



UNITED STATES
NUCLEAR REGULATORY COMMISSION

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

January 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
05000269/2006005, 05000270/2006005, 05000287/2006005

Dear Mr. Hamilton:

On December 31, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station. The enclosed report documents the inspection findings which were discussed on January 9, 2007, with Mr. Larry Nicholson, Safety Assurance Manager, 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, no findings of significance were identified. However, two licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. NRC is treating these violations as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy because of their very low safety significance and because they are entered into your corrective action program. 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, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of

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2

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

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

Enclosure: NRC Integrated Inspection Report 05000269/2006005,05000270/2006005,
05000287/2006005 w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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3

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Distribution w/encl (See page 4)

DEC

4

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

SUBJECT: OCONEE NUCLEAR STATION - INTEGRATED INSPECTION REPORT
05000269/2006005, 05000270/2006005, 05000287/2006005

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

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

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

Report No: 05000269/2006005, 05000270/2006005, 05000287/2006005

Licensee: Duke Power Company

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

Location: 7800 Rochester Highway
Seneca, SC 29672

Dates: October 1 - December 31, 2006

Inspectors: J. Díaz Vélez, Health Physicist (Sections 40A1.2, 2OS1)
A. Hutto, Resident Inspector
R. Lewis, Reactor Inspector (Section 40A5.3)
W. Loo, Senior Health Physicist (Section 2OS3)
E. Michel, Reactor Inspector (Section 1R08)
R. Moore, Senior Reactor Inspector (Section 40A5.3)
D. Rich, Senior Resident Inspector
E. Riggs, Resident Inspector

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

Enclosure

SUMMARY OF FINDINGS

IR 05000269/2006005, 05000270/2006005, 05000287/2006005, 10/01/2006 - 12/31/2006; Oconee Nuclear Station, Units 1, 2, and 3; Quarterly Integrated Inspection Report.

The report covered a three-month period of inspection by the onsite resident inspectors and announced regional-based inspections conducted by three reactor inspectors and two health physicists. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status:

Unit 1 began the report period at 91 percent rated thermal power (RTP), in the midst of a unit coast down in advance of the end-of-cycle (EOC) 23 refueling outage (RFO). The unit was shutdown from approximately 85 percent RTP on October 7, 2006, and commenced the 1EOC23 RFO. The outage ended when the unit was brought on-line on December 15, 2006. A turbine trip the same day from approximately 18 percent reactor power caused a brief forced outage, during which the reactor was maintained in Mode 1 at approximately 18 percent reactor power. The unit was again brought on-line on December 17, 2006, and achieved 100 percent RTP on December 19, 2006. The unit operated at or near 100 percent RTP for the remainder of the inspection period.

Unit 2 began the report period at approximately 100 percent RTP, and operated at or near 100 percent RTP for the remainder of the inspection period.

Unit 3 began the report period at approximately 100 percent RTP. The unit was reduced to approximately 88 percent RTP on November 11, 2006, to perform turbine valve movement testing. The unit was returned to 100 percent RTP on the same day, and operated at or near 100 percent RTP for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

.1 Cold Weather Preparations

a. Inspection Scope

The inspectors reviewed the licensee's preparations for the onset of seasonal cold weather. Specifically, the inspectors reviewed completed Operation's Cold Weather Checklist contained in operating procedures OP/1,2,3/A/1102/020 for outside temperature conditions expected to be below 35 degrees F. The inspectors reviewed IP/0/B/1606/009, Preventive Maintenance and Operational Check of Freeze Protection, as implemented by work order (WO) 01674758, to verify the applicable circuits met acceptance criteria. The inspectors reviewed the previous year's Freeze Protection Program Health Reports, as well as the requirements of Nuclear Station Directive (NSD) 317, Freeze Protection Program. The inspectors verified that the freeze protection circuit checks were performed before any significant cold weather impacted the plant.

b. Findings

No findings of significance were identified.

Enclosure

.2 Heavy Rain Event

a. Inspection Scope

On November 15, 2006, during heavy rains associated with a severe thunderstorm, the inspectors toured the turbine building to verify that external flood barriers were intact, and that additional preparations for the forecasted weather conditions had been undertaken. During the storm, the inspectors verified cable trenches were being pumped as necessary and building cable and piping penetrations were not leaking excessively. The inspectors also verified that the licensee identified problems and entered them into the corrective action program at the appropriate level.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

Partial Walkdown

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 (OOS). 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. The following three systems were included in this review:

- CT-4 and the associated SK Breakers while CT-5 was OOS for Lee Combustion Turbine testing.
- Unit 1 decay heat drop line and the low pressure injection pumps while the steam generators were not available for decay heat removal.
- Keowee Unit 1 while Keowee Unit 2 was unavailable during governor calibrations.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Fire Area Walkdowns

a. Inspection Scope

The inspectors conducted tours in ten areas of the plant to verify that 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. Inspections of the following areas were conducted during this inspection period:

- Unit 1, 2, and 3 Cable Spreading Rooms (3)
- Unit 1 Control Room (1)
- Turbine Building Basement (1)
- Radwaste Facility (1)
- Unit 1, 2, and 3 Equipment Rooms (3)
- Essential Siphon Vacuum Facility (1)

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

Internal Flooding (Turbine Building)

a. Inspection Scope

The inspectors reviewed the licensee's turbine building flood control measures while performing Unit 1 condenser maintenance during its refueling outage commencing in October 2006. The inspectors determined that the licensee complied with the applicable Unit 1 waterbox and condenser circulating water (CCW) inlet and outlet de-watering and watering operating procedures (OP/1/A/1104/012 E and G). The inspectors also walked down the appropriate CCW valve isolations to verify that they were established per Selected Licensee Commitment 16.9.11.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities

.1 Piping Systems ISI

a. Inspection Scope

On October 16-26, 2006, the inspectors reviewed the implementation of the licensee's ISI program for monitoring degradation of the reactor coolant system (RCS) boundary and the risk significant piping system boundaries in Unit 1. The inspector selected a sample of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI required examinations for review.

The inspector's activities consisted of an on-site review of non-destructive examination (NDE) and welding activities to evaluate compliance with the applicable edition of the ASME Code, Sections V, IX, and XI (Code of Record for the 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, IWB-3000 or IWC-3000 acceptance standards.

Specifically, the inspectors directly observed the NDE activities described below and reviewed their corresponding procedures, NDE reports, equipment and consumables certification records, and personnel qualification records.

- Ultrasonic (UT) examination of weld 1-PIA1-3 (33.5 inch pipe, Reactor Coolant System, ASME Class 1)
- Liquid Penetrant (LPT) examination of weld 1-PIA1-10 (12.0 inch pipe, Reactor Coolant System, ASME Class 1)
- Magnetic Particle (MT) examination of weld 1-PIA1-5 (33.5 inch pipe, Reactor Coolant System, ASME Class 1)

The inspectors also reviewed procedures, NDE reports, equipment and consumables certification records, and personnel qualification records for the NDE activities described below:

- UT examination of weld 1-PIA1-5 (33.5 inch pipe, Reactor Coolant System, ASME Class 1)

The inspectors reviewed one VT-1 reportable indication from the previous outage to verify that the evaluation and disposition of indications were in accordance with the applicable edition of the ASME Section XI, IWB-3000; and that additional exams were performed in accordance with IWB-2000. Specifically, the inspector reviewed the disposition of indications of:

- 1-PZR-RC67-STUDS (Pressurizer relief valve bolting, ASME Class 1)

The inspectors reviewed a sample of welding activities being performed during the outage for ASME Class 1 piping to evaluate compliance with the ASME Code and applicable NRC requirements. Specifically, the inspectors reviewed the weld logs, welding procedure specification, procedure qualification records, welder qualification records, and NDE reports for the following weld:

- Weld 1-PSP-1 (Pressurizer Spray Line weld overlay, ASME Class 1-Final NDE: UT examination)

In addition to the review of NDE required by the ASME Code, the inspector reviewed the licensee's progress toward meeting commitments to address the High Energy Line Break project (letter submitted to the NRC dated November 21, 2005, ADAMS Accession No. ML53340283). Specifically, the inspector reviewed the schedule, listing of completed exams, NDE reports, equipment certification records, and personnel qualification records for the NDE activities described below:

- UT examination of weld 1-03-3X4 (24-inch pipe to pipe, Feedwater System)
- UT examination of weld 1-FWD64-C (24 inch-pipe to elbow, Feedwater System)

As a follow-up inspection activity related to the non-cited violation (NCV) documented in Inspection Report 05000269/2006003 for the failure to perform adequate examinations of letdown filter supports, the inspector reviewed the licensee's progress toward completing missed exams revealed during the root cause analysis. The inspector also reviewed the following NDE report to verify compliance with the examination requirements of the ASME Code, Section XI, Subsection IWF:

- Visual (VT-3) of 1-UST-DOME (Upper Surge Tank Dome Support Legs, ASME Class 3)

b. Findings

No findings of significance were identified.

.2 Boric Acid Corrosion Control (BACC) Program

a. Inspection Scope

On October 16-26, 2006, the inspector 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 in the Unit 1 Fall 2006 outage [Problem Investigation Process report (PIP) O-06-06417]. The inspector also conducted an independent walk-down of the reactor building to evaluate compliance with the 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 corrective action program.

Enclosure

The inspectors reviewed a sample of engineering evaluations completed for evidence of boric acid found on reactor coolant system piping and components to verify that the minimum design code required section thickness had been maintained for the affected components, and the licensee was following industry accepted BACC program practices. Specifically, the inspectors reviewed the following evaluations:

- PIP O-06-05189, Evaluation performed on valve 1-LWD-11 leaking valve packing
- PIP O-06-06537, Evaluation performed on valve 1-HP-58 leaking valve packing
- PIP O-06-00968, Evaluation performed on weld leak upstream of 1-LP-167

b. Findings

No findings of significance were identified.

.3 Steam Generator (SG) Tube Inspection Activities

a. Inspection Scope

On October 16-26, 2006, the inspectors reviewed activities, plans, pre-outage degradation assessment, condition monitoring and operating assessment, and procedures for the inspection and evaluation of the steam generator Inconel Alloy 690TT tubing for Unit 1, A and B SGs to determine if the activities were being conducted in accordance with Technical Specifications (TS) and applicable industry standards. Data acquisition, analysis, and resolution activities were observed. The inspectors reviewed the site technique validation to verify equivalency with qualified procedures. The inspectors reviewed information to determine that the licensee recorded the expected tube wear degradation and was conducting appropriate evaluations. The inspectors also reviewed data acquisition operators', analysts', and resolution analysts' certifications and qualifications, and the onsite vendor's written practice. The inspectors reviewed equipment certifications, including X-probe certificates of compliance and Remote Data Acquisition Unit (RDAU) calibration. The previous outage operational assessment predictions were compared with results obtained in the current outage.

b. Findings

No findings of significance were identified.

.4 Identification and Resolution of Problems

The inspectors performed a review of ISI-related problems, including welding, BACC program, and SG ISI that were identified by the licensee and entered into the corrective action program as 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 10CFR Part 50, Appendix B, Criterion

XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspectors are listed in the Attachment.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed licensed operator simulator training on November 16, 2006. The scenario involved training on multiple operating procedures (OPs) which exercised the operators' proficiency in the use of newly installed instruments and controls associated with the Unit 1 "strings" (control room instrumentation and controls) modification and the digital control rod drive system. 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.

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 structures, systems, 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 (a)(1) and (a)(2) classifications were justified in light of the reviewed degraded equipment condition. The inspectors reviewed the following items:

- PIP O-06-1265, Level One Breaker Refurbishment Assessment
- Complex Evolution Plan - Rigging of Bigge Access Platform/Coatings Abatement and Recoating, Unit 1 EOC23. During the Unit 1 refueling outage, the licensee removed approximately 7000 ft² of degraded, service level one coatings from the overhead area of the reactor building (RB).

b. Findings

No findings of significance were identified.

Enclosure

1R13 Maintenance Risk Assessment and Emergent Work Evaluations

a. Inspection Scope

The inspectors evaluated the following attributes for the six 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.

- PIP O-06-6991, Conflicts of taking station auxiliary service water (ASW) pump OOS during outage
- PIP O-06-7382, Interaction between outage and on-line risk assessments
- PIP O-06-7385, 1EOC23 Independent review team assessment
- PIP O-06-7538, CT-5 left OOS following maintenance on 1DIB panel board
- Keowee Hydroelectric Unit (KHU) 1 battery test/recharge complex/critical action plan
- PIP O-06-8303, Unplanned orange operational risk assessment monitor due to Unit 2 turbine driven emergency feedwater pump tagged out while Jocassee black line tagged out

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 conditions for operations. The inspectors reviewed the following six operability evaluations:

- PIP O-06-7026, Boric acid corrosion evaluation for the Unit 1 pressurizer surge line
- PIP O-06-7601, Discrepancy between indicating range of RIA-58 and its associated chart recorder
- PIP O-06-7596, Unexpected KHU high pressure lube oil pump operation
- PIP O-06-8073, Low differential pressure on the 3B motor driven emergency feedwater (MDEFW) pump
- PIP O-06-8207, Trisodium phosphate volume out-of-spec low
- PIP O-06-8305, Problems with the standby shutdown facility (SSF) watertight door latch mechanism

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (PMT)a. Inspection Scope

The inspectors reviewed PMT procedures and witnessed or reviewed test data 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. The inspectors observed testing and/or reviewed the results of the following seven tests:

- MP/0/A/2005/001, KHU Generator Inspection and Maintenance Electrical Tests, following rotor repairs
- TT/0/A/0610/036, Lee Combustion Turbines Testing, following installation of new combustion turbine generators
- PT/1/A/0150/004, Unit 1 RB Equipment Hatch leak rate test (LRT), following 1EOC-23
- PT/0/A/0400/005, Standby Shutdown Facility ASW Pump Test, following packing adjustments
- PT/1/A/0151/020, Penetration 20 LRT, following PR-1 and 2 PMs
- PT/1/A/0600/014, Emergency Feedwater Pump Suction from Hotwell Test, following upper surge tank modifications
- PT/0/A/0711/001, Zero Power Physics Test, following Unit 1 refueling (1EOC-23)

b. Findings

No findings of significance were identified.

1R20 Refueling & Outage Activities.1 KHU 2 Forced Outagea. 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 October 1, 2006,

Enclosure

and October 19, 2006, the following activities related to the KHU-2 electrical generator forced outage were reviewed for conformance to applicable procedures and selected activities associated with each evaluation were witnessed:

- Licensee Outage Risk Management Plan/Assessment
- Licensee Control of Outage Activities
- Clearance Activities
- Unit 1, 2 and 3 Emergency Electrical Power Availability
- Identification and Resolution of Problems
- Outage Configuration Management
- Emergent Work

b. Findings

No findings of significance were identified.

.2 Oconee Unit 1 EOC-23 Refueling Outage

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 October 7, 2006, and December 15, 2006, the following activities related to the Unit 1 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
- Refueling activities
- Plant heatup/mode changes
- Core physics testing
- Power Escalation

b. Findings

No findings of significance were identified.

1R22 Surveillance Testinga. Inspection Scope

The inspectors reviewed surveillance test procedures and witnessed or reviewed test data for the following six surveillance tests 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/0600/013, 2A Motor Driven Emergency Feedwater (MDEFW) Pump Test (IST)
- PT/2/A/0600/010, Reactor Coolant System Leakage
- CP/1/A/2002/001, Encl 4.2, Unit 1 Primary Sampling System, sampled Unit 1 RCS during RFO with Low Pressure Injection (LPI) system in operation for decay heat removal
- CP/2/A/2002/001, Enclosure 4.20, Unit 2 Primary Sampling System, sampled Unit 2 RCS with Continuous Flow through Letdown Storage Tank (LDST)
- CP/3/A/2002/001, Enclosure 4.23, Unit 3 Primary Sampling System, sampled Unit 3 RCS with Continuous Flow through LDST
- PT/1/A/0151/019, Penetration 19 Leak Rate Test

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modificationsa. Inspection Scope

The inspectors reviewed documents and observed portions of the installation of one temporary modification (Temporary Station Modification OD101395, Loose Parts Monitor Temp Recorder Installation). Among the documents reviewed were system design bases, the UFSAR, TS, system operability/availability evaluations, and the 10 CFR 50.59 screening. The inspectors observed, as appropriate, that the installation was consistent with the modification documents, was in accordance with the configuration control process, adequate procedures and changes were made, and post installation testing was adequate.

b. Findings

No findings of significance were identified

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

Simulator Based Evolution

a. Inspection Scope

The inspectors observed and evaluated a simulator based training evolution held on December 7, 2006. The training scenario involved a steam generator tube rupture. This required the operators to identify that the event caused the plant to be in an "Alert" condition. The operators successfully determined the proper classification of the event and simulated making the appropriate notifications of the counties, state, and NRC within the required time. The inspectors attended the post training evolution critique to verify that any problems or weaknesses encountered during the training were identified.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstones: Occupational and Public Radiation Safety

2OS1 Access Control To Radiologically Significant Areas

a. Inspection Scope

Access Control - Licensee program activities for monitoring workers and controlling access to radiologically significant areas and tasks were inspected. The inspectors evaluated procedural guidance; directly observed implementation of administrative and established physical controls; assessed worker exposures to radiation and radioactive material; and appraised radiation worker and technician knowledge of, and proficiency in, the implementation of Radiation Protection (RP) program activities.

During the inspection, radiological controls for ongoing refueling activities for Unit 1 were observed and discussed. Reviewed tasks included steam generator (SG) nozzle dam preparation, installation and testing, "B" SG nozzle dam installation [including posting and controls for extra (locked) high radiation areas (EHRA)], "A" SG lower bowl surveys (including control of the EHRA). In addition, licensee controls for selected tasks scheduled and ongoing during the refueling outage were assessed. The evaluations included, as applicable, Radiation Work Permit (RWP) details; use and placement of dosimetry and air sampling equipment; electronic dosimeter set-points; and monitoring and assessment of worker dose from direct radiation and airborne radioactivity source terms. Effectiveness of established controls was assessed against area radiation and contamination survey results and occupational doses received. Physical and administrative controls and their implementation for EHRAs and very high radiation

areas were evaluated through discussions with cognizant licensee representatives, direct field observations, and record reviews.

Occupational workers' adherence to selected RWPs and Health Physics Technician proficiency in providing job coverage were evaluated through direct observations of staff performance during job coverage and routine surveillance activities, review of selected exposure records, and interviews with cognizant licensee staff. Radiological postings and physical controls for access to designated high radiation area and EHRA locations within the U1 Reactor Building, Units 1, 2, and 3 Auxiliary Building (AB), and Spent Fuel Pool Floor areas were evaluated during facility tours. In addition, the inspectors independently measured radiation dose rates and evaluated established posting and access controls for selected Units 1, 2, and 3 AB locations. Occupational doses associated with direct radiation exposure and potential radioactive material intakes were reviewed and discussed with cognizant licensee representatives.

RP program activities were evaluated against 10 CFR 19.12; 10 CFR 20, Subparts B, C, F, G, H, and J; Updated Final Safety Analysis Report (UFSAR) details in Section 12, Radiation Protection; and approved licensee procedures. Licensee procedures, guidance documents, records, and data reviewed within this inspection area are listed in section 2OS1 of the Attachment to this report.

Problem Identification and Resolution - Licensee Corrective Action Program 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 NSD 208, Problem Investigation Process, Revision 27. Licensee self-assessments and PIPs related to access control that were reviewed and evaluated in detail during inspection of this program area are identified in section 2OS1 of the Attachment to this report.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

a. Inspection Scope

Area Radiation Monitoring and Post-Accident Sampling Systems - The operability, availability, and reliability of selected direct area radiation monitor (ARM) and continuous air monitor equipment used for routine and accident monitoring activities were reviewed and evaluated. The inspectors directly observed ARM equipment material condition, installed configurations (where accessible), and conduct and/or results of performance checks for selected monitors. Procedurally established alarm set-points were corroborated and performance check details were reviewed for selected ARM equipment through discussions and direct observation of Control Room instrumentation panel operations, settings, and monitor response readouts. Current calibration data for selected radiation monitoring equipment listed in section 2OS3 of the Attachment to this report were reviewed and discussed with the responsible staff.

Enclosure

The inspectors evaluated Post Accident Sampling System (PASS) program activities. The evaluation included review of current program guidance, observation of material condition of PASS equipment/instrumentation, and review of surveillance results. Program guidance, performance activities, and equipment material condition for the direct radiation detection instrumentation and continuous air sampling equipment were reviewed against details documented in TS 5.4.1, 10 CFR Parts 20 and 50, UFSAR Section 11, and associated procedures. Radiation detection and sampling equipment required for use in accident monitoring also was reviewed against applicable sections of NUREG 0737, Clarification of TMI Action Plan Requirements, and Regulatory Guide (RG) 1.97, Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident, Rev. 3. Licensee guidance documents, records, and data reviewed within this inspection area are listed in section 2OS3 of the Attachment to this report.

Personnel Survey Instrumentation - Current program guidance, including calibration and operation procedures, and its implementation to maintain operability and accuracy of selected portable survey instruments was reviewed and evaluated. The inspectors reviewed current calibration data for selected personnel survey instruments and assessed operability of various portable survey instruments staged or in use by the Health Physics staff. The inspectors observed the daily source checks for a Telepole survey meter and RM-14 friskers and compared the results to specified tolerances. Responsible staff's knowledge and proficiency regarding portable survey instrumentation calibration activities were evaluated through interviews and record reviews. The accuracy and operability determinations for instrumentation used to perform surveys in high radiation or greater areas were assessed.

Operability and analysis capabilities of the whole body counting (WBC) equipment for monitoring internally deposited radionuclides and Personnel Contamination Monitor (PCM) equipment utilized for surveys of individuals exiting the radiologically controlled area were evaluated. For both WBC and PCM equipment, the inspectors examined current calibration and selected performance check data, and directly observed PCM weekly source checks. The sensitivity of PCM equipment and alarm set points were evaluated. The WBC library data and calibrations were reviewed by the inspectors and discussed with cognizant licensee personnel.

Licensee activities associated personnel radiation monitoring instrumentation were reviewed against TS 5.4.1, UFSAR, 10 CFR 20.1204 and 20.1501, and applicable licensee procedures listed in section 2OS3 of the Attachment to this report.

Respiratory Protection - Self-Contained Breathing Apparatus (SCBA) - The licensee's respiratory protection program guidance and its implementation for SCBA equipment use was evaluated. The number of staged SCBA units and their general material and operating condition were observed during tours of the U1 and Unit 2 Control Room common area, the Unit 3 Control Room area, 300 foot elevation of the AB, and Turbine Building. The inspectors reviewed and evaluated current records associated with supplied air quality and maintenance of staged SCBA equipment. Proficiency and knowledge of staff responsible for maintaining SCBA equipment were evaluated through discussions and demonstration of a SCBA monthly functional test. The inspectors

Enclosure

reviewed records and evaluated status of medical qualification determinations, fit test results, and training status for SCBA qualified individuals. In addition, staff members were interviewed to determine their level of knowledge of available SCBA equipment locations, proper use, and availability of prescription lens inserts, if required. Training for performing an SCBA bottle change-out was discussed with SCBA qualified individuals. The licensee's capability for refilling and transporting air bottles to and from the control room during emergency situations was discussed with cognizant licensee personnel.

Licensee activities associated with maintenance and use of SCBA equipment were reviewed against TS 5.4.1, 10 CFR Part 20.1703; UFSAR section 12; RG 8.15, Acceptable Programs for Respiratory Protection, Rev. 1; American National Standards Institute - Z88.2-1992, American National Standard Practices for Respiratory Protection; and applicable procedures as listed in section 2OS3 of the Attachment to this report.

Problem Identification and Resolution - The inspectors reviewed an internal assessment of radiation protection activities, focusing on findings related to radiation monitoring instrumentation. Selected licensee PIPs associated with area radiation monitoring equipment, portable radiation detection instrumentation, and respiratory protective program 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. Specific corrective action program documents reviewed and evaluated are listed in section 2OS3 of the Attachment to this report. Reviews of internal exposures exceeding 50 mrem were evaluated and discussed with cognizant licensee personnel.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Initiating Events, Mitigating Systems, and Barrier Integrity Cornerstones

a. Inspection Scope

The inspectors verified 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		
<i>Performance Indicator</i>	<i>Verification Period</i>	<i>Records Reviewed</i>
Unplanned Scrams	3 rd and 4 th quarters of 2004, 1 st , 2 nd , 3 rd and 4 th quarters of 2005, and 1 st , 2 nd , 3 rd of 2006	<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: Mitigating Systems		
<i>Performance Indicator</i>	<i>Verification Period</i>	<i>Records Reviewed</i>
Safety System Functional Failures	3 rd and 4 th quarters of 2004, 1 st , 2 nd , 3 rd and 4 th quarters of 2005, and 1 st , 2 nd , 3 rd of 2006	<ul style="list-style-type: none"> • LERs • monthly operating reports • TSAIL entries • operator logs • PIPs
Safety System Unavailability	4 th quarter of 2004, 1 st , 2 nd , 3 rd and 4 th quarters of 2005, and 1 st and 2 nd of 2006	

Cornerstone: Barrier Integrity		
<i>Performance Indicator</i>	<i>Verification Period</i>	<i>Records Reviewed</i>
Reactor Coolant System Specific Activity	3 rd and 4 th quarters of 2004, 1 st , 2 nd , 3 rd and 4 th quarters of 2005, and 1 st , 2 nd , 3 rd of 2006	• daily plant chemistry data
Reactor Coolant System Leakage		<ul style="list-style-type: none"> • daily status reports • operator logs • PIPs

b. Findings

No findings of significance were identified.

.2 Occupational Radiation Safety Cornerstone

a. Inspection Scope

The inspectors sampled licensee data submitted to the NRC for the PIs listed below for the period from October 1, 2005 through October 31, 2006. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, Revision 4, were used to verify the basis in reporting for each data element.

For the specified period, the inspectors assessed corrective action program (CAP) documents to determine whether high radiation area, very high radiation area, or unplanned exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred. For the specified period, the inspectors evaluated data reported to the NRC, and subsequently sampled and assessed applicable CAP documents and selected RP program records. The reviewed records included personnel exposure investigation reports. Reviewed documents relative to this PI 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

As required by Inspection Procedure (IP) 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, 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

As required by Inspection Procedure 71152, the inspectors performed a review of the licensee's 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 April 2006 through September 2006, 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

Enclosure

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.

b. Assessment and Observations

No findings of significance were identified. In general, the licensee has identified trends and has appropriately addressed the trends with their CAP.

.3 Focused Review

a. Inspection Scope

The inspectors performed an in-depth review of one issue entered into the licensee's corrective action program. The sample was within the mitigating systems cornerstone and involved risk significant systems. The inspectors reviewed the actions taken to determine if the licensee had adequately addressed the following attributes:

- Complete, accurate and timely identification of the problem
- Evaluation and disposition of operability and reportability issues
- Consideration of previous failures, extent of condition, generic or common cause implications
- Prioritization and resolution of the issue commensurate with safety significance
- Identification of the root cause and contributing causes of the problem
- Identification and implementation of corrective actions commensurate with the safety significance of the issue.

The following issues and corrective actions were reviewed:

- Effects of Ultra Low Sulfur Diesel Fuel (ULSDF) on the SSF diesel generator (PIP O-06-4401, Potential Part 21 for EMD diesel engines, and PIP O-06-7519, ULSDF static charge issues)

b. Findings

No findings of significance were identified.

4OA5 Other Activities

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

a. Inspection Scope

The inspectors reviewed the interim report for the INPO plant assessment of Oconee Nuclear Station conducted in August 2006. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee

performance and to verify if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

.2 (Closed) NRC Temporary Instruction (TI) 2515/169, Mitigating Systems Performance Index (MSPI) Verification

a. Inspection Scope

During this inspection period, the inspectors completed a review of the licensee's implementation of the MSPI guidance for reporting unavailability and unreliability of monitored safety systems in accordance with Temporary Instruction 2515/169.

The inspectors examined surveillances that the licensee determined would not render the train unavailable for greater than 15 minutes or during which the system could be promptly restored through operator action and therefore, are not included in unavailability calculations. As part of this review, the recovery actions were verified to be uncomplicated and contained in written procedures.

On a sample basis, the inspectors reviewed operating logs, work history information, maintenance rule information, corrective action program documents, and surveillance procedures to determine the actual time periods the MSPI systems were not available due to planned and unplanned activities. The results were then compared to the baseline planned unavailability and actual planned and unplanned unavailability determined by the licensee to ensure data accuracy and completeness. Likewise, these documents were reviewed to ensure MSPI component unreliability data determined by the licensee identified and properly characterized all failures of monitored components. The unavailability and unreliability data were then compared with performance indicator data submitted to the NRC to ensure it accurately reflected the performance history of these systems.

b. Findings and Observations

No findings of significance were identified.

The licensee accurately documented the baseline planned unavailability hours, the actual unavailability hours, and the actual unreliability information for the MSPI systems. No significant errors in the reported data were identified which resulted in a change to the indicated index color. No significant discrepancies were identified in the MSPI basis document which resulted in: (1) a change to the system boundary; (2) an addition of a monitored component; or (3) a change in the reported index color.

.3 (Open) TI 2515/166, Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02) - Units 1 & 2

a. Inspection Scope

The inspectors verified the Unit 1 & 2 implementation of the licensee's commitments documented in their September 1, 2005, response to Generic Letter 2004-02, Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors. The commitments included permanent modifications and program and procedure changes. Permanent modifications included installation of the sump screen assembly, relocation of the sump level instrumentation and removal of insulation from the B train Auxiliary Reactor Building Cooling Unit piping. Program and procedure changes were related to plant labeling, the modification process, coatings control and the technical specification surveillance for periodic screen inspection. This review included the sump screen assembly installation procedure, screen assembly modification 10 CFR 50.59 evaluation, missile evaluation, structural (debris) loading calculation, and the vortex analysis. The baseline analysis was reviewed to identify the minimum analyzed screen surface area for verification of the adequacy of the installed design. The initial downstream effects analysis was reviewed to verify that the related corrective actions were incorporated into the commitment action item list. The inspectors also reviewed the foreign materials exclusion controls and the completed Quality Assurance / Quality Control records for the screen assembly installation on Units 1 and 2.

The inspectors conducted a visual walkdown of the Unit 1 screen assembly to verify the installed screen assembly configuration was consistent with drawings and the tested configuration and to verify the design acceptance criteria for screen gap. The Unit 2 screen assembly walkdown was accomplished during the previous Unit 2 outage. Additionally, the inspectors field verified the removal of insulation from the B train Auxiliary Reactor Building Cooling Unit piping.

b. Findings and Observations

No findings of significance were identified.

Unit 1 & 2 permanent modifications completed at the time of this inspection, which included the sump screen assembly, the instrument relocation and the insulation removal, were implemented in accordance with Oconee's GL 2004-02 response. The installed screen size area exceeded the minimum value determined by the baseline analysis with considerable margin. The initial downstream effects study identified a number of corrective actions that were incorporated into the commitment action list. Program and procedure changes, which will apply to all three units were in process. The commitment action list was documented in PIP O-04-07314.

The TI will remain open pending completion of the following GL 2004-02 commitments:

1. Completion of corrective actions for downstream effects analysis.

Analysis of emergency core cooling system (ECCS) pump seal systems by vendors for cyclone separator replacement and back up bushing on building spray (BS) pumps.

Replace seal orifices on low pressure injection (LPI), BS and high pressure injection (HPI) pumps.

Replace wear rings and impeller hubs on HPI pumps

Vendor perform wear vs mission time analysis of LPI pump wear rings and impeller hubs.

Vender perform plugging and erosive wear evaluations on LPI restriction orifi.

Obtain plugging and wear evaluations/tests of HPI throttle valves

Determine impact of debris sedimentation on HPI check valves and relief valves
2. Industry to perform downstream analysis on debris effects on flow through fuel and reactor internals and identification of subsequent corrective actions if required.
3. Completion of additional chemical effects analysis and related head loss testing.
4. Licensee analysis to reconcile sump screen design with GL 2004-02 commitments – could be part of license amendment request to incorporate new mechanistic analysis replacing the current 50 percent assumption in the license.

Procedure and program change completion, as documented in PIP O-04-07314, are scheduled for December 31, 2007.

40A6 Management Meetings (Including Exit Meeting)

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Larry Nicholson, Safety Assurance Manager, and other members of licensee management at the conclusion of the inspection on January 9, 2007. The licensee acknowledged the findings presented. Although proprietary information was reviewed during the inspection, no proprietary information is included in this report.

Enclosure

4OA7 Licensee Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs:

- TS 5.4.1 requires that written procedures shall be established, implemented and maintained covering activities related to procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A, 1978. RG 1.33, Section 4(j) Containment, requires procedures for maintaining integrity. On November 17, 2006, Unit 1 was in mode 6 with core reload completed when maintenance personnel cut out 1SD-25 which is a 1 inch diameter steam trap inlet isolation and a containment isolation valve. Outside containment closure was in affect for the secondary side as the steam generators were open inside containment. The work proceeded without compensatory measures required by the licensee's Shutdown Risk Management plan that would ensure the opening could be closed prior to the core becoming uncovered, as required by NUMARC 91-06 and Generic Letter 88-17. Contrary to TS 5.4.1, this led to inadequate implementation of the licensee's containment closure procedures, as the status of the 1SD-25 penetration was not incorporated into OP/1/A/1502/009, Containment Closure Control, to ensure that the appropriate actions would be taken to restore containment closure in the event of a loss of decay heat removal. This issue was determined to be of very low safety significance based on the screening criteria found in MC 0609, Appendix H, Containment Integrity Significance Determination Process (SDP), approach for assessing Type B findings at shutdown. The issue was screened as having very low safety significance (Green) using Table 4.1 to determine that 1SD-25 would not contribute to large early release frequency (LERF) based on the size of the line. This issue was documented in the licensee's corrective action program as PIP O-06-7978.
- 10 CFR Part 50.55a(g)(4), "Codes and Standards," requires, in part, that components (including supports) which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements set forth in Section XI of the editions of the ASME Boiler and Pressure Vessel Code and addenda which the facility has committed to in their ASME Section XI program. During the second and third intervals, the licensee was committed to the 1989 edition, and the 1998 edition and 2000 addenda, respectively. Contrary to the above, the licensee failed to meet section IWA-2420, "Inspection Plans and Schedules", of the 1989 edition, and 1998 edition and 2000 addenda of the ASME Section XI code, in that they had failed to identify over 40 components which were required to be examined by their ISI Program. The licensee identified this violation during an operating experience review for a previous violation (05000269, 270, 287/2006003-02). The current violation was identified in the licensee's corrective action program as PIP O-06-04249. As part of their corrective actions the licensee re-evaluated scheduling of welds and supports included in their ISI Program, and has completed or scheduled examinations for the missed weld and support examinations. The finding is not suitable for SDP evaluation, but has

Enclosure

been reviewed by NRC management and is determined to be a finding of very low safety significance because no SSCs were found to be inoperable as a result of the completed exams.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

N. Alchaar, Civil Engineering
L. Azzarello, Modification Engineering Manager
S. Batson, Superintendent of Operations
D. Baxter, Station Manager
R. Brown, Emergency Preparedness Manager
T. Bryant, Engineering Support
A. Burns, Civil Engineer, Reactor & Electrical Systems
S. Capps, Mechanical/Civil Engineering Manager
T. Coleman, ISI Coordinator
N. Constance, Operations Training Manager
D. Covar, Training Instructor
C. Curry, Maintenance Manager
G. Davenport, Compliance Manager
K. Davis, ECT Level III
P. Downing, SG Manager
P. Earnhardt, Modifications Engineer
C. Eflin, Requalification Supervisor
F. Eppler, Senior Engineer
P. Fowler, Access Services Manager, Duke Power
T. Gillespie, Reactor and Electrical Systems Manager
J. Gilreath, SG Component Engineer
M. Glover, Engineering Manager
T. Grant, Engineering Supervisor, Reactor & Electrical Systems
R. Griffith, QA Manager
B. Hamilton, Site Vice President
R. Hester, Civil Engineer
D. Hubbard, Training Manager
T. King, Security Manager
T. Ledford, Engineering Supervisor, Reactor & Electrical Systems
L. Llibre, Engineering Supervisor
D. Mayes, Consulting Engineer
R. Murphy, Engineering Support
S. Neuman, Regulatory Compliance Group
L. Nicholson, Safety Assurance Manager
J. Patterson, Engineering Supervisor
W. Pursley, General Supervisor, Radiation Protection
D. Robinson, General Supervisor, Radiation Protection
J. Rowell, Engineer, Reactor & Electrical Systems
J. Smith, Regulatory Affairs
B. Spear, Engineer, Reactor & Electrical Systems
J. Steeley, Training Supervisor
J. Stinson, Engineer, Reactor & Electrical Systems
P. Stovall, SRG Manager
S. Townsend, Keowee Operations
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

None.

Opened and Closed

None.

Closed

2515/169	TI	Mitigating Systems Performance Index Verification (Section 4OA5.2)
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Items Discussed

2515/166	TI	Pressurized Water Reactor Containment Sump Blockage (NRC Generic Letter 2004-02) - Units 1 & 2 (Section 4OA5.3)
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DOCUMENTS REVIEWED

Section 1R08: Inservice Inspection (ISI) 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-25, "Magnetic Particle Examination", Revision 23

Engineering Support Document, Boric Acid Corrosion Program, Revision 3, dated 6/6/2006

MP/0/A/1800/132, "Evaluation of Boric Acid Leakage on Mechanical, Structural and Electrical Components", Revision 3

Areva Procedure No 03-9032829.000, Eddy Current Guidelines for Oconee Nuclear Station's Replacement Once-Through Steam Generators (ROTSG), issue date 10/3/06

PIPs

O-05-02556, 1RC-67 flattened/damaged threads on 2 studs

O-05-06251, Welds on Aux Feed left out of ISI Plan for 4th Interval

O-05-03026, Verification of "delta M" criterion not being performed

O-05-07598, Torque applied for welded roll plugs exceeded procedure specification

O-05-07599, Torque applied for plug inadequate

O-06-00198, Emerging trend on instrumentation tubing failures
O-06-05189, Valve 1LWD-11 has an active boric acid leak from the valve packing
O-06-06417, Engineering/Maintenance Mode 3 Shutdown RB Tour (walkdown)
O-06-06537, 1HP-58 Leaking 1 drop every 10 minutes
O-06-00968, Unit 1 RB tour results (Mode 1)
O-06-04249, Missed ISI exams

* Document generated as a result of this inspection

Other Records

VT Examination Report: VT-06-35, Upper Surge Tank Dome Support Legs
PT Examination Report: PT-06-227, Nozzle to Pipe weld, 1-PIA1-10
MT Examination Report: MT-06-060, Elbow to Pipe weld, I-PIA1-5
UT Examination Reports: UT-05-104, Pipe to Pipe weld, 1-03-3-3X4;
 UT-05-105, Pipe to Elbow weld, 1-FWD64-C
 UT-06-427, Elbow to Pipe weld, 1-PIA1-3
 UT-06-428, Elbow to Pipe weld, 1-PIA1-3
 UT-06-429, Elbow to Pipe weld, 1-PIA1-5
 UT-06-430, Nozzle to Pipe weld, 1SGB-W3
Structural Integrity Associates, Inc Phased Array Ultrasonic Examination Records: 1-RC-0230-57V-WBM-SE; 1-RC-0230-57V-WBM-DM
Structural Integrity Associates, Inc Ultrasonic Phased Array Calibration Records: Spray Axial-25-WBM SE; Spray Axial-31-WBM SE
Welding Procedure Specification, WPS 01-08-T-803-102836, Spray Line Weld Overlay
Welding Services, Inc ASME Section IX Expiration Report, various welding operators
Welding Services, Inc PT Inspection Report 102836-PT-002, PZR Spray Nozzle
Certification for PT Examination Consumables: Batch No. 00J07K, 04G05K, 02L02K
Instrument Certification for MCNDE32803, Lutron Light Meter
Instrument Certification for MCNDE32796, D.A.S. Thermocouple
Form NDE-25B, Revision 1, Magnetic Particle System Calibration/Performance/Sensitivity Report, Magnaflux Serial No 26086
Certification for UT Examination Couplant: Batch No. 03125
Certification for UT Transducers: G14819, G14818, J19012SP, O41784
Ultrasonic Instrument Linearity Report, Report No L-05-017
Ultrasonic Calibration Reports: CAL-05-131, CAL-05-132
Washington Group International Certificate of Method Qualification, various NDE examiners
Washington Group International Documentation of 8 Hours of Hands on Practice, various NDE examiners
Areva Eddy Current Examination Plan for Oconee Unit 1EOC23
SGMEP 105, ROTSG Specific Assessment of Potential Degradation Mechanisms, Revision 4, Oconee Unit 1 EOC 23
Areva Document Identifier 51-5064539-00, A CMOA Evaluation of Wear Scars for Oconee Unit 1, EOC 22, dated 5/25/05
ROTSG Site Technique Validation for Oconee Nuclear Station, Revision 3, dated September, 2005
Probe Master Report, dated Oct 26, 2006 8:47
Data Acquisition and Analysis Personnel Qualification for Level II Data Operators, Level II A and Level III Analysts

Letter, dated 2/24/98 from Duke Power Company to US Nuclear Regulatory Commission, Subj: Response to Generic Letter 97-05
Letter Dated 11/21/2005 from Duke Power to US Nuclear Regulatory Commission, Subj: High Energy Line Break and Tornado Mitigation Strategy
Unit 1 Main Feed Water inspection schedule for High Energy Line Break and Tornado Mitigation Strategy
EOC 22 Refueling Outage Report, Oconee Unit 1, Revision 0, dated 6/22/05
QA-513A, ONS1-022, ISI Plan Addendum Sheet, dated 4/14/05
QA-513A, ONS1-027 ISI Plan Addendum Sheet, dated 5/25/05
QAL-13A, ISI Visual Examination Sheet, 1-PZR-RC4-STUDS, dated 5/10/05
QAL-13A, ISI Visual Examination Sheet, 1-PZR-RC67-STUDS, dated 5/10/05
QAL-13A, ISI Visual Examination Sheet, 1-PZR-RC66-STUDS, dated 5/10/05
ASME Section XI form NIS-2, Owner's Report for Repair/Replacement Activity, WO # 98693302-04, Flange Bolting on Valve 1RC-67
Attachment to Form QAL-14A, Support No 1 - UST - Dome Tank, QA Item No F01.040.039 and D01.010.008

Section 2OS1: Access Control To Radiologically Significant Areas

Procedures, Instructions, Guidance Documents, and Operating Manuals

Active RWPs List (Document Not Dated)

ALARA Planning Worksheet, Attachment 6.2 (RWP 1218 & 1241 - "A" & "B" SG Install and Remove Nozzle Dams

Archived Operator Log Entry for 10/13/06, 12:33:01 PM - Degraded RX-1 Canal from EHRA to HRA per M. Smith @ 11:56

Archived Operator Log Entry for 10/16/06, 10:57:22 AM – Unit 1 Reactor Building Canal Posted EHRA at 0915 Per D. Reynolds

Duke Power Company (DPC), Oconee Nuclear Station (ONS), Procedure Number (No.)

HP/0/B/1000/016, Enclosure 5.3, OTSG Platform Worker Dose Tracking for Workers

Performing Nozzle Dam Installation, Dated 10/18/06 (15:53)

DPC, ONS, Procedure No. HP/0/B/1000/016, Radiological Protection Requirements for Steam Generator Maintenance, Revision (Rev.) 024

DPC, ONS, Procedure No. HP/0/B/1000/054, Radiation Protection Routines, Rev. 040

DPC, ONS, Procedure No. HP/0/B/1000/104, Section 3.2 Movement and Storage of Incore Detectors Casks (Page 3 of 6 Only, Revision Not Identified)

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

Non-Fuel Material Stored in the Spent Fuel Pool Inventory List, Dated 05/02/06

Nuclear System Directive: 501 Temporary Storage of Radioactive Material in the Spent Fuel Pool, Rev. 5

ONS HRA, EHRA and VHRA List (Document Not Dated)

Oconee PIP Summary Reports (Brief Description and Detailed), Dated 10/19/06

Oconee U1, EOC-23 Refueling Outage Updates, Dated 10/17/06 (5:00), 10/18/06 (5:00), and 10/19/06 (5:00)

DPC, Standard Procedure for Oconee, McGuire and Catawba Nuclear Stations (SPOMCNS), Procedure No. SH/0/B/2000/004 Taking, Counting and Recording Surveys, Rev. 007

DPC, SPOMCNS, Procedure No. SH/0/B/2000/005 Posting of Radiation Control Zones, Rev. 004

DPC, SPOMCNS, Procedure No. SH/0/B/2000/006 Control of Radioactive Material and Use of Radioactive Material Tags, Rev. 003

Records and Data Reviewed

DPC, SPOMCNS, SH/0/B/1000/012, Enclosure 5.6 - VHRA/EHRA Downgrade Documentation, Dated 10/13/06

Room (Rm.) 50 U1 & 2 Spent Resin Storage Tank Survey # 100705-9, Dated 10/07/05

Rm. 51 R.C. Bleed Evaporator Survey # M-032306-10, Dated 03/23/06

Rm. 112 U-1 & 2 Misc. Waste Holdup Tank Survey # M-032306-8, Dated 03/23/06

Rm. 114 Backflush Storage Tank Survey # M-051206-19, Dated 05/12/06

Rm. 126 U-2 "a" R.C. Bleed Holdup Tank Survey # M-032706-8, Dated 03/27/06

Rm. 130 Radwaste Survey # M-042806-11, Dated 04/28/06

Rm. 151 High Activity Spent Resin Storage Tank Survey # 100705-12, Dated 10/07/05

Rm. 152 U-3 Spent Resin Storage Tank Survey # 100705-13, Dated 10/07/05

Rm. 213 U-1 Letdown Storage Tank Survey # M-051406-1, Dated 05/14/06

Rm. 215 U-2 Letdown Storage Tank Survey # M-041506-9, Dated 04/15/06

Rm. 219 U-1 & 2 Spent Fuel Pool Filters & Demineralizer Survey # M-042306-2, Dated 04/23/06

Rm. 240 Radwaste Resin Batch Tank Survey # M-012606-7, Dated 01/26/06

Rm. 249 U-3 Letdown Storage Tank Survey # M-052206-21, Dated 05/22/06

Rm. 254 U-3 Spent Fuel Pool Demineralizer and Filters Survey # M-042106-20, Dated 10/04/06

Rm. 619 U1/2 Spent Fuel Pool Survey # M-100406-7, Dated 10/04/06

Radiation Work Permit (RWP) 1310 U1 Aux Bldg SFP Fuel Movement Operations, Rev. 10

RWP 1311 U1 Aux Bldg SFP Fuel Inspection, PIE Work, Fuel UT, Sipping, Reconstitution, and Associated Work, Rev. 9

RWP 11 Routine Spent Fuel Pool Area Activities (Excluding Refueling), Rev. 23

RWP 1001 U1 RX Bldg Inspection and Valve Operations, Rev. 23

RWP 5 Entry for Minor Corrective Maintenance, Rev. 21

RWP 5061 Solid/Dry Radioactive Waste-in-Excess of 1000 MREM/HR @ 30 CM- Handling, Packing and Shipping, Rev. 9

RWP 1218 U1 RX Bldg "A" OTSG Install/Remove Nozzle Dams, Rev. 15

RWP 1160 U1 RX Bldg Remove/Repair/Replace CRDM's and Associated Work, Rev. 11

RWP 1152 U1 RX Bldg Remove/Replace Plenum (Includes Install/Remove Index Fixture), Rev. 9

U1 "A" S/G Lower Bowl Survey # - 101906-10, Dated 10/18/06

U1 "A" S/G Lower Bowl Survey # - 101906-15, Dated 10/18/06

U1 "A" S/G Lower Playpen Survey # - 101906-12, Dated 10/18/06

U1 "B" S/G Lower Bowl Survey # - 101906-11, Dated 10/18/06

U1 "B" S/G Lower Playpen Survey # - 101806-7, Dated 10/18/06

U1 "B" S/G Lower Playpen Survey # - 101806-30, Dated 10/18/06

PIPs

PIP No. O-05-01609, The Purpose of this PIP is to

Notify ONS RP of a Root Cause Initiated at McGuire for PIP M-05-0981, "Extra High Radiation Area (EHRA) key inadvertently issued to non-Radiation Protection Personnel"

PIP No. O-05-01741, The Purpose of this PIP is to Notify ONS RP of a Root Cause Initiated at McGuire for PIP M-05-1130, "Extra High Radiation Area Boundary Cover Was Not Secured"

PIP No. O-05-03139, 12 AFIs Identified During NPAS Audit GO-05014 (NPA) (ALL) Radiation Protection FAE

PIP No. O-05-03767, Assessment of the radiological posting sign and inserts that are stocked in supply to ensure that the stock is commensurate with RP's needs

PIP No. O-05-08557, Found door to HRA locked but locking mechanism not engaged (Room sometimes serves as an EHRA)

PIP No. O-06-00241, RP Assessment of Benchmarking on Radioactive Material Control
PIP No. O-06-00386, Level 2 Assessment of the use of Red Eds and radiological aspects of Oconee events
PIP No. O-06-00705, Results of a Radiation Protection Tools and Equipment Control assessment at the RCA exit
PIP No. O-06-01721, Level II Assessment – Radioactive Material Control – Effectiveness of Corrective Actions
PIP No. O-06-02687, Dose rates through the annulus door are creating an EHRA in the basement
PIP No. O-06-06823, Observation made by NRC inspector concerning RCA entrance turnstile

Section 20S3: Radiation Monitoring Instrumentation and Protective Equipment

Procedures, Manuals, and Reports

DPC, ONS, Count Room Instrument Performance Check Procedures, Procedure No. HP/0/B/1001/009, Rev. No. 015
DPC, ONS, Procedure for Calibration of the Whole Body Counting System, Procedure No. HP/0/B/1003/021, Rev. No. 004
DPC, ONS, Quality Assurance for Automated Personnel Monitors, Procedure No. HP/0/B/1000/067E, Rev. No. 020
DPC, ONS, Quality Assurance for Count Room Instrumentation, Procedure No. RPSM 8.7, Rev. No. 003
DPC, ONS, Radiological Respiratory Quality, Procedure No. HP/0/B/1010/002, Rev. No. 018
DPC, ONS, Respirator Equipment Issue and Use Procedure, Procedure No. Hp/0/B/1010/001, Rev. No. 027
DPC, ONS, Respirator Maintenance Procedure, Procedure No. HP/0/B/1010/003, Rev. No. 027
DPC, ONS, Rheodyne Sample Via Post Accident Liquid Sampling System (PALSS), Procedure No. CP/1/A/2002/002, Rev. 001
Duke Power Quality Assurance Program Related, Nuclear Policy Manual, Nuclear System Directive: 208, Problem Investigation Process (PIP), Rev. 27
DPC, Standard Procedure for CNS, MNS & ONS, Calibration and Quality Assurance of Canberra Argos-4AB Contamination Monitors, Procedure No. SH/0/B/2008/001, Rev. No. 001

Records, Worksheets, Data, and Calibration Reports

10 CFR 50/61 Analysis Reports: Smears (DAW), Dated 12/18/03 and 10/10/04
Breathing Air Certificate of Analysis Job Summary Report, Job Nos. 06-Mar-0632, 06-APR-0027 and 06-APR-0135, Dated 04/11/06, 04/11/06, and 04/25/06, respectively
HP/0/B/1004/058, Enclosure 5.23, AMS-4 Calibration Data Sheet for Instruments 1150, 1325, and 1398, Dated 04/27/06, 05/09/06, and 04/28/06, respectively
HP/0/B/1003/019, Rev. 008, Calibration and Setup of HPGE Detectors Using the Count Room Acquisition System (CAS) Software, Dated 03/09/06
HP/0/B/1003/021, Rev. 4, Procedure for Calibration of the Wholebody Counting System, People Mover, Dated 03/24/06
HP/0/B/1010/002, Enclosure 5.1, SCBA Units, Spare Cylinders, and Respirators Monthly or Initial Inspection and Inventory, September 2006.
IP/0/B/0360/038, 1RIA-32 Auxiliary Building Gas Monitor Calibration, 12/20/05
IP/0/B/0360/038, 3RIA-32 Auxiliary Building Gas Monitor Calibration, 02/02/06
IP/0/B/0361/009, 1RIA-3, 2RIA-3 and 3RIA-3 (Fuel Transfer Canal) Extended Range Monitor

Calibrations, Dated 04/19/05, 11/04/05, and 05/08/06, respectively
IP/0/B/0361/009, 1RIA-6 and 3RIA-6 (Spent Fuel Pool) Extended Range Monitor Calibrations,
Dated 09/06/06 and 06/20/06, respectively
MSA Certification of Training for MSA BMR and MMR Certified C.A.R.E. Technicians,
Specifying Authorized Individuals to Perform Test and Repairs on MSA BMR and MMR
SCBAs, Dated 09/15/04 and 06/07/04, respectively.
People Mover, Daily Calibration Check and VMS Calibration Report V1.6, Dated 10/20/06

CAP Documents

NPA Audits GO-05-014 and GO-06-01 (NPA)(RP)(ALL) Radiation Protection Functional Area
Evaluation, Dated 06/15/05 and 04/28/06, respectively
PIP No. O-06-00656, NSD 607 Level 1 Assessment changing station source term from Cs-137
to Co-60 regarding RP contamination monitors
PIP No. O-06-01115, 7 Areas for Improvement from RP Audit that included improvements
regarding source check and SAM mounting
PIP No. O-06-01650, MAKO SCBA compressor malfunctioned
PIP No. O-06-06890, RP has experienced an upward trend on various issues with the
MG DMC 2000 dosimeter this outage

Section 40A1.2: Performance Indicator Verification

Procedures, Guidance Documents and Manuals

DPQAPR, NPM, NSD: 208, Problem Investigation Process (PIP), Rev. 27

Records and Data

Standard Radiation Protection Management Procedure (SRPMP) 10-1, *NRC Performance
Indicator Data Collection Validation, Review and Approval*, records from October 1, 2005 to
October 31, 2006.

Dose alarms report since January 2005 to May 06, 2006 (undated).

Rate alarms (MS[®] Excel file) since October, 2005 to May 06, 2006 (undated).

Section 40A5.3: TI 2515/166

MP/0/A/1800/105A, Final Sump Inspection and Cover Installation, Enclosure 13.7, RBES - LPI
Suction Line Flange Installation and Removal Drain Line and Sump Inspection, Rev. 04
3-SA-096.009, Proof of Absence of Vortex and Air Intake, Oconee Units 1,2 &3, Rev. 0
Duke Power Response to NRC GL 2004-02, Potential Impact of Debris Blockage on
Emergency Recirculation During Design Basis Accidents at PWRs, dated Sept. 1, 2005
S&W Calculation S-005, Missile Evaluation for the Emergency Sump Strainer, Rev. 1
ALION-REP-DUKE 2736-02, GSI-191 Baseline Analysis for Oconee Units 1,2 &3, dated 7/14/05
TN/1/A/OD100051/01C, Replace the Unit 1 Reactor Building Emergency Sump Strainer, Rev. 0
Variation Notices OD0100051 A through L, dated 10/20/06 - 11/3/06
PIP O-04-073154, Documentation and Tracking of Activities Related to GL 2004-02, dated 11/7/06
Container Sump Strainer Replacement: Large Test Loop Filter Performance Report , Bericht
Report, Rev. 1
Bericht Report 3-SA-096.029, Head Loss Calculation, Oconee Unit 1 Sump Strainers, Rev. 1
Downstream Effects Analysis for the Oconee Nuclear Station Units 1, 2 & 3, dated 9/13/06
Calculation OSC-8924, GSI-191, Baseline Analysis for Oconee Units 1, 2, &3, dated 8//10/06

10 CFR 50.59 Evaluation, ONS-2006-013, Reactor Building Emergency Sump Screen Replacement/Design change OD100051, dated 10/16/06

LIST OF ACRONYMS

AB	-	Auxiliary Building
ACB	-	Air Circuit Breaker
ADAMS	-	Agency wide Documents Access and Management System
ANSI	-	American National Standards Institute
ARM	-	Area Radiation Monitor
AP	-	Abnormal Procedure
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society for Testing and Materials
ASW	-	Auxiliary Service Water
BACC	-	Boric Acid Corrosion Control
BMV	-	Bare Metal Visual
CAM	-	Continuous Airborne Monitor
CAP	-	Corrective Action Program
CC	-	Component Cooling
CCW	-	Condenser Circulating Water
CFR	-	Code of Federal Regulations
CRD	-	Control Rod Drive
CROABF	-	Control Room Outside Air Booster Fan
CTPD	-	Core Thermal Power Demand
DEC	-	Duke Energy Corporation
DG	-	Diesel Generator
ECCS	-	Emergency Core Cooling System
EDG	-	Emergency Diesel Generator
EHRA	-	Extra (locked) High Radiation Area
EHC	-	Electro-Hydraulic Control
EOC	-	End-of-Cycle
FDW	-	Feedwater
FME	-	Foreign Material Exclusion
GPM	-	Gallons per Minute
HPI	-	High Pressure Injection
HPSW	-	High Pressure Service Water
HX	-	Heat Exchanger
ICS	-	Integrated Control
INPO	-	Institute of Nuclear Power Operations
IP	-	Inspection Procedure
IR	-	Inspection Report
ISI	-	Inservice Inspection
IST	-	Inservice Testing
KHU	-	Keowee Hydroelectric Unit
kV	-	Kilo Volt
LDST	-	Letdown Storage Tank
LER	-	Licensee Event Report

LOCA	-	Loss of Coolant Accident
LPI	-	Low Pressure Injection
LPSW	-	Low Pressure Service Water
LPT	-	Liquid Penetrant
LRT	-	Leak Rate Test
MDEFW	-	Motor Driven Emergency Feedwater
MR	-	Maintenance Rule
MSPI	-	Mitigating Systems Performance Index
MT	-	Magnetic Particle
NCV	-	Non-Cited Violation
NDE	-	Non-Destructive Examination
NEI	-	Nuclear Energy Institute
NIST	-	National Institute of Standards and Technology
NRC	-	Nuclear Regulatory Commission
NRMCA	-	National Ready Mixed Concrete Association
NRR	-	Nuclear Reactor Regulation
NSD	-	Nuclear Station Directive
ODCM	-	Offsite Dose Calculation Manual
ONS	-	Oconee Nuclear Station
OOS	-	Out of Service
OP	-	Operating Procedure
OTSG	-	Once-Through Steam Generator
PARS	-	Publicly Available Records
PASS	-	Post Accident Sampling System
PCM	-	Personnel Contamination Monitor
PI	-	Performance Indicator
PIP	-	Problem Investigation Process report
PM	-	Preventive Maintenance
PMT	-	Post-Maintenance Testing
PT	-	Performance Test
PWHT	-	Post Weld Heat Treatment
QC	-	Quality Control
RB	-	Reactor Building
RBCU	-	Reactor Building Cooling Unit
RBES	-	Reactor Building Emergency Sump
RBS	-	Reactor Building Spray
RCMUP	-	Reactor Coolant Makeup Pump
RCA	-	Radiologically Controlled Area
RCP	-	Reactor Coolant Pump
RCS	-	Reactor Coolant System
RDAU	-	Remote Data Acquisition Unit
REMP	-	Radiological Environmental Monitoring Program
RFO	-	Refueling Outage
RG	-	Regulatory Guide
RII	-	Region II
RP	-	Radiation Protection
RPV	-	Reactor Pressure Vessel
RTP	-	Rated Thermal Power

A-10

RV	-	Reactor Vessel
RWP	-	Radiation Work Permit
SCBA	-	Self-Contained Breathing Apparatus
SDP	-	Significance Determination Process
SG	-	Steam Generator
SGRP	-	Steam Generator Replacement Project
SSC	-	Structure, System and Component
SSF	-	Standby Shutdown Facility
TI	-	Temporary Instruction
TLD	-	Thermoluminescent Dosimetry
TS	-	Technical Specification
UFSAR	-	Updated Final Safety Analysis Report
ULSDF	-	Ultra Low Sulfur Diesel Fuel
URI	-	Unresolved Item
UT	-	Ultrasonic
VT	-	Visual
WBC	-	Whole Body Counting
WO	-	Work Order