



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

January 27, 2009

Mr. David A. Baxter
Site Vice President
Duke Power Company, LLC
d/b/a Duke Energy Carolinas, LLC
Oconee Nuclear Station
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION - INTEGRATED INSPECTION REPORT
05000269/2008005, 05000270/2008005, AND 05000287/2008005

Dear Mr. Baxter:

On December 31, 2008, 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 January 12, 2008, with Mr. Rich Freudenberger, 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 the inspection, no findings of significance were identified.

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

Sincerely,

/RA/

Jonathan H. Bartley, 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 05000269/2008005, 05000270/2008005,
05000287/2008005 w/Attachment: Supplemental Information

cc w/encl: (See next page)

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Letter to David A. Baxter from Jonathan H. Bartley dated January 27, 2009

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05000269/2008005, 05000270/2008005, AND 05000287/2008005

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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 Nos: 05000269/2008005, 05000270/2008005, 05000287/2008005

Licensee: Duke Power Company, LLC

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

Location: 7800 Rochester Highway
Seneca, SC 29672

Dates: October 1, 2008 – December 31, 2008

Inspectors: A. Hutto, Senior Resident Inspector
E. Riggs, Resident Inspector
G. Ottenberg, Resident Inspector
R. Chou, Reactor Inspector (Sections 1R08, 4OA5.3)

Approved by: Jonathan H. Bartley, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000269/2008005, 05000270/2008005, 05000287/2008005; 10/01/2008 - 12/31/2008; Oconee Nuclear Station, Units 1, 2, and 3; Routine Integrated Inspection Report.

The report covered a three-month period of inspection by the onsite resident inspectors and one region based reactor inspector. 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

None.

B. Licensee-Identified Violations

None.

Enclosure

REPORT DETAILS

Summary of Plant Status

Unit 1 began the report period at 100 percent rated thermal power (RTP). On November 23, 2008, the unit was reduced to 88 percent RTP for turbine valve movement testing. It was returned to 100 percent RTP later the same day, where it remained through the end of the inspection period.

Unit 2 began the report period at 100 percent RTP. On October 25, 2008, the unit was shutdown from 100 percent RTP for the End-of-Cycle (EOC)-23 refueling outage. On December 11, 2008, the unit was taken critical following outage activities. It achieved 100 percent RTP on December 15, 2008, where it remained through the end of the inspection period.

Unit 3 began the report period at 100 percent RTP. On November 7, 2008, the unit experienced an automatic shutdown due to a fault in the digital Control Rod Drive (CRD) system. The unit entered a forced outage in order to identify and correct the cause of the trip. On November 9, 2008, the unit was taken critical. It achieved 100 percent RTP on November 10, 2008, where it remained through the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

Cold Weather Preparations

a. Inspection Scope

The inspectors reviewed the licensee's preparations for adverse weather associated with cold ambient temperatures for the three risk significant systems listed below. This included field walkdowns to assess the material condition and operation of freeze protection equipment (e.g., heat tracing, instrument box heaters, area space heaters, etc.), as well as other preparations made to protect plant equipment from freeze conditions. In addition, the inspectors conducted discussions with operations, engineering, and maintenance personnel responsible for implementing the licensee's cold weather protection program in order to assess the licensee's ability to identify and resolve deficient conditions associated with cold weather protection equipment prior to cold weather events. Documents reviewed during this inspection are listed in the Attachment to this report.

- Essential Siphon Vacuum System
- Unit 1, 2, and 3 Borated Water Storage Tank Level Instrumentation
- Elevated Water Storage Tank Level Instrumentation

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdown

a. Inspection Scope

The inspectors conducted three 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. Documents reviewed are listed in the Attachment to this report. The following systems were included in this review:

- 2B Reactor Building Spray (RBS) train and 2A, B, and C Reactor Building Cooling Units with the 2A RBS pump OOS for pump modifications
- Unit 1 and 3 Emergency Feedwater Water (EFW) systems with the Station Auxiliary Service Water (ASW) and Standby Shutdown Facility (SSF) ASW systems OOS during Unit 2 Condenser Circulating Water (CCW) maintenance and SSF maintenance outage
- CT-2, Keowee Hydro-electric Units (KHUs), and Underground Power Path during SSF maintenance outage

b. Findings

No findings of significance were identified.

.2 Complete Walkdown of KHU-1

a. Inspection Scope

The inspectors performed a system walkdown on accessible portions of KHU 1. The inspectors focused on verifying proper breaker positioning, proper tap changer settings on the associated transformers, support system alignment and availability, and material condition.

A review of Problem Investigation Process reports (PIPs) and preventive maintenance work orders was performed to assess whether material condition deficiencies significantly affected the KHU's ability to perform its design functions and determine if appropriate corrective action was being taken by the licensee.

The inspectors conducted a review of the system engineer's trending data and system health reports to determine if appropriate trending parameters were being monitored and that no adverse trends were noted. Documents reviewed for this semiannual inspection sample are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Fire Area Walkdowns

a. Inspection Scope

The inspectors conducted tours in four 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. The following areas were inspected during this inspection period:

- Unit 2 Reactor Building (RB) (1)
- Unit 1 Turbine Building Basement (1)
- Unit 3 Control Room (1)
- Unit 1 & 2 Cable Spreading Room (1)

b. Findings

No findings of significance were identified.

1R08 In-service Inspection (ISI) Activities (71111.08P, Unit 2)

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

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 the Unit 2 Fall 2008 refueling outage (2EOC23). The inspectors' activities consisted of an on-site review of non-destructive 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 (BPVC), Sections XI (Code of record for the Fourth 10-year ISI interval was 1998 Edition through 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. Documents reviewed are listed in the Attachment to this report.

The inspectors reviewed NDE activities including examination procedures, NDE reports, equipment and consumable certification records, personnel qualification records, calibration reports, and calibration block fabrication drawings (as applicable) for the following examinations:

Ultrasonic Testing (UT):

- Weld 2RC-279-91V, Pipe to Elbow on Suction Pipe 33.5" Diameter from Steam Generator (SG) A to Cooling Pump A1
- Weld 2RC-279-90V, Pipe to Elbow on Suction Pipe 33.5" Diameter from SG A to Cooling Pump A2
- Weld 2MS-124-71V, Pipe to Reducer on SG A Main Steam Pipe 26" Diameter
- Weld 2-01A-4-29, Pipe to Elbow on Main Steam Pipe 36" Diameter in Turbine Building
- Weld 2RC-279-89V, Elbow to Elbow on Hot Leg Pipe 36" Diameter to SG A

Magnetic Particle Testing (MT):

- Weld 2RC-279-91V, Pipe to Elbow on Suction Pipe 33.5" Diameter from SG A to Cooling Pump A1
- Weld 2RC-279-90V, Pipe to Elbow on Suction Pipe 33.5" Diameter from SG A to Cooling Pump A2

Radiographic Testing (RT):

- Weld 2-RCP-FTR2B-SH-2 on High Pressure Injection (HPI) Pipe to Reactor Coolant Pump (RCP) Outlet Filter
- Weld 2-SGA-W250-4 on SG A Emergency Feed Water Pipe 3" Diameter
- Weld 2-SGA-W335 on SG A Emergency Feed Water Pipe 3" Diameter
- Weld 2-SGA-W251-4 on SG A Emergency Feed Water Pipe 3" Diameter

The inspectors reviewed In-service Examination Evaluations from Refueling Outage 2EOC22 (the previous outage) for relevant indications that were accepted by the licensee for the continued service. Four recordable indications were reviewed:

- Report UT-07-050, UT Vessel Examination on the Weld between Pressurizer Sampling Nozzle and Shell
- Report PT-07-029, Liquid Penetrant Examination on the Weld between Plate and Shell on 2-LS-Tank (Letdown Storage Tank)
- Report VT-07-152, Visual Examination (VT-3) on 2-LS-Tank Supports
- Report VT-07-156, Visual Examination (VT-3) on Steam Generator 2-SGB Lateral Support

The inspectors reviewed welding activities including an in-process welding activity for ASME Class 1 piping to evaluate compliance with procedures and the ASME Code.

The inspectors directly observed part of the welding process and verified welding machine settings for the welding activity described below.

The inspectors also reviewed weld process control reports, welding procedures, procedure qualification records, certified material test reports for filler material, and welder qualification records.

- Full Structural Weld Overlay on 10.5" Diameter Hot Leg Decay Heat Removal Line as part of Alloy 600 mitigation, Reactor Coolant System (ASME Class 1)

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The bare metal visual examination required by Order EA 03-009 for the surface of the reactor vessel upper head, including 360 degrees around each reactor pressure vessel head penetration nozzle, was performed during this refueling outage. The inspectors reviewed Problem Investigation Process report (PIP) O-08-06882, which documented the results of the examination. The examination also included the insulation and other service structures above the head for identifying potential boric acid leaks from pressure-retaining components above the reactor pressure vessel head, as required by Order EA 03-009. The inspectors also reviewed the effective degradation years (EDY) calculation performed by the licensee. Documents reviewed are listed in the Attachment to this report.

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 of 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 a record review of procedures and the results of the licensee's Mode 3 containment walkdown inspections performed during the fall 2008 outage, including generated PIPs and their subsequent engineering evaluations.

The inspectors 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 or 4 containment walkdown, were properly identified and corrected in accordance with the

licensee's BACC and Corrective Action programs. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.4 SG Tube Inspection Activities

a. Inspection Scope

The inspectors reviewed activities, plans, condition monitoring and operational assessments, the pre-outage degradation assessment, and procedures for the inspection and evaluation of the SG Inconel Alloy 690TT tubing for Unit 2 SGs A and B to determine if the activities were being conducted in accordance with Technical Specifications (TS) and applicable industry standards. Data gathering, analysis, and evaluation activities were reviewed. Documents reviewed are listed in the Attachment to this report.

The inspectors reviewed data results to verify the adequacy of the licensee's primary, secondary, and resolution analyses.

The tube maximum through-wall depth wear from the tube vibration around the tube support plates during the inspection period was 42 percent at SG A tube R137C66. The inspectors reviewed equipment, data operators, and analyst certifications and qualifications, including medical exams.

The inspectors reviewed data for the following tubes:

- SG A - R6C38, R137C66, R76C130, R141C55, R73C1, R76C2, R86C121, R127C90, R120C95, R115C93, R151C16, R149C32, R147C30, and R145C40
- SG B - R76C2, R9C13, R15C69, R19C74, R20C76, R60C5, R60C7, R62C5, R65C1, R68C10, R73C1, R74C1, and R78C1

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 and BACC that were identified by the licensee and entered into the corrective action program as PIPs. 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 to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification

Simulator Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on December 5, 2008. The simulator scenarios involved Just-In-Time (JIT) training for Zero Power Physics Testing and for unit start-up following the Unit 2EOC23 refueling outage. The scenarios involved the initial approach to criticality, the development of 1/M plots, the temperature coefficient measurement, and the differential boron and rod worth measurement. The following procedures were utilized during the JIT training:

- PT/0/A/0711/001, Zero Power Physics Test
- OP/2/A/1102/001, Controlling Procedure for Unit Startup

The inspectors observed crew performance in terms of communications between the operators and reactor engineering; 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.

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-08-7681, Documentation for lessons learned for SSF Major Outages and PIP O-08-8311, 2EOC23 SSF Outage Critique Items
- PIPs associated with Instrument Air (IA) deficiencies. The PIPs reviewed included the following: PIP O-08-7391, Spare Diesel Service Air Compressor auto started for unknown reason; PIP O-08-6720, Instrument Air leak discovered on IA-3101 flange when "A" Primary, IA Dryer was returned to service; PIP O-08-6584, AP/22 "Loss of Instrument Air" was entered due to low IA header pressure; PIP O-08-6560, AP/22 "Loss of Instrument Air" was entered due to low IA header pressure; PIP O-08-6436, Primary Instrument Air Compressor Discharge Pressure Lower than Expected when restored by OP/0/A/1106/027 (Compressed Air System); PIP O-08-4897, Request revisions to AP/22 (Loss of Instrument Air) - lessons learned from 8/7/08

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Evaluations

a. Inspection Scope

The inspectors evaluated the following attributes for the seven 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. Documents reviewed are listed in the Attachment to this report.

- Complex Plan for Repair of 1HP-VA-0007
- Critical Activity Plan for SSF outage and CCW activities during 2EOC23, Revision 0
- Critical Activity Plan for 2LP-21 and 2LP-22 Viper Testing
- PIP O-08-7023, Select Licensee Commitment (SLC) Not Met During Mod Install with Proper Communications to Operations, PIP O-08-7024, SLC 16.9.11.a Entry Required for Low Pressure Service Water (LPSW) piping removal in 2EOC23 RFO
- Critical Activity Plan for OD200934, Unit 2 CCW Protected Service Water Pump Minimum Flow Mod
- Critical Activity Plan for SSF outage and CCW activities during 2EOC23, Revision 1
- Critical Activity Plan for Low Pressure Injection (LPI) and RBS Cyclone Separator Fill and Testing

b. Findings

No findings of significance were identified.

1R15 Operability Evaluationsa. Inspection Scope

The inspectors reviewed six 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 operability evaluations:

- PIP O-08-6125, 2A LPI Pump Vibration in the Alert Range per PT/2/A/0203/006A
- PIP O-08-6278, Possible Cracked Insulation/Overheating Found on Field End Turns During Inspection of KHU-1 Generator
- PIP O-08-6727, Documentation of Unit 2 RB Emergency Sump Coating Inspection
- PIP O-08-7028, FME Found in Unit 2 Fuel Transfer Canal Deep End Drains
- PIP O-08-6244, Unit 2 SSF Pressurizer Heaters not Functioning
- PIP O-08-8492, SSF PZR Level Transmitter, 2RC LT0072, Found Out-of-Tolerance While Performing Preventive Maintenance (PM)

b. Findings

No findings of significance were identified.

1R18 Plant ModificationsPermanent Plant Modificationsa. Inspection Scope

The inspectors reviewed documents and observed portions of the installation of two selected temporary modifications. Among the documents reviewed were system design bases, the Updated Final Safety Analysis Report (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. Additional documents reviewed are listed in the Attachment to this report. The following items were reviewed under this inspection procedure:

- OD 300729, Unit 3 North Control Room Wall – Natural Phenomenon Barrier System Installation
- OD 201964, Replace LPI Pump Cyclone Separator and Seal Orifices

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed six Post-Maintenance Test 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 tests:

- PT/2/A/0203/006A, LPI pump test following cyclone separator modification installation
- PT/0/A/0400/011, SSF Diesel Generator Test, and PT/0/A/0600/021, Standby Shutdown Facility Diesel-Generator Operation following jacket water expansion tank repair
- PT/0/A/0400/005, SSF ASW Pump Test following SSF outage and PMs
- PT/0/A/0600/021, SSF Diesel Generator Operation following overhaul of diesel engine
- PT/0/A/0400/011, SSF Diesel Generator Test following overhaul of diesel engine
- TT/2/A/3117/001, LPSW Waterhammer Prevention System (WPS) Pneumatic Valves Air Accumulator, TT/2/A/3117/002, LPSW WPS System Boundary Leakage Test, TT/2/A/3117/003, LPSW WPS Leakage Accumulator Functional Test following the installation of the Unit 2 LPSW WPS modification

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.

Documents reviewed are listed in the Attachment to this report. Between October 25, 2008, and December 15, 2008, the following activities related to the Unit 2 refueling outage 2EOC23 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 Testing

a. Inspection Scope

The inspectors witnessed five surveillance tests and/or reviewed test data of the risk-significant SSCs listed below, to assess, as appropriate, whether the SSCs met TS, 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. Documents reviewed are listed in the Attachment to this report.

- PT/3/A/0600/012, Unit 3 Turbine Driven Emergency Feedwater Pump (TDEFWP) Test (IST)
- PT/2/A/0610/028A, Unit 2 Main Feeder Bus 2 Lockout Relay Test
- PT/2/A/0151/019, Penetration 19 Leak Rate Test (Containment Isolation Valve LRT)
- PT/0/A/0711/001, Unit 2 Zero Power Physics Test
- PT/2/A/0600/012, Unit 2 TDEFWP Test (IST)

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Mitigating Systems Cornerstone

a. Inspection Scope

The inspectors reviewed the PI listed in the table below (for all three units), to determine it's accuracy and completeness against requirements in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 5.

Cornerstone: Mitigating Systems		
Performance Indicator	Verification Period	Records Reviewed
MSPI - high pressure injection - emergency feedwater - emergency AC power - residual heat removal - support cooling water	4 th Quarter, 2007; 1 st , 2 nd , and 3 rd Quarter, 2008	<ul style="list-style-type: none"> • Operating Logs, Train Unavailability Data • Maintenance Records • Maintenance Rule Data • Corrective Action Program • Consolidated Data Entry Derivation Reports • System Health Reports

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Screening of Corrective Action Reports

In accordance with 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 Focused Review

a. Inspection Scope

The inspectors performed an in-depth review of one issue entered into the licensee's corrective action program, and also performed an in-depth review of existing plant operator workarounds. The sample was within the initiating events 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:

PIP O-08-7110, Unit 3 Tripped

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

As required by 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 2008, through June 2008, 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 listed in the Attachment to this report. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy.

b. Observations and Findings

No findings of significance were identified. In general, the licensee identified trends and appropriately addressed the trends with their CAP. However, the inspectors identified a trend that the licensee had not previously recognized within their trending program. The trend was associated with issues related to the adequacy and thoroughness of coordination of outage activities. During the fall 2008 Unit 2 outage, the inspectors noted three examples where outage activities were not adequately coordinated or communicated between work groups which resulted in unintended system interactions or incomplete operational awareness of plant configurations. The inspectors also noted three similar examples of outage work coordination or communication issues during the

previous two outages. These issues were documented in the licensee's corrective action program under PIPs O-08-6643, O-08-7023, O-08-7024, O-08-6998, O-08-2056, O-07-7374, and O-07-7674. The licensee initiated PIP O-09-0150 to fully evaluate their performance in outage work/activity coordination and communication through their trending program. The inspectors will continue to monitor this area and assess the effectiveness of any corrective actions that may come out of the licensee's evaluation.

4OA3 Event Follow-up

a. Inspection Scope

The inspectors evaluated the event listed below to assess the overall impact on the plant and mitigating actions. As appropriate, the inspectors: (1) observed plant parameters and status, including mitigating systems/trains; (2) determined alarms/conditions preceding or indicating the event; (3) evaluated performance of mitigating systems and licensee actions; and (4) confirmed that the licensee properly classified, if applicable, the event in accordance with emergency action level procedures and made timely notifications to NRC and state/county governments as required. Documents reviewed are listed in the Attachment to this report.

- PIP O-08-7110, Unit 3 Tripped

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings of significance were identified.

- .2 (Closed) Unresolved Item (URI) 05000269,270,287/2007008-02, Untimely Corrective Action to Determine if Steel Plate Laminations Existed in Safety-Related Applications. This issue involved the licensee's discovery of a lamination in a 3/4 inch steel plate slated for use in the fabrication of an LPI pipe hanger in July 2003, and subsequent discovery in September 2006 that additional steel plates of the same heat number had not been

segregated and inspected prior to use. The inspectors noted during a corrective action program inspection in 2007 (IR 0500269,270,287/2007008) that corrective actions to inspect safety-related supports in the Unit 2 and 3 containments that were fabricated from the suspect steel had not been performed. This URI was written as it was determined that the results of the licensee's inspections of the Unit 2 and 3 supports were required to assess the significance of the issue.

The inspectors reviewed completed work orders (WO) 1765202, 1765203, 1765204, 1765205, 1765212, 1765208, 1765207, 1765209, and 1765210 to verify the licensee completed the inspections on the Unit 3 and Unit 2 supports. No laminations or defects were identified by the inspections. The results of these inspections were documented in PIP O-03-4686. Based on the results of the inspections, the untimely corrective action associated with this issue constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the Enforcement Policy. This URI is closed.

.3 (Open) NRC Temporary Instruction (TI) 2515/172, Reactor Coolant System Dissimilar Metal Butt Welds (DMBW's)

a. Inspection Scope

The inspectors reviewed the licensee's activities related to the inspection and mitigation of dissimilar metal butt welds in the Reactor Coolant System (RCS) to ensure that the licensee activities were consistent with the industry requirements established in the Materials and Reliability Program (MRP) document MRP-139, Primary System Piping Butt Weld Inspection and Evaluation Guideline, dated July 2005. The inspectors' activities took place during this refueling outage and covered the documentation review and direct observation of the full structural weld overlay (FSWOL) process on the reactor cooling system hot leg decay heat removal line nozzle weld 2-53A-10-10A. The inspectors also reviewed the qualifications of the welders, as well as those of the personnel conducting the liquid penetrant testing prior to the application of the FSWOL. The inspectors only implemented portions of TI-172 that corresponded to the available activities during this outage. Previous TI-172 inspection activities were documented in NRC Inspection Report 05000269,270,287/2008004. Documents reviewed are listed in the Attachment to this report.

b. Findings and Observations

No findings of significance were identified.

TI 2515/172 REPORTING REQUIREMENTS FOR OCONEE UNIT 2

Examinations/Weld Overlays Mitigations Performed - Hot Leg Decay Heat Removal Nozzle Weld 2-53A-10-10A

- 1) For each weld overlay inspected, was the activity performed in accordance with ASME Code welding requirements and consistent with NRC staff relief request authorizations? Has the licensee submitted a relief request and obtained NRR staff authorization to install weld overlays?

Yes, the licensee performed the FSWOL to reinforce the existing weld during the inspectors' direct observation in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code (ASME Code). The licensee submitted Relief Request (RR)-07-ON-004 for a proposed alternative based on ASME Code Cases N-504-2 and N-638-1 to meet ASME Code requirements.

The licensee obtained NRC approval for the relief request in a safety evaluation report (SER) on January 17, 2008.

The inspectors reviewed welding procedure specifications, procedure qualification records, weld wire certifications, and the in-process welding process control sheets for compliance with ASME Section IX requirements and adherence to the SER. The licensee performed a liquid penetrant examination on the prepared surface of the pipe and existing weld prior to the application of the FSWOL.

- 2) For each weld overlay inspected, was the activity performed by qualified personnel?

Yes, welding personnel were qualified in accordance with the requirements identified in ASME Code Section IX. The inspectors reviewed the welder performance qualification test records and compared them with the requirements of QW-300. The in-process welding process control sheets were reviewed for compliance with the proposed alternative and ASME Code Section IX requirements.

- 3) For each weld overlay inspected, was the activity performed such that deficiencies were identified, dispositioned, and resolved?

Yes, the vendor, Welding Service Inc., had a program in place to identify, disposition, and resolve deficiencies encountered during the FSWOL work. No deficiencies were identified during the preparation and in-process welding.

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

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment of Oconee Nuclear Station conducted in July 2008. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to determine if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings (Including Exit Meeting)

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Rich Freudenberger, Safety Assurance Manager, and other members of licensee management at the conclusion of the inspection on January 12, 2009. 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

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

E. Anderson, Superintendent of Operations
S. Batson, Engineering Manager
D. Baxter, Site Vice President
D. Brewer, Safety Assessments Manager
R. Brown, Emergency Preparedness Manager
E. Burchfield, Reactor and Electrical Systems Manager
C. Curry, Mechanical/Civil Engineering Manager
P. Culbertson, Maintenance Manager
G. Davenport, Compliance Manager
R. Fruedenberger, Safety Assurance Manager
P. Gillespie, Station Manager
M. Glover, General Manager of Projects
D. Hubbard, Training Manager
J. Kammer, Modification Engineering Manager
T. King, Security Manager
B. Meixell, Regulatory Compliance
M. Stephenson, Shift Operations Manager
J. Smith, Regulatory Compliance
J. Steely, Continuing Training Supervisor
J. Weast, Regulatory Compliance

NRC

J. Stang, Project Manager, NRR

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Discussed

2515/172	TI	Reactor Coolant System Dissimilar Metal Butt Welds (Section 40A5.3)
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Closed

05000269,270,287/2007008-02	URI	Untimely Corrective Action to Determine if Steel Plate Laminations Existed in Safety-Related Applications (Section 40A5.2)
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DOCUMENTS REVIEWED

Section 1R01: Adverse Weather

OP/1,2,3/A/1102/020, Control Room Rounds, Enclosure 5.5, Cold Weather Checklist
 OP/1,2,3/A/1102/020 A, Primary Rounds
 OP/1,2,3/A/1102/020 C, Turbine Building Third and Fifth Floor Rounds
 OP/2/A/1102/020 D, SSF and Outside Rounds
 CSM, 4.14, Chemistry Area Rounds and Equipment Status
 RP/0/B/1000/035, Severe Weather Preparations
 IP/0/B/1606/009, Preventive Maintenance and Operational Check of Freeze Protection
 Nuclear System Directive (NSD-317), Freeze Protection Program
 Category C - Electrical Heat Trace Health Reports for 2008
 Freeze Protection Health Reports for 4th quarters 2007 and 2008
 PIP O-06-7488, Cold Weather Checklist needs evaluation and revision
 PIP O-07-7200, Discrepancies between Cold Weather Checklist Point on Unit 3 Primary NEO
 Rounds and Maintenance Procedure, MP/3/A/3007/069
 PIP O-07-7694, Computer indication for outside air ambient temperature may be inaccurate
 PIP O-08-6690, PIP Initiated to document freeze protection concern for cold weather checklist
 PIP O-08-6691, Turbine Building 5th floor louvers are open during Cold Weather Checklist
 PIP O-08-8018, Air Handling Unit (AHU) 1-9 plant heating outlet piping temperature not greater
 than ambient
 PIP O-08-8062, AHU 2-16 has plant heating steam red tagged closed while outside air temp is
 20 degrees F
 Work Order 01807918, PM and Annual Outside Freeze Protection

Section 1R04: Equipment Alignment

Partial Walkdown

OSS-0254.00-00-1034, Design Basis Specification for the Reactor Building Spray System
 OSS-0254.00-00-1026, Design Basis Specification for the Reactor Building Cooling System
 Drawing OFD-103A-2.1, Unit 2 Flow Diagram of Reactor Building Spray System
 Drawing OFD-116E-2.1, Unit 2 Flow Diagram of Reactor Building Cooling System
 Drawing OFD-124B-2.2, Unit 2 Flow Diagram of Low Pressure Service Water (RBCUs)
 OP/2/A/1104/005, Reactor Building Spray System
 OP/2/A/1104/015, Reactor Building Cooling System
 OP/2/A/1104/010, Low Pressure Service Water
 TS 3.7.7, Low Pressure Service Water System
 TS 3.6.5, Reactor Building Spray and Cooling Systems
 OSS-0254.00-00-1000, Design Basis Specification for Emergency Feedwater and the Auxiliary
 Service Water Systems
 OSS-0254.00-00-1005, Standby Shutdown Facility Auxiliary Service Water System
 Drawing OFD-121D-1.1, Unit 1 Flow Diagram of Emergency Feedwater System
 Drawing OFD-121B-1.3, Unit 1 Flow Diagram of Feedwater System (Final Feedwater)
 Drawing OFD-121D-3.1, Unit 3 Flow Diagram of Emergency Feedwater System
 Drawing OFD-121B-3.3, Unit 3 Flow Diagram of Feedwater System (Final Feedwater)

Drawing OFD-121D-1.2, Units 1, 2, and 3 Flow Diagram of Emergency Feedwater System (Auxiliary Service Water)
 Drawing OFD- 133A-2.5, Units 1, 2, and 3 Flow Diagram of Condenser Circulating Water System (SSF Aux. Service)
 OP/0/A/1600/009, SSF Auxiliary Service Water System
 OP/1/A/1106/006, Emergency Feedwater System
 OP/3/A/1106/006, Emergency Feedwater System
 EP/1/A/1800/001, EOP - Rules and Appendix, Rule 3, Loss of Main and Emergency Feedwater
 EP/3/A/1800/001, EOP - Rules and Appendix, Rule 3, Loss of Main and Emergency Feedwater
 UFSAR Section 9.6, Standby Shutdown Facility
 UFSAR Section 10.4.7, Emergency Feedwater System
 TS 3.10.1 and bases, Standby Shutdown Facility (SSF)
 TS 3.7.5 and bases, Emergency Feedwater System
 SLC 16.9.9 and bases, Auxiliary Service Water System and Main Steam Dump Valve Operability requirements

OP/0/A/2000/041, KHS - Modes of Operation
 TS 3.8.1 and bases, AC Sources - Operating
 OSS-0254.00-00-2005, Design Basis Specification for Keowee Emergency Power
 UFSAR Section 8.3.1.1.1, Keowee Hydro Station
 SLC 16.8.6 and bases, Lee/Central Alternate Power System

Complete Walkdown

OSS-0254.00-00-2005, Keowee Emergency Power
 OSS-0254.00-00-2018, Keowee 125 VDC Power System
 AP/0/A/2000/002, Keowee Hydro Station- Emergency Start
 OP/0/A/2000/044, Keowee Emergency Power Path and Auxiliary Alignment
 K-707-A, Elementary Diagram AC Circuits Station Auxiliary Systems
 K-702, One Line Diagram 600 Volt Station Auxiliary Circuits
 K-709, Three Line Diagram Transformers No. 1, 1X, 2X, CX, 1E and 2E
 K-703, One Line Diagram 240/120V AC & 208V/120V AC Station Auxiliary Circuits
 K-704, One Line Diagram 125 Volt DC Station Auxiliary Circuits
 K-700, One Line Diagram Relays and Meters 13.8- 230KV
 PIPs 06-00432, 06-00655, 06-01439, 06-01517, 06-02198, 06-03642, 06-06213, 07-00671, 07-00833, 07-00836, 07-06946, 08-01000, 08-02542, 08-02647, 08-06321

Section 1R05: Fire Protection

UFSAR Section 9.5.1, Fire Protection System
 OSS-0254.00-00-4008, Design Basis Specification for Fire Protection

Section 1R08: In-service Inspection Activities

OP/0/A/1102/028, Reactor Building Tour (For Boric Acid Leaks), Revision (Rev.) 034
 Nuclear System Directive 322, Boric Acid Corrosion Program, Rev. 3
 NDE 12, General Radiography Procedure for Preservice and Inservice Inspection
 Steam Generator Management Program, Rev. 15
 Areva 03-1246524, Instruction for Plug Inspection, Rev. 009
 Areva 03-1275114, Eddy Current Data Management Guidelines, Rev. 012

Areva 03-1277368, System Administration Guidelines for Eddy Current Assignments, Rev. 012
 Areva 03-9020586, Requirements for the Preparation of Automated Eddy Current Data, Rev. 001
 Areva 54-ISI-400, Multi-Frequency Eddy Current Examination of Tubing, Rev. 016
 Areva 51-9089441, ONS2R-EOC23 ECT Inspection Plan, Rev. 000
 SGMEP 105, ROTSG Specific Assessment of Potential Degradation Mechanism, Rev. 8
 Areva Condition Report (CR) 2008-6153, ONS2 EOC23 Steam Generator Tube Mis-Encode Problem Investigation Process (PIP) O-08-07336, Mis-Encode Error Found During O2EOC23 Steam Generator Eddy Current Data Verification
 PIP O-07-02323, Arc Strike Identified on Piping Weld Adjacent to Valve 2CF-1
 PIP O-08-06882, Results of Reactor Vessel Head Bare Metal Examination
 PIP G-06-00465, Containment Integrity Assessment Report
 PIP G-08-00552, Assessment of Use of NIS-2 Forms for ASME Section XI Repair and Replacement Program
 PIP G-08-00888, To Document Benchmarking Report #SXI-B-2008-0001 for the Inspection on Reviewing Southern Company's ASME Section XI Inspection Program
 PIP O-08-05810, Self Assessment on a Post Outage Review of 1EOC 24 SG Inspection
 PIP O-07-02186, U2 Engineering/Maintenance Reactor Building Boric Acid Leak Tour Results (Mode 3)
 PIP O-08-06547, Unit 2 Reactor Building Hot Shutdown (Mode 4) Tour Results
 PIP O-08-06588, Unit 2 Reactor Building Tour Results (Mode 5)
 PIP O-08-07305, Documentation of U2EOC23 Refueling Outage Reactor Building Walkdown in Support ISI for Unit 2
 PIP O-07-06548, Documentation of Level 2 Assessment of Boric Acid Corrosion Program Execution Effectiveness Review
 PIP O-07-03108, U2 Engineering Reactor Building Tour Results (Mode 3) – Performed During Startup from U2EOC22 Refueling Outage
 PIP O-08-06561, U2EOC23 Engineering/Maintenance Reactor Building Tour Results (Mode 3) – Performed During Shutdown
 Tape on Visual Inspection for SG 2A & 2B Cold Leg Lower Inner Radius
 Areva 51-9080450, A Condition Monitoring and Operational Assessment Evaluation of Wear Scars for Oconee Unit 1 at EOC 24, Rev. 000
 Steam Generator Inspection Plan and Schedule
 Steam Generator Data Acquisition and Data Analysis Daily Reports
 Self Assessment SGM-SA-08-001, Steam Generator Inspection Post-Outage Critique
 Eddy Current Inspection Equipment Certification and Calibration Records
 Data Acquisition and Data Examiner Training, Qualification, Certification, and Vision Examination Records
 Eddy Current Examination Technique Specification Sheets
 Areva 51-9055286, Oconee Unit 2 Steam Generator Condition Monitoring and Operational Assessment for EOC 22
 Calculation OSC-9303, Oconee Specific EDY Calculation for Reactor Pressure Vessel Head Penetrations, Dated May 12, 2008
 Report UT-07-050, UT Vessel Examination for U2 EOC 22
 Report PT-07-029, Liquid Penetrant Examination for Plate Weld to Shell of 2-LS-Tank
 Report VT-07-152, Visual Examination (VT-3) for 2-LS-Tank Supports
 Report VT-07-156, Visual Examination (VT-3) for Steam Generator 2-SGB Lateral Support
 Report UT-08-124, UT Pipe Weld Examination for 2RC-279-91V Pipe to Elbow
 Report UT-08-126, UT Pipe Weld Examination for 2MS-124-71V Pipe to Reducer

Report UT-08-095, UT Pipe Weld Examination for 2-01A-4-29 Pipe to Elbow
 Report UT-08-094, UT Pipe Weld Examination for 2RC-279-89V Elbow to Elbow
 Report MT-08-037, Magnetic Particle Examination for 2RC-279-91V Pipe Weld to Elbow
 Report MT-08-039, Magnetic Particle Examination for 2RC-279-90V Pipe Weld to Elbow
 Report for Weld 2-RCP-FTR2B-SH-2, Radiographic Examination for RCP Filter
 Report for Weld 2-SGA-W250-4, Radiographic Examination for SG A Weld
 Report for Weld 2-SGA-W335, Radiographic Examination for SG A Weld
 Report for Weld 2-SGA-W251-4, Radiographic Examination for SG A Weld

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluations

OP/2/A/1104/004, Low Pressure Injection System
 NSD 213, Risk Management Process
 NSD 415, Operational Risk Management (Modes 1-3) per 10 CFR 50.65(a)(4)

Section 1R15: Operability Evaluations

TS 3.5.3, 3.8.1, 3.10
 PIP O-08-1278, KHU-1 generator field brush pigtailed appear to have overheated
 OSS-0254.00-00-1005, Design Basis Specification for SSF ASW
 OSS-0254.00-00-2005, Design Basis Specification for Keowee Emergency Power
 OSS-0254.00-00-1028, Design Basis Specification for Low Pressure Injection and Core Flood System

Section 1R18: Plant Modifications

OSC-9602, Cyclone Separator Evaluation for HPI, LPI, and BS Pumps
 50.59 Screen, Replace cyclone separators and seal flush orifices on Low Pressure Injection pumps (EC94497, 96261, and 96420)
 AR 2319, Equipment Minor Revision Comparison
 EC 96261, Replace LPI pump cyclone separator & seal orifices

Section 1R19: Post Maintenance Testing

Drawing OFD-102A-2.1, Flow Diagram of Low Pressure Injection System (Borated Water Supply & LPI Pump Suction)
 OP/0/A/1600/010, Operation of the SSF Diesel-Generator, Revision 54
 NSM ON-23117, LPSW Reactor Building Waterhammer Prevention System

Section 1R20: Refueling & Outage Activities

PIP O-08-6199, 2EOC23 Independent Review Team Outage Risk Assessment
 PIP O-08-6221, PORC Review of the Unit 2EOC23 Independent Review Team Outage Risk Assessment
 PIP O-08-6643, Loss of process fluid during fill of U2 S/G from U1 using 1A MDEFWP
 PIP O-08-6655, 1A MDEFWP discharge line water hammer
 OP/2/A/1106/008, Steam Generator Secondary Hot Soak Fill, Drain, and Layup
 OP2/A/1502/008C, Secondary System Tagout Information and Draining
 SD 1.3.5, Shutdown Protection Plan

AP/2/A/1700/002, Excessive RCS Leakage
 OP/2/A/1102/010, Controlling Procedure for Unit Shutdown
 OP/2/A/1103/006, RCP Operation

Section 1R22: Surveillance Testing

Drawing OFD-122A-3.4, Flow Diagram of Main Steam System (Emergency FDW Pump Turbine Steam Supply & Exhaust)
 Drawing OFD-121D-3.1, Flow Diagram of Emergency Feedwater System
 Drawing OFD-121B-3.3, Unit 3 Flow Diagram of Feedwater System (Final Feedwater)
 Drawing OFD-121A-3.8, Flow Diagram of Condensate System (Condensate Make-up & Emergency FDW Pump Suction)
 OP/3/A/1106/006, Emergency Feedwater System
 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)
 OP/2/A/1106/006, Emergency Feedwater System

Section 4OA2: Identification and Resolution of Problems

Engineering IPA Trend Reports, 2nd and 3rd Qtr. 2008
 Maintenance IPA Trend Reports, 2nd and 3rd Qtr. 2008
 Operations IPA Trend Reports, 2nd and 3rd Qtr. 2008

Section 4OA3: Event Follow-up

PT/0/A/0811/002, Trip/Transient Review, Unit 3 Reactor Trip on 11/07/08
 NSD 505, Response to Reactor Trips, Significant Transients, or Unit Threat Situations
 PIP O-08-7110, Unit 3 tripped

Section 4OA5.3: NRC Temporary Instruction (TI) 2515/172, Reactor Coolant System Dissimilar Metal Butt Welds

Relief Request 07-ON-004, Use of Preemptive Weld Overlay and Inspection of the Decay Heat Removal Line to Hot Leg Nozzle Welds, Dated September 13, 2007
 NRC Approval and Safety Evaluation on Relief Request 07-ON-004, Use of Preemptive Weld Overlay and Inspection of the Decay Heat Removal Line to Hot Leg Nozzle Welds, Dated January 17, 2008
 Welding Service Inc. (WSI) QAP 9.3, Workmanship and Visual Inspection Criteria for ASME Welding, Rev. 18
 WSI QAP 9.21, Liquid Penetrant Inspection Procedure Solvent Removable Visible Dye for Alloy 600 Weld Overlay
 WSI Work Traveler 105401-TR-006, RCS Hot Leg Decay Heat Nozzle Weld 2-53A-10-10A Weld Overlay Repair, Rev. 0
 Structural Integrity Associates (SIA) Drawing ONS-18Q-01, Hot Leg Decay Heat Nozzle Weld Overlay Design, Rev. 1
 Calculation 8745.06, Supporting Vendor Analysis for Alloy 600 Mitigation – Oconee Units 1, 2, & 3 – Hot Leg Decay Heat Nozzle Overlay
 PT Report TR-006-PT-01, PT Examination for Hot Leg Decay Heat Nozzle Weld Prior to the Application of Weld Overlay

Welder and Equipment Qualification and Certification Records

LIST OF ACRONYMS

ADAMS	-	Agency Wide Documents Access and Management System
AP	-	Abnormal Procedure
ASME	-	American Society of Mechanical Engineers
ASW	-	Auxiliary service Water
BACC	-	Boric Acid Corrosion Control
BPVC	-	Boiler and Pressure Vessel Code
CAP	-	Corrective Action Program
CCW	-	Condenser Circulating Water
CFR	-	Code of Federal Regulations
CRD	-	Control Rod Drive
DEC	-	Duke Energy Corporation
DMBW	-	Dissimilar Metal Butt Welds
DPC	-	Duke Power Company
DSC	-	Dry Storage Certification
EDY	-	Effective Degradation Years
EFW	-	Emergency Feedwater
EOC	-	End-of-Cycle
FSWOL	-	Full Structural Weld Overlay
HPI	-	High Pressure Injection
IA	-	Instrument Air
INPO	-	Institute of Nuclear Power Operations
IP	-	Inspection Procedure
IR	-	Inspection Report
ISI	-	In-Service Inspection
IST	-	In-Service Testing
JIT	-	Just-In-Time Training
KHU	-	Keowee Hydro-electric Unit
LDST	-	Letdown Storage Tank
LPI	-	Low Pressure Injection
LPSW	-	Low Pressure Service Water
LRT	-	Leak Rate Test
MRP	-	Materials and Reliability Program
MT	-	Magnetic Particle Testing
NCV	-	Non-Cited Violation
NDE	-	Non-Destructive Examination
NEI	-	Nuclear Energy Institute
NRC	-	Nuclear Regulatory Commission
NSD	-	Nuclear Site Directive
OOS	-	Out-of-Service
PARS	-	Publicly Available Records
PI	-	Performance Indicator
PIP	-	Problem Investigation Process report
PM	-	Preventive Maintenance
PMT	-	Post-Maintenance Test

PWR	-	Pressurized Water Reactor
RB	-	Reactor Building
RBS	-	Reactor Building Spray
RCA	-	Radiologically Controlled Area
RCP	-	RCP
RCS	-	Reactor Coolant System
RR	-	Relief Request
RT	-	Radiographic Testing
RTP	-	Rated Thermal Power
SER	-	Safety Evaluation Report
SG	-	Steam Generator
SLC	-	Selected Licensee Commitment
SSC	-	Structures, Systems, and Components
SSF	-	Standby Shutdown Facility
SW	-	Service Water
TDEFWP	-	Turbine Driven Emergency Feedwater Pump
TI	-	Temporary Instruction
TLD	-	Thermoluminescent Dosimeters
TS	-	Technical Specification
UFSAR	-	Updated Final Safety Analysis Report
UT	-	Ultrasonic Testing
URI	-	Unresolved Item
VT	-	Visual Examination
VUHP	-	Vessel Upper Head Penetration
WO	-	Work Order
WPS	-	Waterhammer Prevention System