



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GA 30303-8931

July 30, 2007

Duke Power Company LLC
d/b/a Duke Energy Carolinas, LLC
ATTN: Mr. Bruce H. Hamilton
Vice President
Oconee Nuclear Station
7800 Rochester Highway
Seneca, SC 29672

**SUBJECT: OCONEE NUCLEAR STATION - INTEGRATED INSPECTION REPORT
05000269/2007003, 05000270/2007003, 05000287/2007003**

Dear Mr. Hamilton:

On June 30, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station. The enclosed report documents the inspection results which were discussed on June 28, 2007, with you and other members of your staff.

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

Based on the results of this inspection, one self-revealing and two NRC-identified findings of very low safety significance (Green) were identified. They were determined to be violations of NRC requirements. However, because of their very low safety significance and because the issues were entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Oconee facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's

document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

James H. Moorman, III, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos.: 50-269, 50-270, 50-287, 72-04
License Nos.: DPR-38, DPR-47, DPR-55

Enclosure: NRC Integrated Inspection Report 05000269/2007003, 05000270/2007003,
05000287/2007003 w/Attachment: Supplemental Information

cc w/encl.: (See page 3)

document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

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Letter to Bruce H. Hamilton from James H. Moorman, III dated July 30, 2007

SUBJECT: OCONEE NUCLEAR STATION - INTEGRATED INSPECTION REPORT
05000269/2007003, 05000270/2007003, 05000287/2007003

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U. S NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-269, 50-270, 50-287, 72-04

License Nos: DPR-38, DPR-47, DPR-55

Report Nos: 05000269/2007003, 05000270/2007003, 05000287/2007003

Licensee: Duke Power Company, LLC

Facility: Oconee Nuclear Station, Units 1, 2, and 3

Location: 7800 Rochester Highway
Seneca, SC 29672

Dates: April 1, 2007 - June 30, 2007

Inspectors: D. Rich, Senior Resident Inspector
A. Hutto, Resident Inspector
E. Riggs, Resident Inspector
N. Jeff Griffis, Health Physicist, (Sections 2OS1, 2PS2, 4OA1.2, 4OA5.4)
G. Kuzo, Senior Health Physicist (Sections 2PS1, 2PS2, 4OA1.2)
A. Nielsen, Health Physicist (Section 2OS2)
J. Rivera-Ortiz, Reactor Inspector (Section 1R08)
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R. Aiello, Sr. Operations Engineer (Section 1R11.2)
R. Baldwin, Sr. Operations Engineer (Section 1R11.2)

Approved by: James H. Moorman, III, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000269/2007003, 05000270/2007003, 05000287/2007003; 04/01/2007 - 06/30/2007; Oconee Nuclear Station, Units 1, 2, and 3; Licensed Operator Requalification, Maintenance Effectiveness, Radioactive Material.

The report covered a three-month period of inspection by the onsite resident inspectors and announced regional-based inspections conducted by three reactor inspectors, two senior operations engineers, and three health physicists. Three Green non-cited violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation (NCV) of 10 CFR 50.54, Conditions of a license, for failing to meet the minimum licensed operator staffing requirements as stated in 10 CFR 50.54(m)(2)(i). Between March 2003 and February 2007, seven Senior Reactor Operators (SROs) who had not satisfied all requalification requirements stood licensed required positions which resulted in the staffing requirements of 10 CFR 50.54(m)(2)(i) not being met. This issue was entered into the licensee's corrective actions program and the extent of condition was properly assessed.

This finding is more than minor because it is associated with the configuration control and equipment performance attributes of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events. Because this finding was not suitable for SDP evaluation, it was reviewed by NRC management and determined to be of very low safety significance (Green). The finding is of very low safety significance because these SROs had not made errors related to qualifications while performing their licensed duties and had successfully completed other aspects of the requalification program, such as the biennial written examination and routine testing conducted throughout the requalification training period. (Section 1R11.2)

- Green. A self-revealing NCV of Technical Specification (TS) 5.4.1 was identified for failure to ensure a high pressure service water (HPSW) system tagout was compatible with overall plant conditions, in that the elevated water storage tank (EWST) was inadvertently isolated from the turbine building and auxiliary building. Consequently, the backup cooling water supply to the high pressure injection pump motors was unknowingly isolated.

The inspectors determined that the finding was more than minor because it affected the reliability objective of the Equipment Performance attribute under the Mitigating Systems Cornerstone. The finding was potentially risk significant due to external

initiating events (i.e., turbine building flood), because it involved degradation of a function specifically designed to mitigate a flooding event, and the loss of this system during a flooding event would degrade both trains of high pressure injection. The licensee performed a plant specific risk assessment to identify core damage sequences of concern. The staff reviewed this risk assessment and concluded that due to the low initiating event frequency and short exposure time, the finding was appropriately characterized as having very low safety significance. The finding directly involved the cross-cutting area of Human Performance under the work activity coordination aspect of the work control component, in that the licensee failed to appropriately coordinate work activities by incorporating actions to address the impact of changes to the work scope on the plant [H.3(b)]. (Section 1R12)

Cornerstone: Public Radiation Safety

- Green. The inspectors identified an NCV of 10 CFR 20, Appendix G, Section III.A.3 for failure to conduct adequate Quality Assurance activities to ensure compliance with the waste characterization requirements of 10 CFR 61.55. Specifically, the licensee failed to properly evaluate the significance of changes between calendar year (CY) 2004 and CY 2005 for 10 CFR Part 61.55 carbon-14 (C-14) analysis results associated with primary coolant filter waste stream samples. The identified changes in the C-14 isotopic abundance and derived scaling factors for primary filters in CY 2005 could have resulted in the improper classification of radioactive waste shipped to a licensed burial site for final disposal. The licensee has entered this finding into their corrective action program for resolution under Problem Investigation Process report (PIP) O-07-02811.

This example is more than minor because it adversely affects the program and process attribute of the Public Radiation Safety cornerstone, in that it involves an occurrence in the licensee's radioactive material transportation program that is contrary to NRC regulations. The finding was determined to be of low safety significance because the waste classification of primary filter shipments sent for disposal using the CY 2005 data was not changed by the differences in C-14 isotopic abundance that were identified. The cause of this finding is related to the self/independent assessment aspect of the cross-cutting area of Problem Identification and Resolution [P.3(a)]. (Section 2PS2)

B. Licensee-Identified Violations

None

Report Details

Summary of Plant Status

Unit 1 began the report period at 100 percent rated thermal power (RTP) and remained there for the duration of the inspection period.

Unit 2 began the report period at 100 percent RTP. On April 17, 2007, the Unit began an end-of-cycle (EOC) coast down, and on April 27, 2007, the Unit was shutdown for refueling outage 2 EOC 22. On May 29, 2007, following outage activities, the Unit was started up. Reactor power was subsequently increased until 100 percent RTP was reached on June 2, 2007, where it remained through the end of the inspection period.

Unit 3 began the report period at 100 percent RTP. On May 19, 2007, the Unit was reduced to 88 percent RTP for turbine valve movement testing and was returned to 100 percent RTP later the same day, where it remained through the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

Hot Weather Preparations

a. Inspection Scope

The inspectors observed the condition and readiness of the room cooling equipment for all three Units' low pressure injection (LPI) pump rooms to ensure that the ability to maintain ambient temperatures in these rooms consistent with post accident design basis assumptions is preserved during hot weather conditions. The inspectors walked down the applicable portions of the low pressure service water (LPSW) system to verify appropriate flows and temperatures were being maintained. The inspectors also observed the material condition of the LPSW piping, coolers and air handling equipment in the LPI pump rooms to ensure that the licensee was maintaining this equipment at the appropriate level. The inspectors also took temperature measurements in the rooms during hot weather conditions to determine whether the appropriate ambient conditions were being maintained. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors conducted partial equipment alignment walkdowns to evaluate the operability of selected redundant trains or backup systems while the other train or system was inoperable or out of service. The walkdowns included, as appropriate,

reviews of plant procedures and other documents to determine correct system lineups, and verification of critical components to identify any discrepancies which could affect operability of the redundant train or backup system. Documents reviewed are listed in the Attachment to this report. The following three systems were included in this review:

- 1B Building Spray with the A Train out-of-service (OOS) for preventive maintenance (PMs)
- Unit 1 and 3 Emergency Feedwater (EFW) with the Standby Shutdown Facility (SSF) OOS due to heating, venting and air conditioning compressor problems
- Keowee Hydro Unit (KHU) 1 with KHU 2 OOS for PMs

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Fire Area Walkdowns

a. Inspection Scope

The inspectors conducted tours in seven areas of the plant to assess whether combustibles and ignition sources were properly controlled, and that fire detection and suppression capabilities were intact. The inspectors selected the areas based on a review of the licensee's safe shutdown analysis and the probabilistic risk assessment based sensitivity studies for fire-related core damage sequences. Documents reviewed are listed in the Attachment to this report. Inspections of the following areas were conducted during this inspection period:

- Standby Shutdown Facility (1)
- Unit 1, 2 and 3 Control Rooms (2)
- Unit 1, 2 and 3 Equipment Rooms (3)
- Control Room Fire Impairment (Fire Barrier Degraded) (1)

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities (Unit 2)

.1 Inspection Activities Other Than Steam Generator Tube Inspections, PWR Vessel Upper Head Penetration Inspections, and Boric Acid Corrosion Control

a. Inspection Scope

The inspectors reviewed the implementation of the licensee's ISI program for monitoring degradation of the reactor coolant system (RCS) boundary and risk significant piping boundaries during Unit 2 Spring 2007 refueling outage. The inspectors' activities consisted of an on-site review of nondestructive examination (NDE) and welding activities to evaluate compliance with the applicable edition of the American Society of

Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Sections V, IX, and XI (Code of Record for Oconee's Fourth 10-year ISI interval was 1998 Edition with 2000 Addenda), and to verify that indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of the ASME Code, Section XI acceptance standards.

The inspectors' review of NDE activities included direct observation of the examinations described below and the review of their corresponding procedures, NDE reports, equipment and consumables certification records, and personnel qualification records.

- Ultrasonic (UT) and liquid penetrant (PT) examinations of weld 2LP-189-11 (10-inch pipe-to-elbow, Low Pressure Injection System, ASME Class 2)
- UT and PT examinations of weld 2LP-189-12 (10-inch pipe-to-elbow, Low Pressure Injection System, ASME Class 2)
- UT examination of weld 2-PZR-WP26-4 (5.75-inch nozzle-to-shell, Pressurizer Sampling Nozzle, ASME Class 1)
- UT examination of weld 2-PZR-WP26-5 (5.75-inch nozzle-to-shell, Pressurizer Sampling Nozzle, ASME Class 1)
- UT examination of weld 2-PZR-WP26-6 (5.75-inch nozzle-to-shell, Pressurizer Sampling Nozzle, ASME Class 1)

The inspectors' review of recordable indications included a sample from NDE activities performed during the last and current refueling outages to verify that the evaluation and disposition of indications were in accordance with the applicable edition of ASME Section XI, Subsections IWB-3000 and IWF-3000. The inspectors selected the following components for review:

- 2-51A-0-1479A-H9B, Visual (VT-3) indication on Rigid Support, High Pressure Injection System
- 2-RCP-FTR2A-SH-1, Radiographic (RT) indication on Reactor Coolant Pump Seal Supply Filter 2A
- 2-51A-3-0-1444A-H75, VT-3 indication on Spring Hanger, High Pressure Injection System
- 2-LPI-PU-A, VT-3 indication on Low Pressure Injection Pump 2A Support Pad and Legs
- 2-PZR-WP26-4, UT indication on Pressurizer Sampling Nozzle

The inspectors' review of welding activities included a sample of welds performed since the beginning of the last refueling outage for ASME Class 1 and 2 piping to evaluate compliance with procedures and the ASME Code. The inspectors reviewed weld process control reports, welding procedures, procedure qualification records, certified material test reports for filler material, welder qualification records, and NDE reports (including RT film when applicable) for the following welds:

- 2-HP-0495-27, 3-inch diameter pipe, High Pressure Injection System, ASME Class 2 (Final NDE: RT examination)
- 2-HP-0496-37, 3-inch diameter pipe, High Pressure Injection System, ASME Class 2 (Final NDE: RT examination)
- 2-HP-0497-54, 2-inch diameter pipe, High Pressure Injection System, ASME Class 2 (Final NDE: RT examination)

- 2-HP-0497-55, 2-inch diameter pipe, High Pressure Injection System, ASME Class 2 (Final NDE: RT examination)
- 2-PZR-WP91-1WOL, Weld overlay on Pressurizer Safety Nozzle, ASME Class 1 (Final NDE: PT and UT examination)
- 2-RC-0326-22V, Weld overlay on Pressurizer Surge Nozzle (Final NDE: PT and UT examination)
- 2-RC-0266-23V, Weld overlay on Pressurizer Spray Nozzle (Final NDE: PT and UT examination)

b. Findings

No findings of significance were identified.

.2 PWR Vessel Upper Head Penetration (VUHP) Inspection Activities

a. Inspection Scope

The inspectors reviewed licensee procedures and inspection results for the visual inspection activities performed during the Unit 2 Spring 2007 refueling outage to identify potential boric acid leaks from pressure-retaining components above the VUHP as required by NRC Order EA-003-09. The inspectors also reviewed the licensee's effective degradation years calculation, which was performed to determine the VUHP's susceptibility category and its examination requirements. There were no volumetric or bare metal visual exams scheduled for the referenced refueling outage.

b. Findings

No findings of significance were identified.

.3 Boric Acid Corrosion Control (BACC) Inspection Activities

a. Inspection Scope

The inspectors reviewed the licensee's BACC program activities to ensure implementation with commitments made in response to NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary," and applicable industry guidance documents. Specifically, the inspectors performed an on site record review of procedures and the results of the licensee's Mode 3 containment walkdown inspections performed during the Unit 2 Spring 2007 outage (PIP O-07-02186). The inspectors also conducted an independent walkdown of the reactor building to evaluate compliance with licensee's BACC program requirements and verify that degraded or non-conforming conditions, such as boric acid leaks identified during the Mode 3 containment walkdown, were properly identified and corrected in accordance with the licensee's BACC and Corrective Action programs.

The inspectors reviewed a sample of engineering evaluations completed for evidence of boric acid found on systems containing borated water to verify that the minimum design code required section thickness had been maintained for the affected components. The inspectors selected the following evaluations for review:

- PIP O-06-02086, Boric acid indications on valve 2SF-99 (Spent Fuel Pool System, Unit 2)
- PIP O-06-02086, Boric acid indications on RCP 2A1 fitting (Reactor Coolant Pump, Unit 2)
- PIP O-06-02086, Boric acid indications on valve 2LP-180 (Low Pressure Injection System, Unit 2)
- PIP O-06-02086, Boric acid indications on valve 2LP-189 (Low Pressure Injection System, Unit 2)
- PIP O-06-02086, Boric acid indications on pressure transmitter 2RC-PT-208 (Reactor Coolant System, Unit 2)
- PIP O-06-02086, Boric acid indications on valve 2RC-IV-0154 (Reactor Coolant System, Unit 2)

b. Findings

No findings of significance were identified.

.4 Steam Generator (S/G) Tube Inspection Activities

a. Inspection Scope

The inspectors reviewed licensee documentation and performed direct observation of licensee and vendor activities related to the eddy current examination (ECT) of Unit 2 S/Gs A and B tubes during the Spring 2007 refueling outage to verify that inspection activities were being conducted in accordance with Technical Specifications and applicable industry standards. The inspectors' review of documentation included the vendor's inspection plan, pre-outage degradation assessment, pre-outage condition monitoring and operational assessment, inspection procedures, Site Technique Validation for Oconee Nuclear Station, Examination Technique Specification Sheets, ECT bobbin and array probe certificates of compliance, and personnel qualifications. The inspectors performed direct observation of data acquisition activities along with verification of equipment settings for ongoing data acquisition. The inspectors also reviewed ECT data for SG B tubes R72T2, R74T1, R58T3, R92T6, and R61T3 to verify the adequacy of the licensee's primary, secondary, and resolution analyses.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI-related problems, including welding, BACC, and SG ISI that were identified by the licensee and entered into the corrective action program as Problem Investigation Process (PIP) documents.

The inspectors reviewed the PIPs to confirm that the licensee had appropriately described the scope of the problem and had initiated corrective actions. The review also included the licensee's consideration and assessment of operating experience events

applicable to the plant. The inspectors performed this review to ensure 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

.1 Simulator Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on June 6, 2007. The first scenario involved simulator training on job performance measure (JPM) CRO-54, removing a main feedwater pump from handjack. This JPM was noted as an area for improvement in Problem Investigation Process (PIP) O-06-6479, 2006 Licensed Operator Requalification Annual Operating Exam Assessment, and was being tracked by corrective action 6 of the PIP. The second scenario involved a small break loss of coolant accident (SBLOCA) in a reactor coolant system (RCS) cold leg, which resulted in the automatic actuation of engineered safeguards (ES) Channels 1 and 2. The scenario progressed through a loss of sub-cooling margin, and the automatic actuation of ES Channels 3, 4, 5 and 6, and the classification of the event as an Alert. The inspectors observed crew performance in terms of communications; ability to take timely and proper actions; prioritizing, interpreting, and verifying alarms; correct use and implementation of procedures, including the alarm response procedures; timely control board operation and manipulation, including high-risk operator actions; and oversight and direction provided by the shift supervisor, including the ability to identify and implement appropriate TS actions and properly classify the simulated event.

b. Findings

No findings of significance were identified.

.2 Biennial Review of the Licensed Operator Requalification Program

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. While onsite, the inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of operating tests associated with the licensee's operator requalification program. These activities were performed to assess the effectiveness of the licensee in implementing requalification requirements identified in 10 CFR Part 55, "Operators' Licenses." 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." The inspectors evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-1998, "American National Standard for Nuclear Power Plant Simulators for use in

Operator Training and Examination.” The inspectors observed two crews during the performance of the operating tests. Documentation reviewed included written examinations, Job Performance Measures (JPMs), simulator scenarios, licensee procedures, on-shift records, simulator modification request records and performance test records, the feedback process, licensed operator qualification records, remediation plans, watchstanding, and medical records. The records were inspected using the criteria listed in Inspection Procedure 71111.11. Documents reviewed during the inspection are listed in the Attachment to this report.

Following the completion of the annual operating tests which ended on March 31, 2007, the inspectors reviewed the overall pass/fail results of the individual JPM operating tests, and the simulator operating tests administered by the licensee during the operator licensing requalification cycle. These results were compared to the thresholds established in Manual Chapter 0609, Appendix I, “Operator Requalification Human Performance Significance Determination Process.”

One sample was completed during this inspection which satisfies the requirements of this biennial inspection.

b. Findings

Introduction: The inspectors identified a Green NCV of 10 CFR 50.54, Conditions of licenses, for failing to meet the minimum licensed operator staffing requirements. During the period between March 2003 and February 2007, seven licensed Senior Reactor Operators (SROs) fulfilled licensed positions required by 10 CFR 50.54(m)(2)(i) without meeting the requalification program requirements as stated in 10 CFR 55.59.

Description: While observing simulator scenarios that were part of the annual operating tests, the inspectors noted that SROs who were normally assigned to the Shift Technical Assistant (STA) position on the operating crew were not satisfying the annual operating test requirements of 10 CFR 55.59. The annual operating test requirements are specified in 10 CFR 55.59(a)(2)(ii) which requires, in part, that senior operators demonstrate an understanding of and ability to perform the actions necessary to accomplish a comprehensive sample of items specified in §55.45(a)(2) through (13). At Oconee, to fulfill the requirements of 10 CFR 55.59(a)(2)(ii), an SRO is required to stand in the position of either the Shift Manager or the Unit Supervisor during the simulator scenario portion of the annual operating tests. The inspectors requested that the licensee further review this issue to determine the extent of condition and whether minimum licensed operator staffing requirements were affected.

The licensee reviewed their records back to 2003 for SROs who were assigned to the STA position to determine if minimum licensed operator staffing requirements were met for situations where an SRO who had not met the requirements of 10 CFR 55.59 stood a licensed operator required position. The licensee identified seven instances between March 2003 and February 2007 where the minimum number of SROs on shift did not meet the requirements of 10 CFR 50.54(m)(2)(i). This was due to SROs failing to meet the requalification program requirements as stated in 10 CFR 55.59.

All SROs who had not completed an acceptable annual operating test during the current one year cycle were removed from shift duties. They were administered an annual

operating test that satisfied all the requirements of 10 CFR 55.59 prior to returning to licensed duties.

Analysis: The inspectors determined the licensee's failure to meet minimum licensed operator staffing requirements due to SROs not meeting the requalification requirements of 10 CFR 55.59 is a performance deficiency. The failure to meet the minimum operator staffing requirements for SROs is more than minor because it is associated with the configuration control and equipment performance attributes of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events. Having licensed operators on shift who did not meet all the requirements of 10 CFR 55.59 could increase the probability of errors they commit which could directly impact corresponding systems.

Since this finding could not be evaluated by an SDP and was not applicable for traditional enforcement resolution, it was reviewed by regional management for significance determination. Based on these SROs not making errors related to qualification while performing their licensed duties and successfully completing other aspects of the requalification program, such as the biennial written examination and routine testing conducted throughout the requalification training period, this finding was determined to be of very low safety significance (Green).

Based on the overall sample size of licensed operators reviewed for compliance with 10 CFR 55.59 and the number of operators identified as not meeting the requalification requirements, the criteria in Manual Chapter 609, Appendix I, Operator Requalification Human Performance Significance Determination Process was not met for issuing a separate violation of 10 CFR 55.59.

Enforcement: 10 CFR 50.54, Conditions of licenses, states, in part, that the licensee shall meet the minimum licensed operator staffing requirements as stated in 10 CFR 50.54(m)(2)(i). Contrary to the above, between March of 2003 and February 2007, seven instances occurred where the minimum number of SROs on shift did not meet the requirements of 10 CFR 50.54(m)(2)(i). Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as PIP 07-1734, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000269,270,287/2007003-01, Failure to Meet the Minimum Licensed Operator Staffing Requirements as required by 10 CFR 50.54(m)(2)(i).

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the licensee's effectiveness in performing routine maintenance activities. This review included an assessment of the licensee's practices pertaining to the identification, scoping, and handling of degraded equipment conditions, as well as common cause failure evaluations. For each item selected, the inspectors performed a detailed review of the problem history and surrounding circumstances, evaluated the extent of condition reviews as required, and reviewed the generic implications of the equipment and/or work practice problem. For those systems, structures, and components (SSCs) scoped in the maintenance rule per 10 CFR 50.65, the inspectors verified that reliability and unavailability were properly monitored and that 10 CFR 50.65

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(a)(1) and (a)(2) classifications were justified in light of the reviewed degraded equipment condition. Documents reviewed are listed in the Attachment to this report. The inspectors reviewed the following items:

- SSF Watertight Door Latching Mechanism Deficiencies (PIPs O-07-3044, O-07-3183)
- EWST Isolation During HPSW Maintenance (PIP O-07-1569)

b. Findings

Introduction: A Green self-revealing NCV of TS 5.4.1 was identified regarding failure to ensure an HPSW system tagout was compatible with overall plant conditions, in that the EWST was inadvertently isolated from the turbine building and auxiliary building. Consequently, the backup cooling water supply to the HPI pump motors was unknowingly isolated.

Description: On March 20, 2007, the licensee isolated portions of the HPSW system B header in the turbine building in order to replace valve 2HPSW-34. Due to leakage past the boundary valves, operators were unable to depressurize the piping. The isolation boundaries were extended and the resulting lineup inadvertently isolated the EWST from the HPSW pumps, from the turbine building, and from the auxiliary building. The condition was identified approximately 18 hours later when operators noted they were unable to maintain EWST level with either the HPSW jockey pump or a main HPSW pump. The licensee cancelled the planned maintenance and restored the system to a normal lineup. The total time the EWST was isolated was approximately 19.75 hours.

In addition to being a source of fire fighting water, the EWST functions as a backup source of cooling water for the HPI pump motors during a turbine building flood. The EWST also functions as a backup source of cooling water for the turbine driven emergency feedwater (TDEFW) pumps' oil coolers. The original maintenance plan removed most of the HPSW turbine building B header from service, which included the connections to the TDEFW pump coolers. Plant operators took appropriate compensatory actions for these planned outages. However, the extended isolation boundaries inadvertently isolated the EWST from the turbine building M header, and the auxiliary building, which prevented the EWST from being able to function as the backup source of cooling water to the HPI pump motor coolers. Selected Licensee Commitment (SLC) 16.9.8.a, Commitment A, requires this backup source of cooling water, and this commitment was not met. This condition existed for approximately 19.75 hours.

Analysis: The inspectors determined that the finding was more than minor because it affected the reliability objective of the Equipment Performance attribute under the Mitigating Systems Cornerstone. The finding was potentially risk significant due to external initiating events (i.e., turbine building flood), because the finding involved degradation of a function specifically designed to mitigate a flooding event, and the loss of this system during a flooding event would degrade both trains of high pressure injection. The licensee performed a plant specific risk assessment to identify core damage sequences of concern. The staff reviewed this risk assessment and concluded that due to the low initiating event frequency and short exposure time, the finding was appropriately characterized as having very low safety significance. The finding directly involved the cross cutting area of Human Performance under the work activity coordination aspect of the work control component, in that the licensee failed to

appropriately coordinate work activities by incorporating actions to address the impact of changes to the work scope on the plant.

Enforcement: TS 5.4.1 requires that written procedures be established, implemented, and maintained for the activities specified in Regulatory Guide (RG) 1.33, Revision 2, Appendix A, which includes procedures for equipment control, including locking and tagging. Standard Operations Management Procedure 02-01, Safety Tagging and Configuration Control, Attachment 13.5, requires the tagout reviewer and approver to ensure the tagout is compatible with plant conditions, including SLCs. Contrary to the above, on March 20, 2007, the tagout reviewer and approver did not ensure the tagout was compatible with SLC 16.9.8a, Commitment A, which states that HPSW shall be available to provide the backup cooling water to HPI pump motor coolers. The finding is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as: NCV 05000269,270,287/2007003-02, Failure to Ensure Tagout Compatibility with Plant Conditions. This issue is in the licensee's Corrective Action Program as PIP 07-01569.

1R13 Maintenance Risk Assessment and Emergent Work Evaluations

a. Inspection Scope

The inspectors evaluated the following attributes for the seven selected SSCs and activities listed below: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved.

- 2LP-7 Leak Testing Critical Activity Plan (Orange Operational Risk Assessment Monitor (ORAM))
- Critical/Complex Plan Orange Defense-in-Depth for Unit 2 Main Feeder Bus Lockout Relay Testing
- Auxiliary Building Flood PIP O-07-2674
- SSF Breaker Testing Complex Plan
- Critical Activity Plan for Unit 1/2 Control Room LPSW Piping Removal
- Emergent SSF Auxiliary Service Water (ASW) Pump OOS Due to High Vibrations (PIP O-07-3553)
- Critical Activity Plan for Switchyard Battery testing With SSF OOS (Orange ORAM)

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed selected operability evaluations affecting risk significant systems, to assess, as appropriate: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing

degraded conditions were considered; (4) if compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; and (5) where continued operability was considered unjustified, the impact on TS limiting condition for operations. Documents reviewed are listed in the Attachment to this report. The inspectors reviewed the following seven operability evaluations:

- PIP O-07-2061, SSF Sump Pump Number 2 Did Not Develop Discharge Pressure and Experienced Rubbing/Vibration
- PIP O-07-2415, Scaffold Will Not Allow Equipment Hatch Door to Close
- PIP O-07-1783, Unit 3 Turbine Insulation and Oil Fire
- PIP O-07-1818, Unit 2 Reactor Building Cooling Unit Paint Fouling
- PIP O-07-2081, 2A LPI Cooler Leak
- PIP O-07-2724/2551, Main Feeder Bus 86 Lockout Relay Failures
- PIP O-07-2844, 2HP-487 Pressure Relief Line Leak

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (PMT)

a. Inspection Scope

The inspectors reviewed PMT procedures and/or test activities, as appropriate, for selected risk significant systems to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform its safety function. Documents reviewed are listed in the Attachment to this report. The inspectors observed testing and/or reviewed the results of the following five tests:

- IP/0/A/0200/037A, Pressurizer Heater Group B Surveillance, Following OD 200411, Unit 2 SSF Bank 2, Group B, Pressurizer Heater Breaker
- PT/2/A/0251/024, HPI Full Flow Test, following outage maintenance
- PT/0/A/0711/001, Zero Power Physics Test, following Unit 2 core refueling
- PT/1/A/0251/001, LPSW Pump Test C, following packing replacement
- MP/0/A/1400/033, Flood Door - SSF Building - Presray - Semi-Annual and 5 Year Preventive Maintenance and Repair, following latch repair

b. Findings

No findings of significance were identified.

1R20 Refueling & Outage Activities

a. Inspection Scope

The inspectors conducted reviews and observations for selected outage activities to ensure that: (1) the licensee considered risk in developing the outage plan; (2) the licensee adhered to the outage plan to control plant configuration based on risk; (3) that mitigation strategies were in place for losses of key safety functions; and (4) the licensee adhered to operating license and TS requirements. Between April 27, 2007, and June 2, 2007, the following activities related to the Unit 2 refueling outage were reviewed for conformance to applicable procedures and selected activities associated with each evaluation were witnessed:

- Outage risk management plan/assessment
- Clearance activities
- Reactor coolant system instrumentation
- Plant cooldown
- Mode changes from Mode 1 (power operation) to No Mode (defueled)
- Shutdown decay heat removal and inventory control
- Containment closure
- Mid Loop activities
- Refueling activities
- Plant heatup/mode changes
- Core physics testing
- Power Escalation

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed surveillance tests and/or reviewed test data of the seven risk-significant SSCs listed below, to assess, as appropriate, whether the SSCs met TS, Updated Final Safety Analysis Report (UFSAR), and licensee procedure requirements. In addition, the inspectors determined if the testing effectively demonstrated that the SSCs were ready and capable of performing their intended safety functions.

- PT/2/A/0600/014, EFW Pump Suction From Hotwell Test
- PT/2/A/0151/019, Penetration 19 Leak Rate Test
- PT/3/A/0600/013, Unit 3 TDEFW Pump Test (IST)
- MP/0/A/1200/89, Unit 2 Main Steam Safety Valve Test
- CP/2/A/2002/001, Unit 2 Primary Sampling System (RCS DEI)
- PT/2/A/0160/003, Component Test of ES Channels 5 and 6
- PT/2/A/0150/008A, RB Personnel Hatch Leak Rate Test

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluationa. Inspection Scope

The inspectors observed and evaluated a simulator/plant based emergency preparedness drill held on April 4, 2007. The drill scenario involved an anticipated transient without reactor trip that resulted in an Alert. The scenario progressed to a site area emergency, as a result of a turbine building flood due to a condenser circulating water inlet expansion joint failure. Subsequent plant damage required the use of Severe Accident Management Guidelines. The operators were observed to determine if they properly classified the event and made the appropriate notifications for both the alert and site area emergency conditions. Notification sheets were reviewed for accuracy and to verify that protective action recommendations were made in accordance with the licensee's emergency plan procedures. The inspectors observed the post drill critique to assess whether the licensee appropriately captured drill deficiencies and/or weaknesses.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Control To Radiologically Significant Areasa. Inspection Scope

Access Controls: During the weeks of April 30, 2007, and May 14, 2007, licensee activities for controlling and monitoring worker access to radiologically significant areas and tasks associated with the Unit 2 EOC22 Refueling Outage were evaluated. The inspectors evaluated changes to, and adequacy of procedural guidance; directly observed implementation of established administrative and physical radiological controls; appraised radiation worker and technician knowledge of, and proficiency in implementing radiation protection activities; and assessed radiation worker (radworker) exposures to radiation and radioactive material.

The inspectors directly observed controls established for workers and Health Physics Technician (HPT) staff in airborne radioactivity area, radiation area, high radiation area (HRA), locked-high radiation area (LHRA), and very high radiation area (VHRA) locations. Controls and their implementation for LHRA keys and for storage of irradiated material within the Unit 2 (U2) spent fuel pool were reviewed and discussed in detail. Evaluated 2EOC22 tasks included reactor head removal and reinstallation, steam generator eddy current testing, pressurizer weld overlays, manipulation of incore

detectors, and various decontamination activities. The inspectors attended pre-job briefings and reviewed radiation work permit (RWP) details to assess communication of radiological control requirements to workers. Occupational workers' adherence to selected RWPs and HPT proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results with a focus on activities and tasks involving areas where dose rates could change significantly as a result of plant shutdown and refueling operations. Worker exposure as measured by ED and by licensee evaluations of skin doses resulting from discrete radioactive particle or dispersed skin contamination events since October 2006, and during current 2EOC22 activities were reviewed and assessed.

Postings for access to radiologically controlled areas (RCAs) and physical controls for the U2 reactor building (RB) and for U1, U2, and U3 auxiliary building (AB) locations designated as LHRAs and VHRAs were evaluated during facility tours. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for various locations within the U2 RB during fuel movement, as well as various areas within the U1, U2, and U3 AB. Results were compared to current licensee surveys and assessed against established postings and radiation controls.

Licensee controls for airborne radioactivity areas with the potential for individual worker internal exposures of greater than 30 millirem (mrem) Committed Effective Dose Equivalent (CEDE) were evaluated. For selected RWPs identifying potential airborne areas associated with refueling activities, the inspectors evaluated the implementation and effectiveness of administrative and physical controls including air sampling, barrier integrity, engineering controls, and postings.

Radiation protection activities were evaluated against Updated Final Safety Analysis Report (UFSAR); Select Licensee Commitments; 10 Code of Federal Regulations (CFR) Part 19 and 20 requirements; and Regulatory Guide (RG) 8.38, control of Access to High and Very High Radiation Areas in Nuclear Power Plants. Specific assessment criteria included UFSAR Section 12, Radiation Protection; 10 CFR 19.12; 10 CFR 20, Subpart B, Subpart C, Subpart F, Subpart G, Subpart H, and Subpart J; TS Sections 5.4, Procedures; and approved procedures. Detailed procedural guidance and records reviewed for this inspection area are listed in Sections 2OS1, 2OS2, 2PS2, 4OA1.2, and 4OA5.4 of the Attachment to this report.

Problem Identification and Resolution: Licensee Corrective Action Program (CAP) documents associated with access control to radiologically significant areas were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with Nuclear System Directive (NSD) 208, Problem Investigation Process, Revision (Rev.) 27. Licensee Problem Investigation Process reports (PIPs) associated with access controls, personnel monitoring instrumentation, and personnel contamination events were reviewed. Licensee PIP documents reviewed and evaluated in detail during inspection of this program area are listed in Sections 2OS1 and 4OA1.2 of the Attachment to this report.

b. Findings

No findings of significance were identified.

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2OS2 ALARA Planning and Controls

a. Inspection Scope

As Low As Is Reasonably Achievable (ALARA): The inspectors reviewed ALARA program guidance and its implementation for ongoing 2EOC22 job tasks. The inspectors evaluated the accuracy of ALARA work planning and dose budgeting, observed implementation of ALARA initiatives and radiation controls for selected jobs in-progress, assessed the effectiveness of source-term reduction efforts, and reviewed historical dose information.

ALARA planning documents, procedural guidance, and dose reduction initiatives were reviewed, and projected completion times and dose estimates were compared to actual expenditures for the following high dose jobs: Steam Generator Eddy Current Testing (S/G ECT), Alloy 600 Weld Overlays, and Leak-off Line Repair/Core Flood Nozzle Inspection. Differences between budgeted dose and actual exposure received were discussed with cognizant ALARA staff, as well as changes to dose budgets relative to changes in radiation source term and/or job scope. The inspectors attended pre-job briefings and evaluated the communication of ALARA goals, RWP requirements, and industry lessons-learned to job crew personnel.

The inspectors also evaluated whether the work tasks were reasonably grouped into specific jobs and whether the benefits of good scheduling were used to plan the work during times when dose rates would be lowest. Post-job evaluations for Alloy 600 work from a previous outage were reviewed. In addition, the inspectors reviewed the minutes from the last two ALARA Review Committee meetings.

The inspectors made direct field or closed-circuit video observations of job tasks involving S/G ECT, Alloy 600 mitigation, and other 2EOC22 activities. For the selected tasks, the inspectors evaluated radworker and HPT job performance (e.g. use of low dose waiting areas and adequate supervisory oversight of work crews); individual and collective dose expenditure versus percentage of job completion; surveys of the work areas; appropriateness of RWP requirements; and adequacy of implemented engineering controls. For S/G ECT and Alloy 600 work, the inspectors interviewed radworkers and job sponsors regarding understanding of dose reduction initiatives and their current and expected accumulated doses at completion of the job tasks. The inspectors also interviewed Operations and Maintenance department managers to evaluate the interface between different licensee organizations and ALARA planning staff.

Implementation and effectiveness of selected program initiatives with respect to source-term reduction were evaluated. Chemistry program ALARA initiatives and their effect on U2 Reactor Building dose rate trends were reviewed. The effectiveness of temporary shielding installed for the current outage was assessed through review of shielding request packages and pre-shielding versus post-shielding dose rate data. The inspectors also reviewed program guidance for reduction of cobalt-containing valves within the U2 Reactor Building and evaluated specific instances of valve replacement during the 2EOC22 refueling outage. In addition, the inspectors reviewed the current hot spot database and discussed reduction of tracked plant exposure sources with ALARA staff.

Plant exposure history for calendar year (CY) 2003 through CY 2005, and data reported to the NRC pursuant to 10 CFR 20.2206 were reviewed, as were established goals for reducing collective exposure during the current 2E0C22 outage. The inspectors reviewed procedural guidance for dosimetry issuance and exposure tracking. Guidance for calculation and assignment of internal dose due to alpha emitting radionuclides was reviewed and discussed with HP staff. The inspectors also examined dose records of declared pregnant workers to evaluate assignment of gestation dose.

ALARA program activities and their implementation were reviewed against 10 CFR Part 20 and approved licensee procedures. In addition, licensee performance was evaluated against guidance contained in RG 8.8, Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be As Low As Is Reasonably Achievable and RG 8.13, Instruction Concerning Prenatal Radiation Exposure. Procedures and records reviewed within this inspection area are listed in Section 2OS2 of the Attachment to this report.

Problem Identification and Resolution: Selected PIPs in the area of exposure control were reviewed in detail and discussed with licensee personnel. The inspectors assessed the licensee's ability to characterize, prioritize, and resolve the identified issues in accordance with procedure NSD 208, Problem Investigation Process, Rev. 27. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent self-assessment results. Documents reviewed for problem identification and resolution are listed in Section 2OS2 of the Attachment to this report.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety (PS)

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

a. Inspection Scope

Current licensee programs for monitoring, tracking, and documenting the results of both routine and abnormal liquid releases to onsite and offsite surface and ground water environs were reviewed and discussed in detail. The status of hydrogeological studies, and proposed initiatives to mitigate and monitor for potential movement of radionuclides from Chemical Treatment Pond (CTP) 1 and CTP 2 to onsite groundwater were discussed in detail. Further, radionuclide analysis results for a composite sediment sample collected from CTP 1 and 2, and for groundwater collected from onsite monitoring wells during CY 2006 and documented in the 2006 Annual Radiological Effluent Release Report, were reviewed and discussed in detail. Groundwater radionuclide analysis results were compared to Offsite Dose Calculation Manual (ODCM) reporting requirements.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation

a. Inspection Scope

Waste Processing and Characterization: The inspectors reviewed and discussed the currently installed radioactive waste (radwaste) processing systems as described in Section 11 of the UFSAR. In addition, radwaste types and quantities stored on site or shipped offsite for disposal in CY 2005 and CY 2006 were discussed with responsible licensee representatives.

The operability and configuration of selected liquid and solid radioactive waste radwaste processing systems and equipment were evaluated. Inspection activities included document review, interviews with plant personnel, and direct inspection of processing equipment and piping. The inspectors observed equipment material condition and configuration for liquid and solid radwaste processing systems, and licensee staff were interviewed regarding equipment function and operability. The licensee's policy regarding abandoned radwaste equipment was reviewed and discussed with cognizant licensee representatives. Operations staff were interviewed to assess knowledge of radwaste system processing operations. Procedural guidance involving resin dewatering activities and filling of waste packages was reviewed for consistency with the licensee's Process Control Program (PCP) and UFSAR details.

Licensee radionuclide characterizations of each major waste stream were evaluated. For dry active waste (DAW), primary resin, secondary resin, and filters, the inspectors evaluated PCP and licensee procedural guidance against 10 CFR 61.55 and the Branch Technical Position (BTP) on Radioactive Waste Classification details. 10 CFR Part 61 abundance data and derived scaling factors were reviewed and discussed with licensee representatives for radwaste processed or transferred to licensed burial facilities from January 1, 2005, through March 31, 2007. The licensee's analyses and current scaling factors for quantifying hard-to-detect nuclides were assessed. The inspectors discussed potential changes to waste streams resulting from plant operations and reviewed selected primary resin and mechanical filter waste stream radionuclide data to determine if identified changes were assessed or radionuclide composition remained consistent for the period reviewed.

Transportation: The inspectors evaluated the licensee's activities related to transportation of radioactive material. This evaluation included a review of shipping records and procedures, an assessment of worker training and proficiency, and direct observation of shipping activities.

The inspectors assessed shipping-related procedures for compliance to applicable regulatory requirements. Selected shipping records were reviewed for completeness and accuracy, and for consistency with licensee procedures. Training for individuals qualified to ship radioactive material was evaluated. In addition, specific training curricula provided to maintenance workers were discussed. For a shipment of contaminated equipment to an approved vendor, the inspectors directly observed package preparation; independently verified results of contamination and direct radiation surveys; evaluated shipping paperwork for completeness; and assessed initial loading, bracing, placarding, and labeling of the transport vehicles. Responsible staff were interviewed to assess their knowledge of package preparation specifications, and applicable radiation and contamination limits.

Transportation program guidance and implementation were reviewed against regulations detailed in 10 CFR 71, 49 CFR 170-189, and applicable licensee procedures listed in the Attachment to this report. In addition, training activities were assessed against 49 CFR 172 Subpart H.

Problem Identification and Resolution: Licensee CAP documents associated with radwaste processing and transportation activities were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with NSD 208, Problem Investigation Process, Rev. 27. Assessment requirements and selected CAP documents reviewed in detail for this inspection area are identified in Section 2PS2 of the Attachment to this report.

b. Findings

Introduction: An NRC-identified non-cited violation (NCV) of 10 CFR 20, Appendix G, Section III.A.3. was identified for failure to conduct adequate Quality Assurance (QA) activities to ensure compliance with the waste characterization requirements of 10 CFR 61.55.

Description: During a review of the licensee's annual radwaste stream comparisons for 2004 and 2005 waste stream data, the inspectors identified an inadequate evaluation of significant changes in quantities of radionuclides within the primary system filter waste stream. Specifically, waste stream analysis results for carbon-14 (C-14) in spent primary filters increased from less than detectable values for samples collected in 2004 to readily measurable quantities for samples collected in 2005. The difference in the reported C-14 relative abundance and derived scaling factors between 2004 and 2005 filter samples were outside of acceptable NRC variances, which indicated a change in the radionuclide distribution of the filter waste stream that could have affected the classification of filter waste.

The inspectors examined an October 25, 2006, memorandum which documented the licensee's review of changes in waste stream data between 2004 and 2005. This memorandum detailed the licensee's decision to continue using 2004 data in lieu of the 2005 data for radwaste characterization. The decision was based on a comparison of selected waste stream radionuclide values between the two successive years, and the stability of the waste streams. As detailed in the memo, the decision to continue using 2004 data was also based on the fact that Duke Power Corporation had suspended use of the 2005 data because it came from a vendor laboratory that had not yet been accepted into the Duke QA-approved vendor program. The inspectors noted that the licensee used the 2005 data for their annual 10 CFR 61.55 waste stream comparison, and eventually the laboratory was accepted into their approved vendor program. Although use of the vendor laboratory was temporarily suspended at the time, the memo states that the licensee determined the 2005 data was sufficiently credible to validate differences between the 2004 and 2005 waste streams. The licensee's failure to recognize, and conduct detailed evaluations of, the significant changes in the C-14 values between 2004 and 2005 contributed to the licensee's determination that the differences in the two data sets were not significant enough to implement the new data for waste classification purposes. Inspectors noted that the increased C-14 values in the filter samples for 2005 potentially could have affected waste classification for affected filter waste shipments sent for land burial.

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Analysis: The licensee's failure to conduct an adequate review of changes between 2004 and 2005 waste stream data is considered a performance deficiency. The inspectors determined that the violation was greater than minor, in that the failure to properly evaluate the significant increase in the hard-to-detect C-14 radionuclide and its effect on classifying primary filter waste streams could have resulted in improper characterization of waste shipments. This violation is associated with the program and process attribute of the Public Radiation Safety cornerstone, and affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. The violation was evaluated using the Public Radiation Safety Significance Determination Process (SDP). The identified issue was determined to be of very low safety significance (Green) because followup evaluations indicated that the failure to conduct an adequate QA review of the primary filter waste stream Part 61 data did not result in the licensee exceeding DOT package radiation limits; the improper use and maintenance of shipping containers, or their breach during transport; or the under-classification of the waste materials for burial based on 10 CFR Part 61.55 criteria. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution because the licensee did not conduct an independent assessment of vendor laboratory Part 61 analyses that was of sufficient depth to identify and properly evaluate substantial changes in their primary filter waste stream.

Enforcement: 10 CFR 20, Appendix G, Section III.A.3. requires that any licensee who transports radioactive waste to a land disposal facility or a licensed waste collector conduct a QA program to assure compliance with 10 CFR 61.55. Contrary to the above, licensee QA activities were inadequate to assure compliance with 10 CFR 61.55 because the licensee failed to properly evaluate a significant increase in C-14 activity concentrations for primary system filter waste streams between CY2004 and CY 2005. Because these QA deficiencies are of very low safety significance and have been entered into the corrective action program as PIP document number O-07-02811, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000269,270,287/2007003-03, Failure to Conduct Adequate QA Activities to Ensure Waste Shipments are Characterized in accordance with 10 CFR 61.55.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Initiating Events and Barrier Integrity Cornerstones

a. Inspection Scope

The inspectors reviewed the PIs listed in the tables below (for all three units), to determine their accuracy and completeness against requirements in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 4.

Cornerstone: Initiating Events		
<u>Performance Indicator</u>	<u>Verification Period</u>	<u>Records Reviewed</u>
Unplanned Scrams	4 th quarter of 2006, and 1 st quarter of 2007	<ul style="list-style-type: none"> • Licensee Event Reports • NRC Inspection Reports • Monthly Operating Reports • operator logs • licensee power history curves
Scrams with Loss of Normal Heat Removal		
Unplanned Power Changes		

Cornerstone: Barrier Integrity		
<u>Performance Indicator</u>	<u>Verification Period</u>	<u>Records Reviewed</u>
Reactor Coolant System Specific Activity	4 th quarter of 2006, and 1 st quarter of 2007	<ul style="list-style-type: none"> • daily plant chemistry data • daily status reports • operator logs

b. Findings

No findings of significance were identified.

.2 Occupational and Public Radiation Cornerstones

a. Inspection Scope

The inspectors sampled licensee data for the PIs listed below. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 4, were used to screen each data element.

Occupational Radiation Safety Cornerstone: The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the period of October 1, 2006 through April 30, 2007. For the assessment period, the inspectors reviewed electronic dosimeter alarm logs and PIPs related to exposure significant area controls. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Report section 2OS1 contains additional details regarding the inspection of controls for exposure significant areas. Documents reviewed are listed in the Attachment to this report.

Public Radiation Safety Cornerstone: The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the period of April 1, 2006 through March 31, 2006. For the assessment period, the inspectors reviewed monthly dose calculations to the public, out-of-service effluent radiation monitors, and selected PIPs related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Screening of Corrective Action Reports

In accordance with Inspection Procedure (IP) 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for followup, the inspectors performed daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing copies of PIPs, attending daily screening meetings, and accessing the licensee's computerized database.

.2 Semi-Annual Trend Review

a. Inspection Scope

In accordance with IP 71152, "Identification and Resolution of Problems," the inspectors performed a review of the licensee's Corrective Action Program (CAP) and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screenings discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the six month period of January 2007 through June 2007, although some examples expanded beyond those dates when the scope of the trend warranted. The review also included issues documented outside the normal CAP in major equipment problem lists, plant health team vulnerability lists, focus area reports, system health reports, self-assessment reports, maintenance rule reports, and Safety Review Group Monthly Reports. The inspectors compared and contrasted their results with the results contained in the licensee's latest quarterly trend reports. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy. Documents reviewed are listed in the Attachment to this report.

b. Assessment and Observations

No findings of significance were identified. In general, although one group was late in completing trend analysis, the licensee has identified trends and has appropriately addressed the trends with their CAP. Inspectors noted several issues which were caused by either incorrectly wired relays, inadequate relay protection systems, or poorly designed relays. Several of these issues appeared to either cause or contribute to a dual unit trip in February 2007 (reference IR 05000269,270,287/2007002, Sections 4OA2 and 4OA3). In response to issues with design and control relay of systems which protect switchyards and associated equipment such as generators and transformers, the licensee initiated a company wide review of these components and systems to verify adequate design and maintenance. Inspectors noted that the licensee also had begun to implement some replacements for obsolescent relay systems.

4OA3 Event Follow-up

(Closed) Licensee Event Report (LER) 05000269/2006-02-00, High Energy Line Breaks Outside Licensing Basis May Result in Loss of Safety Function. Inspection and evaluation of this event are discussed in detail in NRC IR 05000269,270,287/2005004. The risk evaluation and enforcement aspects of the event are discussed in NRC IR 05000269,270,287/2006012 and 05000269,270,287/2006014. Additionally, the inspectors reviewed the status of the licensee's committed corrective actions which include the installation of flood outlet devices and impoundment modifications, to verify that these actions are being implemented adequately and in accordance with the committed schedule. This LER is closed.

4OA5 Other Activities

- .1 (Closed) Unresolved Item (URI) 05000269,270,287/2006003-01, Failure to Identify and Correct SSF Internal Flooding Risk. This issue involved non-seismically qualified piping in the SSF. When the condition was identified, the licensee isolated the supply to the plant drinking water system; thereby, removing the system from service. The licensee subsequently installed flow restriction devices in order to mitigate the risk of internal flood from plant drinking water. In view of prompt action on the part of the licensee to address this issue, and in the absence of an identified performance deficiency or violation, this issue is closed.
- .2 (Closed) URI 05000269,270,287/2006002-02, Failure to Promptly Identify an Inadequate SSF Building Sewer System Design. This issue concerned a design feature of the SSF sewer system which could have potentially allowed external flood waters to enter the SSF. Upon notification of the issue, the licensee removed the sewer system from service and capped the line in question; thereby, removing the flood vulnerability. The licensee subsequently modified the system to prevent flow of postulated flood waters into the SSF. The licensee had determined the external flood protection function of the SSF structure to be a maintenance rule function (Number 8094.3). This function was degraded by the sewer system design, and was classified as a maintenance rule functional failure by the licensee. Maintenance Rule guidance NUMARC 93-01, Section 9.4.5, advocates prompt resolution of design-related failures/degradation to preclude treatment of subsequent failures as a MPFF. Once identified, the licensee took prompt action to remove the vulnerability, and subsequently implemented a design change to prevent recurrence. The inspectors determined the licensee's corrective actions were adequate. Having identified no performance deficiency, or violation with respect to the Maintenance Rule, this issue is considered closed.
- .3 Operation of an Independent Spent Fuel Storage Installation (ISFSI)
 - a. Inspection Scope

Under the guidance of IP 60855.1, the inspectors observed operations involving spent fuel storage and reviewed the licensee's procedure for storing spent fuel in the ISFSI (MP/0/A/1500/016, ISFSI Phase V DSC Loading and Storage). The inspectors reviewed Oconee Nuclear Engineering Instruction (ONEI)-400, for Dry Storage Certification (DSC), for ISFSI shipments DSC-088, DSC-89, DSC-90, and DSC-091. Spent fuel documentation was discussed with the cognizant reactor engineer to assess whether the licensee has identified each fuel assembly, recorded the parameters and characteristics

of each fuel assembly, and has maintained a record of each fuel assembly as a controlled document. The inspectors also observed selected licensee activities related to the shipment DSC-91 to verify that they performed these activities in a safe manner and in compliance with approved procedures.

The inspectors reviewed selected completed procedures for physical inspection and inventory of the ISFSI (i.e., PT/0/A/0750/003, Physical Inventory of Reportable Special Nuclear Material, Enclosure 13.6, Dry Cask Storage Inspections) and completed ONEI-400s to determine whether records had been established for all spent fuel in storage in the ISFSI; that duplicate records are maintained by the licensee; and an inventory has been conducted on all spent fuel stored in the ISFSI at least every 12 months.

The inspectors reviewed selected screening evaluations performed pursuant to 10 CFR 72.48 since the last inspection (October 2006). There were no 72.48 evaluations performed during this period, as all document changes screened as not needing a 72.48 evaluation. The inspectors reviewed the following 72.48 screening evaluations:

- Certificate of Compliance 72-1004, Amendment 9, 10 CFR 72.212 Written Evaluation
- MP/0/A/1500/023, Revision 7, Independent Spent Fuel Storage Installation Phase V – DSC Loading and Storage

b. Findings

No findings of significance were identified.

.4 ISFSI Radiological Controls

a. Inspection Scope

Access controls and surveillance results for the licensee's ISFSI activities were evaluated. The evaluation included review of ISFSI radiation control surveillance procedures and assessment of ISFSI radiological surveillance data. During tours of the ISFSI storage facilities, the inspectors observed access controls; thermoluminescent dosimeter (TLD) locations and material condition; and radiological postings on the perimeter security fence. The inspectors observed licensee staff performing radiation surveys of the general area and selected casks currently maintained within the established ISFSI Storage Pad area. Survey results were compared to licensee survey data and established postings.

Program guidance, access controls, postings, equipment material condition, and surveillance data results were reviewed against details documented in applicable sections of the UFSAR; 10 CFR Parts 20 and 72; applicable Certificates of Compliance and TS details; and licensee procedures. Licensee guidance documents, records, and data reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings (Including Exit Meeting)

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. Bruce Hamilton, Site Vice President, and other members of licensee management at the conclusion of the inspection on June 28, 2007. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

L. Azzarello, Modification Engineering Manager
S. Batson, Superintendent of Operations
D. Baxter, Station Manager
R. Bowser, Senior Scientist, Radiation Protection
R. Brown, Emergency Preparedness Manager
S. Capps, Mechanical/Civil Engineering Manager
T. Coleman, ISI Coordinator
N. Constance, Manager, Operations Training
C. Curry, Maintenance Manager
G. Davenport, Compliance Manager
P. Downing, Corporate Steam Generator Manager
E. Burchfield, Reactor and Electrical Systems Manager
J. Gilreath, Site Steam Generator Engineer
M. Glover, Engineering Manager
B. Hamilton, Site Vice President
L. Hekking, BACC Program
D. Hubbard, Training Manager
T. King, Security Manager
B. Meixell, Technical Specialist
L. Nicholson, Safety Assurance Manager
P. North, Shift Operations Manager
V. Owens, Radioactive Material Control General Supervisor
L. Parham, Weld Overlays
W. Pursley, General Supervisor, Radiation Protection
D. Robinson, General Supervisor, Radiation Protection
J. Smith, Technical Specialist
J. Steely, Continuing Training Supervisor
P. Stovall, SRG Manager
J. Twiggs, Radiation Protection Manager
J. Weast, Regulatory Compliance

NRC

J. Moorman, III, Chief, Reactor Projects Branch 1
L. Olshan, Project Manager, NRR

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000269,270,287/2007003-01	NCV	Failure to Meet the Minimum Licensed Operator Staffing Requirements as required by 10 CFR 50.54(m)(2)(i) (Section 1R11.2)
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05000269,270,287/2007003-02 NCV Failure to Ensure Tagout Compatibility with Plant Conditions (Section 1R12)

05000269,270,287/2007003-03 NCV Failure to Conduct Adequate QA Activities to Ensure Waste Shipments are Characterized in accordance with 10 CFR 61.55 (Section 2PS2)

Closed

05000269/2006-02-00 LER High Energy Line Breaks Outside Licensing Basis May Result in Loss of Safety Function (Section 4OA3)

05000269,270,287/2006003-01 URI Failure to Identify and Correct SSF Internal Flooding Risk (Section 4OA5.1)

05000269,270,287/2006002-02 URI Failure to Promptly Identify an Inadequate SSF Building Sewer System Design (Section 4OA5.2)

DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

OSS-0254.00-00-1039, Design Basis Specification for Low Pressure Service Water System Drawing OFD-124B-1.6 and 3.6, Low Pressure Service Water System (Aux. Bldg. Air Handling Units)

OSC-6667, Auxiliary Building and Turbine Loss of Cooling and Ventilation Analysis

Section 1R04: Equipment Alignment

OSS-0254.00-00-1034, Design Basis Specification for Reactor Building Spray System Drawing OFD-103A-1.1, Flow Diagram of Reactor Building Spray System (Unit 1)
Drawing OFD-121D-1.1, Unit 1 Flow Diagram of Emergency Feedwater System
Drawing OFD-121D-3.1, Unit 3 Flow Diagram of Emergency Feedwater System
OP/0/A/2000/041, KHS - Modes of Operation

Section 1R05: Fire Protection

UFSAR Section 9.5.1, Fire Protection System

Design Basis Specification OSS-0254.00-00-4008, Fire Protection

Impairment and Compensatory Measures Form ON-2007-165, Unit 1 Control Room Area/Lobby

Impairment and Compensatory Measures Form ON-2007-166, Unit 2 Control Room Area/Lobby

Section 1R08: Inservice Inspection Activities

[Procedures]

NDE-600, "Ultrasonic Examination of Similar Metal Welds in Ferritic and Austenitic Piping,"

Revision 17

NDE-35, "Liquid Penetrant Examination," Revision 21
 NDE-820, "Ultrasonic Examination of Welds in Ferritic Pressure Vessels Greater than 2 inches in Thickness," Revision 2
 PDI-UT-7, "Generic Procedure for the Manual Ultrasonic Through Wall and Length Sizing of Ultrasonic Indications," Revision F
 NDE-680, "Ultrasonic Examination of Nozzle Inner Radii in Ferritic Pressure Vessels," Revision 5, with Field Change 06-08
 NDE-640, "Ultrasonic Examination Using Longitudinal Wave and Shear Wave, Straight Beam Techniques," Revision 3
 54-ISI-24-30, "Written Practice for Personnel Qualification in Eddy Current Examination," Revision 12/14/06
 54-ISI-400-15, "Multi-Frequency Eddy Current Examination of Tubing," Revision 7/17/06
 "Eddy Current Acquisition - Plug Visual Characterization Process for Duke Power Company Steam Generator," Revision 4
 Welding Procedure Specification GTSM0808-01, Revision 6
 Welding Procedure Specification 01-08-T-804-Surge-1023349, Revision 0
 Welding Procedure Specification 01-08-T-801-102836, Revision 3
 Welding Procedure Specification 01-08-T-803-102836, Revision 1
 MP/0/B/1140/013, "CRDM - Flanges and Motor Tubes - Visual Inspection," Revision 11
 OP/0/A/1102/028, "Reactor Building Tour," Revision 28
 MP/0/A/1800/132, "Evaluation of Boric Acid Leakage on Mechanical, Structural, and Electrical Components," Revision 4

[Corrective Action Documents]

PIP-O-05-06246
 PIP-O-05-06251
 PIP-O-05-06860
 PIP-O-05-07217
 PIP-O-05-07697
 PIP-O-06-04249
 PIP-O-07-02505
 PIP-O-05-06181
 PIP-O-06-05766
 PIP-O-06-04650
 PIP-G-07-00140
 PIP-G-07-00277
 PIP-O-07-02186
 PIP-O-07-02533
 PIP-O-07-02685
 PIP-O-07-00407
 PIP-O-06-04249
 PIP-O-07-02570 (Document generated as a result of this inspection)

[Other Records]

DPC-1201.01-00-0007, "EDY Calculation for Reactor Pressure Vessel Head Penetrations," Revisions 2 and 3
 PT Examination Reports: PT-07-027, -28, OC-PT-07-12, -13, -14, -15, -16, and -17
 UT Examination Reports: UT-07-057, -058, -048, -049, -050, -067, -054, -055, -056, -051, -052, -053, and BOP-UT-07-008
 UT Examination Reports: 2-PZR-WP91-1 WOL, 2-RC-0266-23V, 2-PZR-WP91-2 WOL, 2-PZR-WP91-3 WOL, 2-RC-0326- 22V, and 2-RC-326- 21V

UT Calibration Reports: CAL-07-059, -058, -057, -047, -048, -050, -051, -060, -052, -053, -054, -055, -056, and -049

Certification for PT Examination Consumables: Batch No. 04G05K, 00J07K, and 5K11K

Certification for UT Examination Couplant: Batch No. 05125

Certification for UT Transducers: 57463-1707, 0105LM, 0085LN, M18425, B07959, K06782, G14817, 007Y14, 4915-03002, 4915-03001, 4916-03001, 4916-03002, E19875, and I84281

Fabrication Drawings for Calibration Blocks: 50237E and 40338

Welding Procedure Qualification Records: PQR-01-01-T-802, Revision 1; PQR-43-43-T001, Revision 0; PQR A0843244, Revision 1; PQR-01-08-T-032, Revision 0; PQR 01-01-T-801, Revision 1; PQR A843256-52, Revision 1; PQR-A08202.3-3, Revision 1; PQR L-148C, Revision 0; PQR L-138, Revision 0; and PQR L-110-D, Revision 0

Certified Material Test Reports for welding filler metal Heat Nos. NX4720TK, NX5213TK, NX4720TK, 1065599, and 1065138

ISI Visual Examination Reports for Work Orders: 98708199, 98710438, and 98710487

Radiographic Examination Report and Films for Component 2-RCP-FTR2A-SH-1

ROTSG Site Technique Validation for Oconee Nuclear Station, Revision 4

Examination Technique Specification Sheets No. 1 and 2

SGMEP 105, "ROTSG Specific Assessment of Potential degradation Mechanisms for Oconee Unit 2 EOC 22," Revision 6

Areva Document 51-9044921-000, "Areva Eddy Current Examination Plan for Oconee Unit 2 EOC22

Areva Document 51-9009275-000, "A Condition Monitoring and Operational Assessment (CMOA) Evaluation of Wear Scars for Oconee Unit 2, EOC 21," Rev. 00

Data Acquisition and Analysis Personnel Qualification for Level II Data Operators, Level II A and Level III Analysts

Steam Generator Health Report for 2007Q1

Certificate of Compliance for Bobbin and Bobbin/Array probes - Contract No. 180179

Instrument Calibration Certificates for Eddy Current Testers, Model MIZ-80

Section 1R11.2: Biennial Review of the Licensed Operator Requalification Program

[Procedures]

NSD-512, Maintenance of RO/SRO NRC Licenses, Rev 1

OTG-012, Oconee Training Center Simulator Configuration Management Guide, Rev 14

OMP 1-12, Maintenance of Licensed Operator, STA, and NEO Qualifications, Rev 023

OTG-004, Conduct of Licensed Operator Requalification, Rev 31

OTG-016, Conduct of Simulator Training and Evaluation, Rev 12

OTG-020, Development, Administration, and Security of Examinations, Rev 13

[Simulator Scenarios]

ASE-05, Small Break LOCA

ASE-13, Auto/Manual Turbine Trip Failure, HPI Forced Cooling.

[Job Performance Measures]

NLO-041, Restart the Primary IA Compressor Following a Compressor Trip

NLO-029, Control TDEFDWP Flow Locally Following Loss of MFDW

CRO-004, Perform Required Actions for a Failed LPI Train

SRO-014, Emergency Classification Based on Dose Calculation

CRO-021, Isolate Main Steam Line Rupture

CRO-053, Bypass Coolant Pump Starting Interlocks

[Simulator Conformity Documents Reviewed]

Operator Training Guide #12. Oconee Training Center Simulator Configuration Management Guide. Revision, 4, March 08, 2007

[ONS Simulator Transient Tests]

PT/01, Anticipated Reactor Trip if Main Feed Water is Lost, July 16, 2005

PT/4/T4, Trip of One RCP (1B2), October 20, 2006

PT/8/T/8, Double - Ended Main Steam Line Break From Full Power.

(Compared to expected data and computer generated data.)

PT/13/T/13, TMI -2 Accident.

(Compared to expected data and computer generated data.)

[Simulator Exercise Guide]

OP-OC-SAE - R176

OP-OC-SAE - R181

OP-OC-SAE - R184

OP-OC-SAE - R185

[Records]

Badge Access Transaction Reports for Reactivation of Licenses (5)

Licensed Operator Medical Records (21)

Feedback Summaries

Remedial Training Records (9)

[Written Examinations Reviewed]

Inspectors reviewed five written examinations that were administered for the 2007 biennial requalification Examinations, Crews A-E, RO and SRO.

Two Weekly Examinations

Section 1R12: Maintenance Effectiveness

MP/0/A/1400/033, Flood Door – SSF Building – Presray – Semi-Annual and 5 Year – Preventive Maintenance and Repair

WO 01722335 01, PM SSF Flood Barrier Door – Semi-Annual

Maintenance Rule Function Report, ONS 8094.3, SSF Structural

Section 1R15: Operability Evaluations

OSC 2240, Verification of SSF Sump System Parameters – NSM 1012, revision 1

OSS-0254.00-00-1005, SSF ASW System DBD, revision 24

OSS-0254.00-00-00-1008, SSF Diesel Support System DBD, revision 29

UFSAR Section 9.6, Standby Shutdown Facility

UFSAR Section 3.4, Water Level (Flood) Design

TS 3.10 and bases, Standby Shutdown Facility

SD 1.3.5, Shutdown Protection Plan, revision 20

OSC-4848, Time to Core Saturation for Loss of Decay Heat Removal Events, revision 12

Generic Letter 88-17, Loss of Decay Heat Removal

AP/2/A/1700/026, Loss of Decay Heat Removal, revision 17

OP/2/A/1502/009, Containment Closure Control, revision 33

TS 3.6 and Bases, Containment Systems

OSS-0254.00-00-1028, Design Basis Specification for Low Pressure Injection and Core Flood System

Drawings OFD-102A-2.2, Unit 2 Flow Diagram of Low Pressure Injection System

OSC-8064, ROTSG Long-Term Containment Response Following a Large Break LOCA

OSC-5666, Unit 2 Reactor Building Cooling Units Performance Test

Section 1R19: Post-Maintenance Testing

PIP O-05-3770, SSF Risk Reduction

OD200411, Unit 2 SSF bank 2, group B, PZR heater breaker

IP/0/A/0200/037A, Pressurizer Heater Group B Surveillance

UFSAR Section 9.6, Standby Shutdown Facility

UFSAR, Section 7.7.3, Emergency (Auxiliary) Shutdown Panel

UFSAR Section 6.3.3.1, High pressure Injection System

UFSAR Section 9.2.2.2.3, Low Pressure Service Water System

Section 1R22: Surveillance Testing

Drawing OFD-121D-2.1, Unit 2 Flow Diagram of Emergency Feedwater System

Drawing OFD-121B-2.3, Unit 2 Flow Diagram of Feedwater System (Final Feedwater)

UFSAR Section 10.4.7, Emergency Feedwater System

UFSAR Section 7.3, Engineered Safeguards Protective System

TS 3.6.1, Containment, and TS 3.6.2, Containment Air Locks

Section 2OS1: Access Controls to Radiologically Significant Areas

[Procedures, Instructions, Guidance Documents, and Operating Manuals]

Health Physics Procedure (HP)/0/B/1000/104, Radiological Protection Requirements for Incore Detector Work, Rev. 010

HP/0/B/1000/089, Resin Sluice Surveillance, Rev. 018

HP/0/B/1000/093, Non-Routine Surveillance Requirements, Rev. 022

Instruction Procedure (IP)/0A/0302/004 B, Incore Detector Assemble Withdrawal and Insertion, Rev. 054

MURORA Instructions for Donning and Removal the Murora V4 Fully Enclosed Suit, Dated 06/09/01

Shared Health Physics Procedure (SH)/0/B/2000/004 Taking, Counting and Recording Surveys, Rev. 007

SH/0/B/2000/005 Posting of Radiation Control Zones, Rev. 004

SH/0/B/2000/006 Control of Radioactive Material and Use of Radioactive Material Tags, Rev. 003

SH/0/B/2000/012, Access Controls for High, Locked High, and Very High Radiation Areas, Rev. 008

Radiation Protection Section Manual (RPSM) 4.4, Entry into Containment at Power, Rev. 006

RPSM 5.4, Equipment Hatch and Construction Opening Surveillance and Control, Rev. 004

RPSM 6.14, Refueling Outage Radiological Protection Requirements, Rev. 002

Letter from NRC to ONS Vice President, Subject: Alternate High Radiation Area Controls at Oconee Nuclear Station, dated February 14, 1994

[Records and Data Reviewed]

Active RWPs List for 2EOC22

List of Non-fuel Material Stored in the Spent Fuel Pools, Updated on 1/30/07

RWP 11 Routine Spent Fuel Pool Area Activities (Excluding Refueling), Rev. 24
 RWP 2001, U2 RX Bldg Inspections and Valve Operations, Rev. 18
 RWP 2022, U2 RX Bldg - Alloy 600 Replacement / Repair and Associated Activities, Rev. 3
 RWP 2048, U2 RX Bldg - Canal - LHRA Miscellaneous Entries, Rev. 2
 RWP 2057, U2 RX Bldg Pressurizer surge Line - Alloy 600 Inspect / Repair Activities Rev. 3
 RWP 2152, U2 RX Bldg Remove / Replace Plenum, Rev. 10
 RWP 2176, U2 RX Bldg Incore Instrumentation Work, Rev. 10
 RWP 2218, U2 RX Bldg A OTSG Install / Remove Nozzle Dams
 RWP 2219, U2 RX Bldg A OTSG Eddy Current / Inspections and Associated Work, Rev. 16
 ALARA Work Plan, "Remove and Replace Plenum Includes Index Fixture, Rigging, and Moving," dated 4/18/07
 Survey No. M-021307-9, RM-218 U1 and U2 Spent Fuel Pool (SFP) Coolers & Pumps, 2/13/07
 Survey No. M-031407-5, RM-218 U1 and U2 SFP Coolers & Pumps, 3/14/07
 Survey No. M-040907-5, RM-218 U1 and U2 SFP Coolers & Pumps, 3/14/07
 Survey No. M-042607-2, RM-668 U3 Spent Fuel Pool, 4/26/07
 Survey No. M-050107-19, Post shielding survey top of 2RC PZR Spray line, 5/01/07
 Survey No. M-050207-1, A Upper Steam Generator, 5/02/07
 Survey No. M-050207-21, B Upper Steam Generator, 5/2/07
 Survey No. M-050307-8, U2 RX Bldg 3rd Floor survey of RX Head in stand, 5/03/07
 Survey No. M-050407-22, Survey of RX Head, 5/04/07
 Survey No. M-050607-9, RV Head, 5/4/07
 Survey No. M-050507-17, Pre-job survey on scaffold around RX Head flange, 5/05/07
 Survey No. M-051007-17, Job coverage survey during RX Head O-Ring removal, 5/10/07
 Survey No. M-051707-9, U2 RX Bldg 3rd Floor during movement of Plenum from deep end of canal to reactor, 5/16/07
 Survey No. M-051707-13, U2 RX Bldg 3rd Floor during movement of Plenum from deep end of canal to reactor, 5/16/07
 Rate History printouts for ARMs 189551, 189359, 198765, 195011, 191748, 190132, 190162, 190921, and 189137 during incore cutting and fuel movement 5/12/07-5/14/07

[Corrective Action Program (CAP) Documents]

ONS RP Internal Assessment 2007
 Problem Identification Process (PIP) Number (No.) O-06-04458, Documentation of RP post outage critique area for improvement and successes during 3EOC22, 7/13/06
 PIP No. O-06-06582, RP could not provide key to stage incore casks in the reactor building, 10/12/06
 PIP No. O-06-07126, Radiological stantions, ropes, & postings moved without authorization, 10/25/06
 PIP No. O-06-08101, Radiological postings moved, 11/22/06
 PIP No. O-07-00700, Violation of RP posting - Room 208, Unit 1 Seal Supply Filter Room, 2/04/07
 PIP No. O-07-01009, Radiological Room Posting placard found out of the proper location (not on a door), 2/19/07
 PIP No. O-07-02302, Personnel contamination Event #: 07-17, 5/01/07
 PIP No. O-07-02386, Inappropriate work practices inside RCA, 5/03/07
 PIP No. O-07-02945, Comments from NRC during debrief, 5/22/07
 PIP No. O-07-03002, Existing gates at Normal Sump, Letdown Cooler Rm, and First Floor Cage at East stairwell do not meet standards for Access Control, 5/23/07

Section 20S2: As Low As Is Reasonably Achievable (ALARA)

[Procedures, Manuals, and Guidance Documents]

System ALARA Manual, Rev. 14

System Chemistry Manual - Oconee Primary Chemistry Optimization Plan, Rev. 6

SH/0/B/2000/008, Operational Alpha Program, Rev. 3

RPSM-4.8, Procedure for TLD Issue and Exposure History Control, Rev. 8

NSD 208, Problem Investigation Process, Rev. 27

[Records and Data]

Minutes - ALARA Committee Meetings, 3/6/07 and 12/11/06

ALARA Planning Worksheet, A & B S/G Eddy Current Testing, 4/17/07

ALARA Planning Worksheet, Leak Off Line Repair/ CF Nozzle Inspection, 4/12/07

ALARA Planning Worksheet, Weld Overlays for Alloy 600 Mitigation - Upper Pzr, 4/3/07

ALARA Planning Worksheet, Weld Overlays for Alloy 600 Mitigation - Lower Pzr, 4/23/07 and 5/2/07

ALARA Planning Worksheet Post-Job Reviews, Alloy 600 Mitigation (previous U1 outage), 12/15/06

RWP 2242, U2 S/G Eddy Current Testing and Associated Work, Rev. 13

RWP 2022, U2 Rx Bldg - Alloy 600 Repair/Replacement and Associated Activities, Rev. 2

Survey M-050107-19, U2 - Top of Pressurizer, 5/1/07

Survey M-112106-15, U1 Refueling Canal - Annulus Shield Plugs Pulled, 11/21/06

Survey M-050207-1, U2 - Upper "A" S/G, 5/2/07

Survey M-050207-21, U2 - Upper "B" S/G, 5/2/07

Survey M-042907-12, U2 Lower Pressurizer Pre-shielding, 4/29/07

Survey M-050407-33, U2 Lower Pressurizer Post-shielding, 5/4/07

Survey M-051607-7, U2 Refueling Canal, 5/16/07

Air Sample 070516052, U2 Canal Plenum Movement, 5/16/07

Air Sample 070503011, U2 Refueling Floor After Reactor Head Lift, 5/3/07

Air Sample 070516095, U2 Letdown Storage Tank Filter Pit, 5/16/07

Temporary Shielding Request U2RB-22-07-RO, Lower Pressurizer, 1/18/07

Temporary Shielding Request U2RB-06-07-RO, Upper Pressurizer, 9/13/06

U2 Dose Rate Trend on A2 Reactor Coolant Pump Discharge, 4/28/07 - 5/2/07

U2 Chemistry Trend, Co-58 concentrations in reactor coolant during crudburst, 4/28/07 - 5/2/07

Declared Pregnant Worker Dosimetry Records, April 2005 - April 2007

2EOC22 Daily RWP Dose Data Sheets: 4/30/07 - 5/4/07 and 5/14/07 - 5/18/07

2EOC22 Personal Contamination Event Log, 4/30/07 - 5/15/07

Personal Contamination Event 07-02728, Internal Dose Evaluation

[CAP Documents]

ONS Internal Assessment 2007

PIP 05-07821, RWP 2155 (tension/detension Rx Head) exceeded its dose estimate by >25%, 11/18/05

PIP 06-01682, Need to evaluate the crudburst method used at ANO-1 for possible use at Oconee, 3/24/06

PIP 06-02659, Inadequate planning for removal/disposal of debris vacuumed from top of fuel assemblies, 5/5/06

PIP 06-06133, U3 outage ALARA packages not completed in a timely matter, 9/25/06

PIP 06-06631, Outage critical path delay due to flushing of instrument lines to reduce dose rates, 10/13/06

PIP 06-07463, Workers retrieved a piece of foreign material from refueling canal without following the approved plan, 11/3/06
 PIP 07-00324, Summary of U1 Alloy 600 weld overlay exposure and actions, 1/17/07
 PIP 07-00418, Elevated levels of Xe-133 seen in U3 RCS could indicate increased source term, 1/22/07
 PIP 07-01594, Elevated levels of Np-239 seen in U3 RCS, 3/22/07

Section 2PS2: Radioactive Material Processing and Transportation

[Procedures, Manuals, and Guidance Documents]

Shared Standard Procedure (SH)/0/B/2004/002, Preparation and Shipment of Radioactive Waste, Revision (Rev.) 006.
 Chemistry Procedure (CP)/0/B/5400/001, Radwaste dewatering & Operating Guidelines . Rev. 27
 Radioactive Waste Process Control Program, Corporate Process Control Program (PCP), Rev. 14
 Radioactive Waste Process Control Program, Appendix A, Oconee Nuclear Station, PCP, Rev. 12
 Chemistry Procedure (CP)/0/B/5200/048, Resin recovery system operation, Rev. 087
 CP/0/B/5200/073, Resin batch tank sluice procedure, Rev. 010
 CP/0/B/5200/054A, LW Demineralizers sluice and reload and BFST transfer, Rev. 040
 LM/O/G004, Determination of gamma isotopic activity, Rev. 10
 Oconee Nuclear Station 10 CFR Part 61 Waste Classification and Waste Form Implementation Program Manual, 09/26/2005
 Health Physics Procedure (HP)/0/B/1000/054, Radiation Protection Routines, Rev. 040

[Records and Data]

ONS 10 CFR 61 Filter Waste Stream Independent Review Final Report 07-063-RE-078, prepared by WMG June, 2007
 Drawing No OFD-117B-1.1, Flow Diagram of Radwaste Facility Liquid Waste and Recycle System (Waste and Recycle Tanks), Rev. 9
 Drawing No OFD-117B-1.2, Flow Diagram of Radwaste Facility Liquid Waste and Recycle System (LW Feed Pumps and Filters), Rev. 12
 Drawing No OFD-117B-1.4, Flow Diagram of Radwaste Facility Liquid Waste and Recycle System (LW Demineralizers), Rev. 10
 Drawing No OFD-117B-1.10, Flow Diagram of Radwaste Facility Liquid Waste and Recycle System (LW Demineralizers "C" thru "H"), Rev. 5
 Drawing No OFD-107M-1.1, Flow Diagram of Liquid Waste Disposal System, (Laundry and Hot Showers Pumps and Tanks), Rev. 4
 Drawing No OFD-117A-1.2, Flow Diagram of Powdered Resin Recovery System (Contaminated Backwash Receiving Tank), Rev. 17
 Drawing No OFD-117C-1.2, Flow Diagram of Solidification System Concentrated Waste Collection Subsystem (Resin Collection Portion), Rev. 15
 Radioactive Shipment Record (RSR) ONS 05-2006, Radioactive Material Type A Package, 7, UN2915, Fissile Excepted, 1B RCP, 01/24/05
 RSR ONS No. 05-2014, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321, RQ - Radionuclides, Dewatered Filter Media, 03/25/05
 RSR ONS No. 05-2113, Radioactive Material, Type A Package, 7, UN2915, Contaminated Equipment, 11/29/05
 RSR No. ONS 06-2005, Radioactive Material, Type B(U) package, 7, UN2916, Fissile Excepted, RQ- Radionuclides Dewatered Filter Media, 02/24/06

RSR No. ONS 06-2033, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321 Fissile Excepted, Dewatered Ion Exchange Resin, 07/19/06

RSR No. ONS 06-2029, Radioactive Material, Type A package, 7, UN2915, Fissile Excepted, Shutdown Samples, 05/31/06

RSR No. ONS 06-2038, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321, Contaminated DAW, 09/22/06

RSR No. ONS 06-2057, Radioactive Material, Type A Package, 7, UN2915, Contaminated Equipment, 11/10/06

RSR No. ONS 07-2006, Radioactive Material, Type A Package, 7, UN2915, Fissile Excepted, Multiple Samples, 01/18/07

RSR No. ONS 07-2009, Radioactive Material, Surface Contaminated Object(SCO-II), 7, UN2913, Contaminated Equipment, 02/22/07

RSR No. ONS 07-2011, Radioactive Material, Low Specific Activity (LSA-II), 7, UN3321, Fissile Excepted, RQ-Radionuclides, Dewatered ion exchange resin, 03/27/2007

RSR No. ONS 07-2016, Radioactive Material, Type A Package, 7, UN2915, Fissile Excepted 1B1 RCP, 05/03/2007

Memorandum to File, File Number (No.): OS 780.20, Annual 10 CFR 61 Data Evaluation, 10/25/06

10 CFR Part 61 Sample Analysis Results including data base comparison update reports for data base sample values, percent abundance, and scaling factors for the following waste stream types: Dry Active Waste (DAW), 11/10/2004; Filter Media, 11/10/2004, 12/28/2005; Primary Resins, 11/10/2004, 12/28/2005; Demin Resins, 11/10/2004, 12/28/2005

[CAP Documents]

Nuclear Performance Assessment GO-06-01(NPA)(RP)(ALL), Radiation Protection Functional Area Evaluation, 04/28/2006

Problem Investigation Process (PIP) Number (No.) 0-06-00833, Survey of High Integrity Container (HIC) Prior to shipping the dose rates at 3 meters were greater than required for the shipping cask that was scheduled, 02/14/06

PIP No. O-06-01216, Duratek provided revisions to cask manuals and Barnwell site information, 03/03/06

PIP No. O-06-01432, After running the Radman shipping program to characterize a liner of primary bead resin, it was discovered that the calculated dose rate at 3 meters from the liner was > 1000 mrem/hr, 03/13/06

PIP No. O-06-02401, Radioactive package not marked properly and number of packages shipped not matching Bill of Lading, 04/28/06

PIP No. O-06-05758, Required air leak test 8-120B failed, 09/08/06

PIP No. O-06-07560, Recent events indicated that workers have not received DOT Hazmat training (49CFR172.700-49CFR172.704) and some trained DOT Hazmat workers may not have received the required training within the specified 3 year period, 11/07/06

PIP No. O-06-08892, When resin liner from radioactive waste shipment RSR# ONS06-2047 was unloaded at the Barnwell Waste Management Facility, the liner ID number, as provided by the Radwaste Chemistry, did not match the liner ID number on the paperwork sent with the shipment, 12/20/06

PIP No. O-07-01476, A bag with unexpected markings was found in an asbestos sea/land that was shipped to vendor for processing 03/19/07

PIP No. O-07-02811, PIP initiated to evaluate and track to completion corrective actions to address a failure to conduct adequate review of data to ensure waste shipments are Characterized in Accordance with 10 CFR 61.55, 5/17/07

Section 4OA1: Performance Indicator Verification**Radiation Safety**

Unusual Dosimetry Occurrence No. Issue Logs for Calendar Year (CY) 2005 and January 1, through November 4, 2006

SH/O/B/2001/002, Investigation of Unusual Dosimetry Occurrence or Possible Overexposure, Rev. 005

Standard Radiation Protection Management Procedures (SRPMP) 2-1, ED Alarms, Rev. 000
SRPMP 10-1, NRC Performance Indicator Data Collection, Validation, Review and Approval, Rev. 001

Section 4OA2: Identification and Resolution of Problems

NSD 223, Trending Program, Appendix A Group Trend Reports:

Maintenance, 1st Quarter, 2007

Radiological Protection, 1st Qtr, 2007

Operations, 1st Qtr, 2007

Mechanical and Civil Engineering, 1st Qtr, 2007

Reactor and Electrical Engineering, 1st Qtr, 2007

Engineering, 1st Qtr, 2007

PIP O-07-0940 and O-07-0941, Unit 1 and 2 trip due to Jocassee Switchyard Fault

PIP O-07-2724, Unit 2, Main Feeder Bus Lockout Relay Test

Section 4OA5.4: ISFSI Radiological Controls

[Procedures, Guidance Documents]

HP/O/B/1000/097, Radiological Protection Requirements For Independent Spent Fuel Storage Installation Phases III, IV, and V (DSCs 41-99), Rev. 007

Maintenance Procedure (MP)/O/A/1500/023, Independent Spent Fuel Storage Installation Phase V DSC Loading And Storage, Rev. 006

[Records and Data Reviewed]

Survey No. M-021007-7, Independent Spent Fuel Storage Installation, 2/10/07

Survey No. M-030807-15, Independent Spent Fuel Storage Installation, 3/08/07

Printout of ISFSI Perimeter TLD trending information for CY2006 (untitled and undated)

LIST OF ACRONYMS

AB	-	Auxiliary Building
ADAMS	-	Agency Wide Documents Access and Management System
ALARA	-	As Low As is Reasonably Achievable
ANSI	-	American National Standards Institute
ASME	-	American Society of Mechanical Engineers
ASW	-	Auxiliary Service Water
BACC	-	Boric Acid Corrosion Control
BTP	-	Branch Technical Position
C-14	-	Carbon-14
CAP	-	Corrective Action Program
CEDE	-	Committed Effective Dose Equivalent
CFR	-	Code of Federal Regulations

CTP	-	Chemical Treatment Pond
CY	-	Calendar Year
DAW	-	Dry Active Waste
DEC	-	Duke Energy Corporation
DOT	-	Department of Transportation
DPC	-	Duke Power Company
DSC	-	Dry Storage Certification
ECT	-	Eddy Current
ED	-	Electronic Dosimeter
EFW	-	Emergency Feedwater
EOC	-	End-Of-Cycle
ES	-	Engineered Safeguards
EWST	-	Elevated Water Storage Tank
HP	-	Health Physics
HPSW	-	High Pressure Service Water
HPT	-	Health Physics Technician
HRA	-	High Radiation Area
IP	-	Inspection Procedure
IR	-	Inspection Report
ISFSI	-	Independent Spent Fuel Storage Installation
ISI	-	Inservice Inspection
IST	-	Inservice Testing
JPM	-	Job Performance Measure
KHU	-	Keowee Hydro Unit
LER	-	Licensee Event Report
LHRA	-	Locked High Radiation Area
LPI	-	Low Pressure Injection
LPSW	-	Low Pressure Service Water
mrem	-	millirem
MP	-	Maintenance Procedure
NCV	-	Non-Cited Violation
NDE	-	Non-Destructive Examination
NEI	-	Nuclear Energy Institute
no.	-	Number
NRC	-	Nuclear Regulatory Commission
NSD	-	Nuclear System Directive
OA	-	Other Activities
ODCM	-	Offsite Dose Calculation Manual
OOS	-	Out-of-Service
ORAM	-	Operational Risk Assessment Monitor
OS	-	Occupational Radiation Safety
PARS	-	Publicly Available Records
PCE	-	Personnel Contamination Event
PCP	-	Process Control Program
PI	-	Performance Indicator
PIP	-	Problem Investigation Process report
PM	-	Preventive Maintenance
PMT	-	Post-Maintenance Testing
PS	-	Public Radiation Safety
PT	-	Liquid Penetrant
QA	-	Quality Assurance

Radwaste	-	Radioactive Waste
Radworker	-	Radiation Worker
RB	-	Reactor Building
RCA	-	Radiologically Controlled Area
Rev.	-	Revision
RG	-	Regulatory Guide
RSR	-	Radioactive Shipment Record
RT	-	Radiograph
RTP	-	Rated Thermal Power
RWP	-	Radiation Work Permit
SBLOCA	-	Small Break Loss of Coolant Accident
SDP	-	Significance Determination Process
SFP	-	Spent Fuel Pool
S/G ECT	-	Steam Generator Eddy Current Testing
SH	-	Shared Health Physics Procedure
SLC	-	Selected Licensee Commitments
SRO	-	Senior Reactor Operator
SSC	-	Systems, Structures and Components
SSF	-	Standby Shutdown Facility
TDEFW	-	Turbine Driven Emergency Feedwater
TS	-	Technical Specification
U1	-	Unit 1
U2	-	Unit 2
U3	-	Unit 3
UFSAR	-	Updated Final Safety analysis Report
URI	-	Unresolved Item
UT	-	Ultrasonic
VHRA	-	Very High Radiation Area
VT	-	Visual
VUHP	-	Vessel Upper Head Penetration