for Using a Mobile Crane (4OA2.3)
05000315/2010002-02 05000316/2010002-02	NCV	Failure to Implement Corrective Actions in a Timely and Effective Manner (4OA2.4)
05000315/2010002-03	URI	Construction Code Requirements For Bending Not applied to MSIP of RCS Pipe (4OA5.3)

Closed

05000315/2010002-01; 05000316/2010002-01,	FIN	Failure to Implement Plant Procedures for Using a Mobile Crane (4OA2.3)
05000315/2010002-02 05000316/2010002-02	NCV	Failure to Implement Corrective Actions in a Timely and Effective Manner (4OA2.4)

Discussed

NONE

LIST OF DOCUMENTS REVIEWED

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

1R04 Equipment Alignment

- 1-OHP-4021-009-001, Placing the Containment Spray System in Standby Readiness, Revision 15
- 1-OHP-4021-032-008AB, Operating DG1AB Subsystems, Revision 8
- 2-OHP-4021-009-001, Placing the Containment Spray System in Standby Readiness, Revision 14
- 2-OHP-4021-056-001, Filling and Venting Auxiliary Feed Water System, Revision 24
- AR 00831174, Evaluate Removal of the Spray Additive System
- AR 00845567, Procedure Does Not Address Unavailability Time for CTS Pumps
- AR 00849024, Unit 2 CTS Ring Plug Leak
- AR 00853541, 1-XRV-52W Design Requirements not known
- AR 09134050, 2-XPI-245 Indicates Pressure Higher Than eSOMS Band
- AR 10008024, Potential Interference 14" SI Pipe (1-RH-104W) & Block Wall
- AR 10046026, WR Tag Not Removed and Work Order Was Cancelled
- AR 20101783, Damaged Main Steam Pipe Supports in ESW Pipe Tunnel
- AR 856433, Equipment Status Control Evaluation
- Containment Spray System Health and Status Report 2008
- EC 50156, Design and Installation Review of Components Changed to Nuclear Safety Related, Revision 00
- EC 50309, 1-CTS-125W Valve Replacement, October 21, 2009
- OP-1-5151A, Emergency Diesel Generator "AB", Revision 44
- OP-1-5151B, Emergency Diesel Generator "AB", Revision 59
- SD-12-AUXFD-100, Auxiliary Feed Water System Description, Revision 0
- SD-12-CTS-100, Containment Spray System Description, Revision 0
- Unit 1 Operator Burden Report, February 2, 2010
- WO 55318998, 1-CFI-427 W CTS Gauge is Pegged Out, September 25, 2009
- WO 55321294, 2-CTS-116, Repack Valve, June 4, 2008
- WR 06372816, Main Turbine Stop Valve #3 Indicates 90% on U-1 HMI

1R05 Fire Protection

- 12-FPP-2270-066-001, Portable Fire Extinguisher Inspections, Revision 10
- 12-IHP-4030-066-001, Fire Pump Performance and Starting Sequence Tests, Revision 7
- AR 00856241, Combustibles Not Considered in Risk Significant Fire Zone
- AR 00856428, Incomplete Surveillance – Fire Damper Inspection
- AR 00861371, NRC Information Notice 2009-29, Potential Failure of Fire Water Supply Pumps
- AR 00861432, Inappropriate Fire Protection Change Management – FP Page out
- AR 10015030, Annual Fire Ext. Inspection Not Punched for New Fire Extinguishers
- Fire Hazards Analysis, Revision 14
- Fire Pre-Plan, Revision 4

1R06 Flooding

- AR 10022024, Errors in Updated Final Safety Analysis Report Table
- NED-2000-537-REP, Flooding Evaluation For D.C. Cook Unit #2, Revision 0
- SD-061206-001, Flooding Evaluation Report, Revision 2

1R07 Annual Heat Sink Performance

- 12-EHP-8913-001-002, Heat Exchanger Inspection for EDG Air Aftercooler, March 31, 2010
- AR 20101305, Unit 1 AB EDG After Cooler Installed Upside Down
- AR 20101307, Tube Nose Broke and Left 2 pieces in the CCW Heat Exchanger

1R08 Inservice Inspection Activities

- AEP-NRC-2009-58, MRP-139 Deviation Notification, July 24, 2009
- AR 00828624, Apparent thru wall leak on reactor flange leak-off line
- AR 00830450, Pipe support 1-GSI-L-53 has cracked welds on lugs
- AR 00830610, Thru wall leak on piping upstream of 1-NFP-222-V2
- AR 00839231, BA 13 RCP seals
- AR 00841127-01, BA No. 12 RCP seal
- AR 00860898, BAA 1-CS-320
- AR 00861980, ISI-RR-31 Relief Request Withdrawal
- AR 00863314, Discrepancies between approved design drawing and as found condition for pipe support 1-GFW-R-179
- AR 2010-1922, NRC Inspectors Identified that Potential Discrepant Condition Described in AR 00863314 Evaluated in Wrong Process
- AREVA Engineering Information Record 51-9041323-002, DC Cook Unit 1 SG Condition Monitoring and Operational Evaluation for U1C21, January 12, 2010
- ES-WELD-1501-QCN, Welder Performance Qualifications for WO 553222035-02
- Field Change Notice FCN-49453-002/003, ESW Pipe Tunnel and Building Joint Repairs
- Liquid Penetrant Examination Report Post WO 55316467-01 on RCS Leak-off Line Repair Welds, April 21, 2008
- Liquid Penetrant Examination Report Post WO 55317887 on 1-GSI-L-53, April 24, 2008
- Liquid Penetrant Examination Report Post WO 55318117-04 on Weld Overlay Up Stream of 1-NFP-222-V2, April 26, 2008
- Magnetic Particle Examination Report, Valve Replacement Weld for 1-MS-135-4, May 2, 2009
- NRC Authorization of Relief Request ISIR-22, Alternative for the Repair of Socket Weld Up-Stream of Valve 1-NFP-222-V2, June 26, 2008
- PQR No. 136 for WPS 8.1TS (SMAW), Revision 1
- PQR No. 219 for WPS 8.1TS (GTAW), Revision 1
- PQR No. 234 for WPS 1.2TS/1.6TS (GTAW), Revision 3
- PQR No. 235 for WPS 1.2TS/1.6TS (SMAW), Revision 2
- PQR No. 255 for WPS 1.2TS/1.6TS (GTAW/SMAW), Revision 2
- Procedure ISI-PDI-UT-2, Ultrasonic Examination of Austenitic Piping Welds in Accordance with PDI-UT-2, Revision 4
- Procedure ISI-UT-208, Ultrasonic Procedure for Manual Examination of Vessel Welds, Revision 0
- Procedure PDI-ISI-254, Remote Inservice Inspection of Reactor Vessel Shell Welds, Revision 7
- Procedure PMI-5075, ASME Section XI Repair/Replacement Program, Revision 11, March 1, 2010

- Procedure PMP-5030-001-001, Boric Acid Corrosion of Ferritic Steel Components and Materials, Revision 15, April 8, 2009
- SGP-DA-U1-C21, Steam Generator Degradation Assessment Unit 1, Cycle 21, Revision 0
- Visual Examination Report (VT-1 and VT-3) Post WO 55317887 on 1-GSI-L-53, April 24, 2008
- Visual Examination Report (VT-1 and VT-3) Post WO 55318117-04 on Weld Overlay Up Stream of 1-NFP-222-V2, April 26, 2008
- Visual Examination Report VT-08-045, Pipe Support 1-GSI-L-53, April 23, 2008
- Visual Examination Report VT-10-002, Pipe Support 1-GFW-R-179, January 13, 2010
- WO 55316467-01, Repair Leaking Pipe on Reactor Flange Seals Leak-off Line, April 19, 2008
- WO 55317451-05, Perform VT-3 Examination on Pipe Support 1-GSI-L-53, April 18, 2008
- WO 55317887, Repair Welds on Pipe Support 1-GSI-L-53, 04, April 24, 2008
- WO 55318117-04, Overlay Weld Repair to Up Stream Weld of First Elbow Up Stream of Valve 1-NFP-222-V2, April 26, 2008
- WO 55321213-05, Perform VT-3 Examination on Pipe Support 1-GFW-R-179, January 13, 2010
- WO 55322035-02, Replace Valve 1-MS-135-4, May 1, 2009
- WO 55322828-08, 1-PP-45-3, Refurbish Mechanical Seal Package, February 9, 2010
- WO 55326830-01, Pressure Inject Grout in ESW Tunnel to Prevent Ground Water Intrusion, January 23, 2009
- WO 55328661-01, 1-PP-45-3, (RCP) Repair Mechanical Seal Leak, November 11, 2009
- WO 55330807-03, 1-PP-45-3, (PH) Clean off Boric Acid Residue, June 3, 2009
- WO 55330867-01, 1-PP-45-2, (RCP) Clean Up Dry Boric Acid in Bowl, July 14, 2009
- WO 55352774-01, 1-CS-320: Buildup of Boric Acid on Pipe Cap (inactive), March 17, 2010
- WPS 1.2TS, Welding Procedure Specification for GTAW/SMAW, Revision 4
- WPS 8.1TS, Welding Procedure Specification for GTAW/SMAW, Revision 2

1R11 Licensed Operator Requalification Program

- Action Request 00836127, Fire Tracking AR for PTER Actions for T.S. 3.0.6 Issues, August 2008
- Action Request 00839618, Fire Header Low Pressure Annunciator Response, October 2008
- Action Request 00839955, Need Additional Training of SFD Program, October 2008
- AE-O-E221, Local Control of Charging Flow Control Valve ARV-251, Revision 12
- AE-O-N202A, Startup and Parallel the Unit 2 South Rod Drive Motor Generator Set, Revision 0
- Annual – Biennial Licensed Operator Requalification Examination Sample Plan (Sample Plan), Requal year 33-34
- Annual Operating Examination Crew Simulator Evaluation (Multiple), various dates
- AR # 00862681, TPE performed by person on exam security agreement, December 29, 2009
- DIT-B-01061-13, AEP Design Information Transmittal (DIT), February 24, 2009
- DTG-SIM-003, Normal Plant Evolution Testing Guideline, Revision 0
- DTG-SIM-004, Reactor Core Testing Guideline, Revision 0
- Integrated Report 1st Quarter 2008 05000315/2008002, 05000316/2008002, April 2009
- Integrated Report 2nd Quarter 2008 05000315/2008002, 05000316/2008002, August 4, 2009
- Job Performance Measures: AE-O-N202, AE-O-N242, AE-O-234, RO-O-E042S, RO-O-N122A, SR-O-E008A, RO-O-E042A, RO-O-N083A, SR-O-N001, RO-O-E263B, RO-O-E002, RO-O-E266, SR-O-E008, 12/17/2009 through 1/15/2010
- Licensed Operator Requalification Dynamic Exam Distribution (Sample Plan), Requal year 34
- Licensed Operator Requalification Examination Question Distribution (Sample Plan), Requal year 33-34
- Licensee Event Report 315/2008-001-00, Unit 1 Manual Reactor Trip, April 1, 2008

- Licensee Event Report 315/2008-002-00, 250 Volt DC Cable Separation Criteria for Appendix R Not Met, April 1, 2008
- Licensee Event Report 315/2008-003-00, Failure to Comply with Technical Specification LCO 3.0.6, May 12, 2008
- Licensee Event Report 315/2008-004-00, Non-Isolable RCS Pressure Boundary Leak, June 23, 2008
- Licensee Event Report 315/2008-005-00, Containment Isolation Valve out of Position, September 10, 2008
- Licensee Event Report 315/2008-006-01, Manual Reactor Trip Due to Main Turbine High Vibration, May 6, 2009
- Licensee Event Report 316/2009-001-00, Manual Reactor Trip Due to RCP Seal Degradation, May 6, 2009
- NRC Special Inspection Team Report 05000315/2008009, 05000316/2008009, January 23, 2009
- OHI-7020, Attachment 4, Active License Watchstanding Record (Multiple), various dates
- OHI-7020, Attachment 6, New or Inactive License/STA Upgrade Record, September 30, 2009
- OHI-7020, Attachment 7, New or Inactive License Watchstanding Record (Multiple),
- Operations Training Comprehensive Assessment, August 2008
- PMP-5040-MOD-007, Engineering Modifications, Revision 17
- RO-O-E002, Isolate Ruptured Steam Generator (Alternate), Revision 11
- RO-O-E263B, Restore RCP Bus 2D Power to AC Bus T21D Emergency Bus, Revision 0
- Root Cause Analysis, Separation of Fire Water Header Pipe Coupling Following Turbine Failure (CR 00838930), November 2008
- RQ-S-3403-TA, Simulator Exercise Guide – Period 3403 Training Scenario B, Revision 0
- RQ-S-3405-TA, Simulator Exercise Guide – Period 3405 Training Scenario A, Revision 0
- Simulator Exercise Guides, RQE-ANN-5, RQE-ANN-19, RQE-ANN-21, RQI-ANN-23, RQE-ANN-23, RQE-ANN-6, RQE-ANN-11, RQE-ANN-13, RQE-ANN-31, 12/17/2009 through 1/15/10
- Steady State Simulator Test Results for the Years of 2008 and 2009
- TRP-2070-SIM-001, Simulator Configuration Control, Revision 4
- TRP-2070-SIM-002, Simulator Change Request Implementation, Revision 1
- TRP-2070-SIM-003, Simulator Performance Testing, Revision 1
- TRP-2070-TAP-300-OPS, Operations Training Examination and Simulator Exercise Guide Development, Revision 6
- TRP-2070-TAP-300-OPS, Operations Training Guide and Simulator Exercise Guide Development, Revision 6
- TRP-2070-TAP-300-OPS, Operations Training Guide and Simulator Guide Development, April 7, 2009.
- TRP-2070-TAP-400-OPS, Operations Training Implementation, Revision 18
- TRP-2070-TAP-400-OPS, Operations Training Implementation, Revision 18
- Unit 0, Normal Plant Evolution Verification NPE-8 – Surveillance Testing on Safety Related Equipment, November 1, 2009
- Unit 1, Cycle 22 Reactor Core Physics Tests, November 25, 2009
- Unit 1, Miscellaneous System Tests (QTPR, Steam Dump Control, Containment Purge, etc.), various dates
- various dates
- Various Simulator Transient Test Results for the Years of 2008 and 2009
- Various Training Needs Assessments of Deviations in Simulator Physical Fidelity for 2009 (TRP-2070-SIM-001 Data Sheet 1)
- Various Year 33/34 Curriculum Development Committee Meeting Minutes, 2008 and 2009
- Various Year 33/34 Simulator Evaluations, 2008 and 2009

- Various Year 33/34 Simulator Remediations, 2008 and 2009
- Various Year 33/34 Student Feedback Summaries, 2008 and 2009
- Various Year 33/34 Written Exam Remediations, 2008 and 2009

1R12 Maintenance Effectiveness

- Cook Nuclear Plant, Maintenance Rule (a)(3) Assessment 2008
- NUMARC 93-01, Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 3

1R13 Maintenance Risk Assessments and Emergent Work Control

- Control Room Logs, January 11-15, January 25-29, February 16-26, March 15-16
- IPTE Brief Guide, U1C23 Dual Essential Service Water Outage, January 4, 2010
- PMP-2291-OLR-001, Online Risk Management, Unit 1 and Unit 2 Part 1 Configuration Risk Assessment, January 11-15, January 25-29, February 16-26, March 15-16
- PMP-4100-SDR-001, Plant Shutdown Safety and Risk Management, Revision 019
- Schedule of daily work activities, January 11-15, January 25-29, February 16-26, March 15-16

1R15 Operability Evaluations

- 12 EHP-6040-PER-118, Main Steam Stop Valve Dump Valve Pressure Tests, Revision 0
- 1-IMO-326, Revision 1
- AR 00813401, “Gap in the HELB and Fire Protection Barrier between the Turbine Building and the Screen House,” Revision 0
- AR 00813401-03, “Gap in the HELB and Fire Protection Barrier between the Turbine Building and the Screen House along with the recently identified potentially inadequate Masonry Block Wall sections,” Revision 1
- AR 00825399, Reducing EDG Leakage
- AR 00841539, “Inadequate masonry block HELB Barrier”
- AR 00853107, Missing Actuator Hold Down Bolts
- AR 10041026, Water in Cable Pit Below VCC 1-ABV-A
- AR 2010-1900, 1-IMO-331 As-found Overthrust Condition
- MD-01-RHR-015-N, Torque and Thrust Setup Calculation for 1-IMO-315, 1-IMO-316, 1-IMO-325 and 1-IMO-326, Revision 3
- MD-12-ESW-104-N, D.C. Cook Essential Service Water System Waterhammer Analysis, Revision 0
- SD-990825-018, Seismic Weak Link Thrust Calculation for 1-IMO-315, 1-IMO-316, 1-IMO-325,
- SL-009394, Study to Evaluate Options to Resolve Water Hammer Issues for the Essential Service Water System, Revision 0
- TH-99-11, “Thermal Lag Analysis of Cables and Components Following a Main Steam Line Break,” Revision 1
- VDS-1-IMO-315, Control Switch Settings, Revision 1
- VDS-1-IMO-331, Control Switch Settings, Revision 1

1R18 Plant Modifications

- 12-OHP-40220057-001, Screen House Forebay Degraded Condition, Revision 6
- 1-CS-774-SH2-E049543, Revised Location of Pipe Support for EC 49543 September 1, 2009
- 1-CS-776-L9-14, Containment Drawing # 1 RCP Seal Return Line, Revision 6

- 2008-0291-01, 50.59 Screen, ESW Pump Reliability Upgrade Project for Unit 2 East Pump and Spare Pumps, Revision 0
- AEP-NRC-2009-47, Nine-Month Supplemental Response to GL 2008-01, July 24, 2009
- AEP-NRC-2009-80, Response to Request for Additional Information Regarding GL 2008-01, December 7, 2009
- AR 00839944, GL 2008-01 Response Commitment
- AR 00840129, Add High Point Vent Valves (5) to the RCP Seal Return Line
- Generic Letter 2008-01 Gas Accumulation Walkdown Report, February, 10, 2010
- WO 55268729-69, U2 ESW Pumps Clean and Inspect Vortex Suppressor

1R19 Post-Maintenance Testing

- 12-MHP-5021-019-004, Essential Service Water Pump Maintenance, Revision 10
- 12-OHP-4030-033-001, Supplemental Diesel Generator Testing, February 19, 2010
- 1-OHP-4021-032-001AB, DG1AB Operation, March 16, 2010
- 1-OHP-4030-103-052W, West CCP Operability Test, March 27, 2010
- 2-OHP-4030-219-022W, West Essential Service Water System Test, January 26, 2010
- 55337731-06, Perform PMT for 1-62-2-LQBA-DGAB, March 16, 2010
- AR 00865111, SDG's failed to restore during 18 month surveillance
- AR 00865119, Test failure for SDG
- AR 09357005, South CRAC Humidifier Does Not Work At All
- AR 09361022, U-2 CRAC N. Chiller Refrigerant Compressor Has Low Oil Level
- AR 09362015, Over Temperature Alarm Received on 2-HV-ACRA-H1
- AR 10022042, Failed PMT on 1-HV-ACRA-H1
- AR 10025002, Unit 2 West ESW Pump Discharge Head Inspection
- AR 10027001, LUB-2-PP-7W-MTR Is Incorrect
- AR 20102332, 1-PP-50W, West Charging Pump Outboard Bearing Oil Leak
- AR 20102388, 1-PP-50W Pump Performance Review
- WO 55246650-03, Unit 1 West CCP Post Maintenance Leak Inspection, March 26, 2010
- WO 55270362-06, Replace 1-BC-CD1 and 1-BC-CD2 Internal Components, February 8, 2010
- WO 55337713-32, Operations PMT EC 048572 Train B, March 16, 2010
- WO 55350544, ESW Pump Replacement and PMT, January 26, 2010
- WO 55354111-10, Unit 2 CRAC South Train 2-HV-ACRA-H2 PMT, January 19, 2010
- WO 55356769-02, Adjust and PMT 2-VR-LDISB-4 Voltage Regulating Unit, January 15, 2010
- WR 06372892, 1-HV-ACRA-H1 Only Has One Operable Heater
- WO 55231408-02, 1-DGCD-2301A, Replace Electronic Governor, March 30, 2010
- 12-IHP-5021-IMP-001, Lead Lifting/Landing and Electrical Jumper/Fuse Installation and Removal, March 31, 2010

1R20 Outage Activities

- 1-OHP-4022-017-001, Loss of RHR Cooling, Revision 18
- 1-OHP-4021-017-002, Placing In Service the RHR Heat Removal System, Revision 22
- 1-OHP-4021-002-005, RCS Draining, Revision 42
- DWG 1-5663-11, Unit 1 RCS Loop Details, October 1, 2007

1R22 Surveillance Testing

- 12-EHP-4030-051-256, Main Steam Safety Setpoint Verification With Lift Assist Device, March 1, 2010
- 12-IHP-5030-EMP-014, MOV Diagnostic Testing Using VIPER Test System, March 25, 2010

- 1-EHP-4030-134-203, Unit 1 LLRT, March 24, 2010
- AR 20101684, 1-QDA-251V1 Is Leaking
- 1-IHP-4030-STP-409, Residual Heat Removal System Valve Interlock Verification, Revision 6
- 1-OHP-4030-102-016, Reactor Coolant System Leak Rate Test, February 9, 2010
- 1-OHP-4030-128-024E, East Control Room Pressurization /Cleanup Filter System Operability Test, February 9, 2010
- 2-IHP-4030-234-001, Unit 2 DIS Surveillance and Baseline Testing B Train, January 14, 2010
- 2-IHP-4030-234-001, Unit 2 DIS Surveillance and Baseline Testing A Train, January 21, 2010
- 2-OHP-4030-202-016, Reactor Coolant System Leak Rate Test, February 9, 2010
- AR 00833319, 1-MRV-223-CRI Indicating Below 0%
- AR 00859204, Motor Driven Fire Pump 12-PP-144 Failed During Surveillance Test
- AR 10014030, U2 DIS Surveillance Low Voltage
- AR 10014044, Minor Updates to 2-IHP-4030-234-001
- AR 10014073, U2 DIS Surveillance Failed
- AR 20100535, Inconsistent Lifts on 1-SV-2A-3
- AR 20100537, Inconsistent Lifts on 1-SV-1B-2
- AR 20101791, U1C23 AF LLRT Failure ICM-250 & ICM-251
- WR 06372905, U2 DIS Lower Voltage Reg. Over Voltage

2RS1 Radiological Hazard Assessment and Exposure Controls

- 10600243; Unit 1 625 RCP-11 Seal Work Air Sample; March 8, 1010
- 10600244; Unit 1 625 RCP-11 Seal Work Air Sample; March 8, 1010
- 10600292; Unit 1 625 RCP-11 Seal Work Air Sample; March 8, 1010
- 10600292; Unit 1 625 RCP-11 Seal Work Air Sample; March 9, 1010
- AR 00814626; Procedural Violation for High Radiation Areas; June 11, 2007
- AR 00819816; Unauthorized High Radiation Area Boundary Manipulation; October 01, 2007
- AR 00856787; High Radiation Area Door Found Open and Unlocked
- AR 2010-0663; Personnel Contamination No. 5-Clean Area of Auxiliary Building; March 3, 2010
- AR 2010-0707; Personnel Contamination No. 6-Clean Area of Auxiliary Building; March 4, 2010
- AR 2010-1090; Radiation Protection Expectation Not Met; March 10, 2010
- AR 2010-1091; NRC Inspector Noted Poor Housekeeping; March 10, 2010
- AR 2010-1240; Post Fuel Move Surveys Not Consistent; March 11, 2010
- AR 2010-1245; Post Decontamination Radiological Surveys Not Documented; March 10, 2010
- AR 856632; Water unexpectedly Drawn into Vacuum; August 27, 2009
- AR 856861; Trend Evaluation for Radiation Protection Human Performance Errors; September 2, 2009
- AR 858308; Contamination Found in Clean Area; September 30, 2009
- AR 862102; Contamination Found in Clean Area; December 15, 2009
- AR 862560; Contamination Found in Clean Area; December 25, 2009
- AR 864606; Sea-Lands in Poor Condition; February 8, 2010
- AR 864967; Radioactive Particle Found in Clean Area of Auxiliary Building; February 15, 2010
- CNP-0703-0044; Survey Records of 012R U-1 Letdown Heat Exchanger; from March 2007 thru August 2007
- CNP-0703-0044; Survey Records of 013R U-2 Letdown Heat Exchanger; from March 2007 thru August 2007
- CNP-1003-0210; Reactor coolant Pump 11 Survey; March 9, 2010
- CNP-1003-0270; Reactor coolant Pump 11 Survey; March 10, 2010

- PMP-6010-RPP-003; High, Locked High, and Very High Radiation Area Access; Revision 18 and 20

2RS2 Occupational As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls

- 12-THP-6010-RPP-006; Radiation Work Permit Processing; Revision 27
- PMP-6010-ALA-0001; ALARA Review Program-Review of Plant Activities; Revision 21
- PMP-6010-RPP-006; Radiation Work Permit Program; Revision 13
- RWP 10-1100; Refuel Cavity Decontamination Activities; Revision 0
- RWP 10-1101; Refuel Preparation Activities and Disassembly; Revision 0
- RWP 10-1106; Mechanical Stress Improvement Process Work; Revision 0
- RWP 10-1142; Containment Scaffold Activities; Revision 0
- RWP 10-1145; Containment Valve Maintenance/Repair Activities; Revision 0
- RWP 10-1153; Containment Radiation Protection Activities; Revision 0

2RS5 Radiation Monitoring Instrumentation

- 12-RHP-6010-RPC-535; Calibration of the ORTEC Fastscan Whole Body Counter; November 05, 2009
- 12-THP-6010-RPC-500; Instrument Issue and Operational Testing; Revision 25
- 12-THP-6010-RPC-517; Calibration of Portable Dose rate Instrument V-451-1320; October 14, 2009
- 12-THP-6010-RPC-517; Calibration of Portable Dose rate Instruments; RSO-041; August 01, 2009
- 12-THP-6010-RPC-525; Calibration of Eberline RM-14, RM-20 and Ludlum-177; December 23, 2009
- 12-THP-6010-RPC-529; Calibration of the RAS-1; LV-351; September 03, 2009
- 12-THP-6010-RPC-555; Calibration of MGP Model AMP-100 High Range Area Monitor; AMP-100-98; December 28, 2009
- 12-THP-6010-RPC-566; Source Characterization and Verification for the J. L. Shepherd Model M89 and M142-S, June 24, 2009
- 12-THP-6010-RPC-591; Calibration of Johnson Extender No-2132; September 18, 2009
- 12-THP-6010-RPC-591; Calibration of Johnson Extender No-2135; September 18, 2009
- 12-THP-6010-RPC-591; Calibration of Portable Dose rate Instruments; T-50-304; September 11, 2009
- 12-THP-6010-RPC-591; Calibration of Portable Dose rate Instruments; T-50-301; March 09, 2009
- 12-THP-6010-RPC-801; Westinghouse RMS Area Monitor Calibration; Revision 9
- 12-THP-6010-RPC-802; Westinghouse Liquid Process Monitor Detector Calibration; Revision 08
- 12-THP-6010-RPC-810; Eberline Radiation Monitoring System Channel Restoration; Revision 12
- 12-THP-6010-RPC-810; Eberline Radiation Monitoring System Channel Restoration; Routine Calibration and Channel Restoration WO No. 55332850 Unit-2 Auxiliary Building Vent Radiation Monitor; Medium Range Gamma Gas Radiation Detector; June 23, 2009
- 12-THP-6010-RPC-810; Eberline Radiation Monitoring System Channel Restoration; Routine Calibration and Channel Restoration WO No. 55332851 Unit-2 Auxiliary Building Vent Radiation Monitor; High Range Gamma Gas Radiation Detector; June 23, 2009
- 12-THP-6010-RPC-810; RMS Channel Restoration Cover Sheet; 2-VRA-2503 Iodine Radiation Detector and 2-VRR-2504 Iodine Background Channel; June 23, 2009

- 12-THP-6010-RPC-814; Eberline Radiation Monitoring System Liquid Channel Calibration; Revision 1
- 12-THP-6010-RPC-817; Eberline Radiation Monitoring System Mid and High Range Noble Gas Calibration; Revision 7
- 12-THP-6010-RPC-818; Eberline Monitoring System DA1-8 Area Monitor; Revision 3
- 12-THP-6010-RPI-803; Operation of Radiation Monitoring System; Revision 30
- 12-THP-6010-RPI-805; Radiation Monitoring System Set-Points; RMS High Alarm Set-Points; November 30, 2009
- 12-THP-6010-RPI-805; Radiation Monitoring System Set-Points; VRS-1505; Eberline RMS Parameter File; November 03, 2009
- 2009 Portable Instrumentation Audits; a Review of Instruments from 2004 Thru 2009
- Analytic, Inc., Certificate of Calibration, Tc-99 Plated Source
- Analytic, Inc., Certificate of Calibration; Cs-137 Point Source
- AR-00845398; Observation that Small Article Monitor -11 was Out Service; January 30, 2009
- AR-00847685; RO20-4396 Failed the As-found Data Portion of Post Periodic Performance Test Failure Calibration; March 10, 2009
- AR-00860645; Computer Problem with the FS-1 Whole Body Counter during Daily Source Check; November 11, 2009
- AR-00862934; E-600/HP-270; Portable RP Dose-rate Instrument Which was Calibrated Offsite was Calibrated at the Lowest Range; January 05, 2010
- D.C. Cook Annual Radiological Environmental Operating Report; May 15, 2009
- D.C. Cook Updated Final Safety Analysis Report; Revision 21
- December 2009, Doses Due to Liquid and Gaseous Effluents
- Eberline Radiation Monitoring System and Westinghouse Radiation Monitoring System Locations and Information Reference
- Eberline, Inc., Electroplated Beta Source Sr-90/Yttrium - 90
- Fluke Biomedical Service; Repaired 20X5-180 Ion Chamber Standards; February 12, 2009
- Mini-Pulser CRP-327; Calibrated October 08, 2010
- RP-06-02; RP Calculation/Technical Bases; Basis Document for Establishment of Set-Points for Automated Free Release Monitors for Personnel, Equipment, and Components; April 29, 2009
- Weekly RMS System Set-Points Verification

4OA1 Performance Indicator Verification

- AR 00844459, Unplanned Scrams Per 7,000 Critical Hours Trending Adversely
- AR 00851719, 2-NSW-420-1 Found Out of Position
- AR 00854754, #22 RCP Seal Flow Low and Seal Outlet Temperature Rising
- Licensee Event Reports, January 1, 2008 through December 31, 2009
- NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 5
- PMP-7110-PIP-001, Reactor Oversight Program Performance Indicators and Monthly Operating Report Data, Quarters 1, 2, 3, and 4, 2009, Units 1 and 2

4OA2 Identification and Resolution of Problems

- 12-MHP-5021-002-003, RCP Controlled Leakage Seal Maintenance, August 2, 2009
- AR 00108463, While Investigating the Cause of Flashing at 1ABC1/D1
- AR 00817731, Received Unexpected Alarm on Annunciator 207 Drop 34
- AR 00821101, #12 RCP Seal Exhibiting Anomalous Behavior
- AR 00826864, 12 RCP Seal Leak Off Flow Low
- AR 00846761, Several Inches of Water in Pit Below 1-ABD-A

- AR 00864717, Water in Cable Pit Below VCC 1-ABV-A
- AR 00864908, MCC & VCC Vaults Are Not Meeting Cleanliness Standards
- AR 10046052, Water, Dirt, and Corrosion in Cable Vault 2-ABD-A
- AR 20100736, WO to Install Floor Plugs in Various Drains Within U1 MCCs
- AR 20100873, Cable 8052 R-1 Failed Megger Test
- AR 20101681, Low Megger Reading @ 1-QCM-350
- AR 20101887, Water Draining Into 1-ABV-A MCC Pit From Unknown Source
- AR 20102558, Perform a Root Cause on Station Response to Wetted Cables
- AR Water, Dirt, and Corrosion in Cable Vault 2-ABD-B
- Evaluation of Significant Operating Experience Report SOER 06-1, “Rigging, Lifting, and Material Handling (CR # 00803956)”
- PMP-3100-IOA-001, “Inter-Organizational Agreement Between the AEP Utility Operations and the AEP Nuclear Generation Group for Assistance to Cook Nuclear Plant,” Revision 4
- PMP-3100-IOA-001, “Inter-Organizational Agreement Between the AEP Utility Operations and the AEP Nuclear Generation Group for Assistance to Cook Nuclear Plant,” Revision 4
- PMP-5020-MHP-001, “Lifting and Rigging Program,” Revision 11
- PMP-5020-MHP-001, “Lifting and Rigging Program,” Revision 11
- PMP-5020-MHP-001, “Lifting and Rigging Program,” Revision 25
- PMP-5020-MHP-001, “Lifting and Rigging Program,” Revision 25
- Root Cause Analysis of “Mobile Crane Severed 12kV Line in W-Yard, November 2009 (AR 00860140)”
- WO 55346237, Inspect RCP Controlled Leakage Seal, August 2, 2009
- WR 06367953, Several Inches of Water in Pit Below 1-ABD-A

4OA5 Other Activities

- AEP-10-48, Mechanical Stress Improvement – Response to Audit Questions, March 12, 2010 (Proprietary)
- AEP-10-49, Mechanical Stress Improvement – White Paper, March 19, 2010\
- Analysis Log Number 247; Ultrasonic and Eddy Current Examination Data Sheets for Weld Number 1-RPV-1-02; March 22, 2010
- Analysis Log Number DM-338-01; Ultrasonic and Eddy Current Examination Data Sheets for Weld Number 1-RPV-2-01; March 11, 2010
- AR 2010-1584, Unit 1 RV Hot Leg No. 2 MSIP Final Squeeze- Review Required
- EC 48752, MSIP for Reactor Pressure Vessel Hot and Cold Leg Nozzle Dissimilar Metal Welds, Revision 1
- FCN-48752-001, Augmented Technical Basis Regarding Impact Evaluations for Mechanical and Structural Impacts Needed, March 14, 2010
- Procedure PDI-ISI-254-SE-NB, Remote Inservice Examination of Reactor Vessel Nozzle to Safe-End, Nozzle to Pipe, and Safe-End to Pipe Welds Using the Nozzle Scanner, Revision 1.
- Procedure WDI-STD-146, ET Examination of Reactor Vessel Pipe Welds Inside Surface, Revision 0
- Procedure WDP=2.10, Qualification and Certification of Personnel in Nondestructive Testing, Revision 0
- WDI-PJF-1304657-EPP-001, 10 Year Reactor Examination - Examination Program Scan Plan, Revision 0
- WDI-TJ-1043, Demonstration Report/Technical Basis Document: Ultrasonic Examination of DC Cook Unit 1 Reactor Pressure Vessel Nozzle to Safe-End Welds from the ID Surfaces Through a Welded Protective Layer, Revision 0 (Proprietary)
- WDI-TJ-1045, Summary of Technique Capabilities – Eddy Current Testing of Category BF/BJ Piping Inside Surfaces, March 2010 (Proprietary)

LIST OF ACRONYMS USED

ADAMS	Agency Documents Access and Management System
ALARA	As-Low-As-is-Reasonably-Achievable
AR	Action Request
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CL	Cold Leg
DMBW	Dissimilar Metal Butt Weld
EDG	Emergency Diesel Generator
EPRI	Electric Power Research Institute
ESW	Essential Service Water
ET	Eddy Current Testing
HL	Hot Leg
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISI	Inservice Inspection
LORT	Licensed Operator Requalification Training
MRP	Materials Reliability Program
MSIP	Mechanical Stress Improvement
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NIST	National Institute of Standards & Technology
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
PDI	Performance Demonstration Initiative
PI	Performance Indicator
PWSCC	Primary Water Stress Corrosion Cracking
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RP	Radiation Protection
RV	Reactor Vessel
RWP	Radiation Work Permit
SAT	Systems Approach to Training
SDP	Significance Determination Process
SG	Steam Generator
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Examination
WO	Work Order

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Sincerely,

/RA/

Jamnes L. Cameron, Chief
Branch 6
Division of Reactor Projects

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Letter to J. Jensen from J. Cameron dated May 5, 2010.

SUBJECT: D. C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2 INTEGRATED INSPECTION REPORT; 05000315/2010002; 05000316/2010002

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