UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

July 27, 2010

Mr. David A. Baxter
Site Vice President
Duke Energy Carolinas, LLC
Oconee Nuclear Station
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000269/2010003, 05000270/2010003, 05000287/2010003

Dear Mr. Baxter:

On June 30, 2010, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station Units 1, 2, and 3. The enclosed inspection report documents the inspection results, which were discussed on July 1, 2010, with you and other members of your staff.

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

This report documents two NRC-identified findings and one self-revealing finding of very low safety significance (Green) which were determined to be violations of NRC requirements. However, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Oconee. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, RII, and the NRC Senior Resident Inspector at Oconee.

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 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, 72-04
License Nos.: DPR-38, DPR-47, DPR-55

Enclosure: NRC Integrated Inspection Report 05000269/2010003, 05000270/2010003, 05000287/2010003 w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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Letter to David A. Baxter from Jonathan H. Bartley dated July 27, 2010

SUBJECT: OCONEE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000269/2010003, 05000270/2010003, 05000287/2010003

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-269, 50-270, 50-287, 72-04
License Nos:	DPR-38, DPR-47, DPR-55
Report Nos:	05000269/2010003, 05000270/2010003, 05000287/2010003
Licensee:	Duke Energy Carolinas, LLC
Facility:	Oconee Nuclear Station, Units 1, 2 and 3
Location:	Seneca, SC 29672
Dates:	April 1, 2010, through June 30, 2010
Inspectors:	A. Sabisch, Senior Resident Inspector E. Riggs, Resident Inspector G. Ottenberg, Resident Inspector K. Ellis, Resident Inspector J. Hamman, Resident Inspector R. Chou, Reactor Inspector (Section 1R17) W. Loo, Health Physicist (Section 2RS1)
Approved by:	Jonathan H. Bartley, Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000269/2010-003, 05000270/2010-003, 05000287/2010-003; 04/01/2010 – 06/30/2010; Oconee Nuclear Station Units 1, 2 and 3; Maintenance Risk Assessments and Emergent Work Control, Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications, Radiological Hazard Assessment and Exposure Control

The report covered a three-month period of inspection by the resident inspectors and two Region-based reactor inspectors. Three Green findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Cross-cutting aspects are determined using IMC 0310, "Components Within The Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Initiating Events

Green. An NRC-identified Green non-cited violation (NCV) of 10 CFR 50.65(a)(4) was identified for the licensee's failure to adequately develop and effectively implement risk mitigation actions associated with lifting the Unit 2 main generator rotor. The licensee failed to establish and adhere to lift height restrictions to protect the Unit 1 and Unit 2 main feeder buses from damage in the event the rotor was dropped. The issue was entered into the licensee's corrective action program as PIPs O-10-2477 and O-10-2830. Corrective actions taken included enhancing the Critical Activity and Complex Lift Plans to provide additional guidance and mitigating actions as well as assigning increased oversight for future lifts.

The performance deficiency was more than minor because it affected the Human Performance attribute and adversely impacted the Initiating Events cornerstone objective in that the risk management strategies did not minimize the consequence of a rotor drop during the Unit 2 online lifts and were not effectively implemented during the Unit 2 outage lifts. The inspectors completed a Phase 1 screening using Inspection Manual Chapter 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process, and determined that the finding was of very low safety significance (Green) because the Incremental Core Damage Probability increase was less than 1E-6. The finding directly involved the cross-cutting area of Human Performance under the "Work Activity Coordination" aspect of the "Work Control" component in that the licensee failed to appropriately control work activities by incorporating risk insight. [H.3(a)] (Section 1R13)

Cornerstone: Mitigating Systems

Green. An NRC-identified non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" was identified. The licensee failed to adhere to drawings and instructions during the installation of rebar in the Unit 3 Borated Water Storage Tank (BWST) Natural Phenomena Barrier System foundation. This issue has been entered into the licensee's corrective action program as PIP O-10-4985.

The inspectors determined that the licensee's failure to follow approved drawings and instructions for construction of the Unit 3 BWST Natural Phenomena Barrier System foundation was a performance deficiency. The inspectors determined that the performance deficiency was more than minor because, if left uncorrected, insufficient concrete coverage on the rebar could lead to rebar corrosion and challenge the integrity of the Unit 3 BWST Natural Phenomena Barrier System. The inspectors used Inspection Manual Chapter 0609, "Significance Determination Process", Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings" and determined that the finding was of very low safety significance (Green) because the finding did not result in the actual loss of function of the Unit 3 BWST. This finding had a cross-cutting aspect in the area of Human Performance under the "Procedural Compliance" aspect of the "Work Practices" component because the licensee failed to effectively communicate expectations to follow procedures. [H.4(b)] (Section 1R17)

Cornerstone: Occupational Radiation Safety

Green. A self-revealing non-cited violation (NCV) of 10 CFR 20.1501(a) was identified for the licensee's failure to conduct an adequate area radiation survey to evaluate the magnitude and extent of radiation levels for an area located in the Radwaste Facility. This issue has been entered into the licensee's corrective action program as PIPs O-09-04475 and O-10-01503.

The failure to conduct an adequate area radiation survey to evaluate the magnitude and extent of radiation levels for an area located in the Radwaste Facility is a performance deficiency. This finding is more than minor because it is associated with the Occupational Radiation Safety cornerstone attribute of exposure control and monitoring and it affected the associated cornerstone objective because the failure to conduct an adequate area radiation survey to evaluate the magnitude and extent of radiation levels for an area located in the Radwaste Facility did not ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The finding was evaluated using the IMC 0609, Appendix C, and was determined to be of very low safety significance. The cause of this finding is related to the cross-cutting aspect of radiological safety in the work control component of Human Performance because the licensee did not conduct an adequate area radiation survey to evaluate the magnitude and extent of radiation levels for an area located in the Radwaste Facility. [H.3(b)] (Section 2RS1)

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at approximately 100 percent rated thermal power (RTP). On June 6, 2010, power was reduced to approximately 88 percent RTP to conduct main turbine valve movement testing. The unit was returned to approximately 100 percent RTP and remained there for the remainder of the inspection period.

Unit 2 began the inspection period at approximately 100 percent RTP and remained there until the unit was removed from service for the 2 EOC 24 refueling outage on April 25. It was returned to service early on May 30, but was removed from service to address excessive pressurizer spray valve leakage. The unit returned to service on June 3, and reached approximately 100 percent RTP on June 5 and remained there for the remainder of the inspection period.

Unit 3 began the inspection period at approximately 100 percent RTP. The unit was placed in Mode 4 on April 18, to repair a leak in the 3F2 feedwater heater. The unit was returned to 100 percent RTP on April 26 and remained there for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

Hot Weather Preparations: The inspectors reviewed the licensee's preparations for adverse weather associated with high ambient temperatures to ensure equipment used in the licensee's procedures were capable of functioning as intended. This included field walkdowns to assess the material condition and operation of ventilation and cooling equipment, as well as a review of procedures designed to align equipment to support operation during the summer months. Risk-significant systems and areas reviewed included the standby shutdown facility (SSF), the auxiliary building, portions of the turbine building and the Essential Siphon Vacuum Building. In addition, the inspectors conducted discussions with operations, engineering, and maintenance personnel in order to assess the licensee's ability to identify and resolve deficient conditions associated with hot weather protection equipment prior to actual hot weather being experienced at the site. The Documents reviewed are listed in the Attachment.

External Flooding: The inspectors conducted a walkdown of the SSF facility to inspect the below-grade conduits and penetrations that could provide a pathway for water to enter the facility. The drainage system including installed sump pumps was inspected to verify it was functional and able to remove water that entered the facility. Discussions were held with the system engineers responsible for the equipment within the SSF structure. Documents reviewed are listed in the Attachment.

Evaluation of Summer Readiness of Offsite and Alternate AC Power Systems: The inspectors reviewed the licensee's procedures used to respond to changing offsite grid conditions, including actions to be taken when notified by the Transmission Control Center that a Real Time Contingency Analysis (RTCA) shows inadequate post trip voltage to verify the implementation of the procedures protect mitigating systems from adverse weather affects. The inspectors also reviewed the procedural guidance for monitoring switchyard voltage and frequency when the RTCA tool is non-functional. The assessment of plant risk for maintenance activities that could affect grid reliability or offsite activities which could affect the transmission system's ability to provide adequate offsite power was discussed with the appropriate plant personnel. The inspectors also reviewed related work orders and performed a walkdown of the plant switchyards to verify the material condition of the offsite power sources. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed partial walkdowns of the six systems listed below to assess the operability of redundant or diverse trains and components when safety-related equipment was inoperable or out-of-service and to identify any discrepancies that could impact the function of the system potentially increasing overall risk. The inspectors reviewed applicable operating procedures and walked down system components, selected breakers, valves, and support equipment to determine if they were correctly aligned to support system operation. The inspectors reviewed protected equipment sheets, maintenance plans, and system drawings to determine if the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the Corrective Action Program (CAP). Documents reviewed are listed in the Attachment.

- Designated protected equipment associated with work tied to the Natural Phenomena Barrier System and High Energy Line Break projects during the week of April 12, 2010
- Verification of protected equipment identified for planned maintenance activities at the start of the week of April 25, 2010
- Additional equipment identified for protection following declaring the SSF inoperable based on high service water strainer differential pressure indications
- Decay heat removal systems placed in-service prior to the start of core reloading activities on Unit 2
- Verification of protected equipment designated as required to support draining the reactor coolant system to reduced inventory for steam generator nozzle dam removal on Unit 2

- Keowee Hydro Unit (KHU)-1 while KHU-2 was out of service for quarterly Preventive Maintenance (PM)

b. Findings

No findings were identified.

1R05 Fire Protection

a. Inspection Scope

Fire Area Tours: The inspectors walked down accessible portions of the five plant areas listed below to assess the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The inspectors observed the fire protection suppression and detection equipment to determine if any conditions or deficiencies existed which could impair the operability of that equipment. The inspectors selected the areas based on a review of the licensee's safe shutdown analysis probabilistic risk assessment and sensitivity studies for fire-related core damage accident sequences. Documents reviewed are listed in the Attachment.

- Turbine Building Ground Floor
- Turbine Building Operating Deck
- Unit 1 East and West Penetration Rooms
- Unit 2 Reactor Building
- Unit 1 Cable Room

Fire Drill Observation: On June 11, 2010, the licensee conducted a shift fire drill simulating an oil leak on the SSF generator resulting in a fire. The inspectors observed this drill to verify the fire brigade's use of protective gear and firefighting equipment; that fire fighting pre-plan procedures and appropriate fire fighting techniques were used; and that the directions of the fire brigade leader were thorough, clear, and effective. The inspectors also observed the post-drill critique to assess if it was appropriately critical, included discussions of drill observations, and identified any areas requiring corrective action. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R06 Flood Protection Measures

a. Inspection Scope

Internal Flood Protection: The inspectors reviewed the following activity to verify that the licensee's turbine building flood control measures were implemented while performing Unit 2 condenser maintenance during the refueling outage. The inspectors reviewed the

applicable portions of OP/2/A/1104/012 E, Isolation and Re-Flooding Condenser Circulating Water (CCW) Inlet Piping. The inspectors verified that Selected Licensee Commitments 16.9.11, Turbine Building Flood Protection Measures were met.

Submerged or Buried Cable Inspection: The inspectors inspected the condition of the Unit 1 SSF Trench (Cover 34) through direct observation. The inspectors verified the trench contained no standing water and that the cables were intact and in good condition.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

Resident Review: The inspectors observed one active simulator exam, to assess the performance of licensed operators during a simulator training session. The scenario included a group of control rods inadvertently de-energizing requiring a manual reactor trip, failure of the Main Turbine to automatically or manually trip requiring the operators to secure both electro-hydraulic turbine control pumps, Loss of Main Feedwater, Emergency Feedwater, and the Condensate Booster Pumps requiring the crew to implement High Pressure Injection Forced Cooling. The inspection focused on high-risk operator actions performed during implementation of the abnormal and emergency operating procedures, and the incorporation of lessons learned from previous plant and industry events. The classification and declaration of the Emergency Plan was also observed during the scenario. The post-scenario critique conducted by the training instructor and the crew was observed. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the licensee's effectiveness in performing the following three corrective maintenance activities. These reviews 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 activity 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. Documents reviewed are listed in the Attachment.

- Assessment of unexpected refueling canal seal leakage following canal flood-up, actions taken to drain back down, maintenance work done to replace the seal and verify that no leakage existed to support the core offload work
- Repair of CCW-284, SSF Diesel Engine Service Water pump discharge check valve following its failure to close resulting in inoperability of the SSF heating, ventilation, and air conditioning (HVAC) System
- Relocation of the low pressure tap associated with the differential pressure gauge of the SSF service water strainer following clogging of the tap

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated the following attributes for the nine 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.

- Unit 2 Electrical Generator Rotor Lift to support rotor replacement from the truck bay to the Unit 2 operating deck laydown area
- Failure of 1HP-417 Reactor Coolant Makeup Unit Pump (RCMUP) recirculation path to Spent Fuel Pool to open during SSF RCMUP test concurrent with breaker 1KE-9 failure
- Replacement of reactor vessel plenum during the 2 EOC 24 refueling outage
- Critical Plan covering the restart of work associated with the Natural Phenomena Barrier System (NPBS) around the Borated Water Storage Tank (BWST)
- Unplanned Red PRA condition due to the simultaneous unavailability of Station Auxiliary Service Water (ASW) and SSF ASW on April 28, 2010
- Drain down of the reactor coolant system to reduced inventory conditions to support removal of the steam generator nozzle dams during low decay heat conditions in 2 EOC 24
- Unplanned Red PRA condition due to the simultaneous unavailability of Station ASW and SSF ASW (failure of 0CCW-284) on May 4, 2010

- Response to low seal dP indications on the 2A1 reactor coolant pump (RCP) during startup, the decision to return to Mode 5 to replace the RCP seal package and the associated schedule review and resequencing required to support the emergent work
- Unit 2 Electrical Generator Rotor Lift to support rotor replacement from the Unit 2 operating deck laydown area to the truck bay

b. Findings

Introduction: An NRC-identified Green NCV of 10 CFR 50.65(a)(4) was identified for the licensee's failure to adequately develop and effectively implement risk mitigation actions associated with lifting the Unit 2 main generator rotor. The licensee failed to establish and adhere to lift height restrictions to protect the Unit 1 and Unit 2 main feeder buses from damage in the event the rotor was dropped.

Description: During the Unit 2 refueling outage, the main generator rotor was replaced. The installation process included six overcapacity lifts which required lifting the 190-ton rotor over the Unit 1 and Unit 2 main electrical feeder buses. Two lifts were scheduled while both Unit 1 and Unit 2 were operating and the remaining four lifts were scheduled while Unit 2 was shutdown. The licensee developed a Critical Activity Plan for the two lifts conducted while Unit 1 and Unit 2 were at power and a Complex Lift Plan for the lifts that occurred during the Unit 2 outage. The following deficiencies related to the development and execution of these plans were identified by the inspectors and represented a failure to meet the requirements in 10 CFR 50.65(a)(4):

- The licensee's Critical Activity Plan addressed the risk mitigation of a potential drop of the rotor by stating that the Safe Shutdown Facility could be used to mitigate the consequences of a load drop event. However, the licensee failed to consider limiting the lift height while over Unit 1 and Unit 2 main electrical feeder buses to a height which would not have damaged the buses in the event the rotor was dropped. The licensee had previously calculated that a drop of the rotor of less than six inches would prevent damaging the electrical buses beneath the east-west portion of the designated travel path. Without applying this limitation, the rotor was lifted greater than two feet above the floor.

- In the Complex Lift Plan, the licensee restricted the rotor from being lifted more than six inches above the floor to prevent damage to the main electrical feeder buses located directly beneath the travel path in the event the rotor was dropped. This limitation was discussed in the pre-job brief for the activity. While performing the first lift, the rotor was raised above the six inch height restriction. The lift was stopped and the rotor lowered to within the prescribed height limit prior to completing the lift.

The issue was entered into the licensee's corrective action program as PIPs O-10-2477 and O-10-2830. Corrective actions taken included enhancing the Critical Activity and Complex Lift Plans to provide additional guidance and mitigating actions as well as assigning increased oversight for future lifts.

Analysis: The failure to adequately manage the increased risk associated with the Unit 2 rotor lifts was a performance deficiency. The performance deficiency was more than minor because it affected the Human Performance attribute and adversely impacted the Initiating Events cornerstone objective in that the risk management strategies did not minimize the consequence of a rotor drop during the Unit 2 online lifts and were not effectively implemented during the Unit 2 outage lifts. The inspectors completed a Phase 1 screening using Inspection Manual Chapter 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process, and determined that the finding was of very low safety significance (Green) because the Incremental Core Damage Probability increase was less than 1E-6. The finding directly involved the cross-cutting area of Human Performance under the "Work Activity Coordination" aspect of the "Work Control" component in that the licensee failed to appropriately control work activities by incorporating risk insight. [H.3.a]

Enforcement: 10 CFR 50.65(a)(4), Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, requires in part, that the licensee assess and manage the increase in risk that may result from the proposed maintenance activities. Nuclear System Directive (NSD) 415, Operational Risk Management (Modes 1-3) per 10CFR50.65(a)(4), implements the requirements of 10FR50.65(a)(4) during power operation. NSD 213, Risk Management Process, defines the requirements of station personnel to identify, direct, control, and manage risk-significant activities at the station, including the development of Critical Activity Plans to manage and minimize the risk resulting from the planned activity. Contrary to the above, on April 10, 2010, and April 26, 2010, the licensee failed to adequately assess and manage the increase in risk associated with maintenance activities. Specifically, for the planned Unit 2 main generator rotor lifts the licensee did not establish a height restriction during the rotor lift while Unit 2 was online and exceeded the established height restriction during a rotor lift while Unit 2 was shutdown. Consequently, the Unit 1 and Unit 2 main electrical feeder buses could have been damaged in the event the rotor was dropped. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as PIP's O-10-2477 and O-10-2830, this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Manual: NCV 05000269, 270/2010003-01, Inadequate Risk Management Associated with the Unit 2 Electrical Generator Rotor Lift.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following eight operability evaluations affecting risk significant systems to assess: (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 Technical Specifications (TS) limiting condition for operations.

- PIP O-10-2172, Unevaluated Single Failure of Control Room Ventilation System
- PIP O-10-2608, Following successful as-found testing, the pilot spindle/disc assembly of 1RC-66 removed during 1 EOC 25 was found in unexpected condition
- PIP O-10-2842, Troubleshooting the cause of the 3A hotwell pump failure to start
- PIP O-10-2707, 2MS-161 (2A MS line Atmospheric Dump Block Bypass) chain broke during operation
- PIP O-10-3167, Keowee ambient air temperature may exceed piping design temperatures during loss of all ventilation
- PIP O-10-3285, Excessive cooling water temperature required shutdown of SSF HVAC Compressors
- PIP O-10-2448, Valve 1HP-417 (isolation valve in the RCMUP recirculation flowpath to the Spent Fuel Pool) would not operate from the SSF control room switch during testing
- PIP O-10-3825, Design Change EC103784 did not document expected impact on SSF Service Water strainer differential pressure measurement

b. Findings

No findings were identified.

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed ductbank construction and examined the brick and concrete block wall condition for Units 1 and 3 in Auxiliary Building after the siding removed in preparing for the installation of the Fiber Reinforced Protection. The inspectors examined installation of the reinforcing steel and form work configuration for the Unit 3 BWST and North and South Entrance Foundations in the Protective Service Water (PSW) Building. The inspectors observed the concrete placement, testing, and standard cylinder preparation for the compressive testing for the Unit 3 BWST Foundation and North and South Entrance Foundations and Wall W-12 of PSW Building. The inspectors reviewed procedures, specifications, construction documents, and corrective actions such as PIPs generated by the licensee and Nonconformance Reports (NCR) generated by the contractor related to the rebar installation, concrete mix testing, and concrete pour.

The inspectors examined the rebar installation to ensure that the licensee had measured the reinforcing steel size, spacing, splice length, and the concrete minimum protection coverage in accordance with the requirements of the design drawings and the American Concrete Institute (ACI) 301-89 and -05, Code Requirements for Structural Concrete. The inspectors reviewed the concrete pre-placement inspection checklist prior to the concrete pour. The inspectors reviewed the procedures, specifications, and documents related to the concrete construction activities.

The inspectors observed placement activities to verify that activities pertaining to concrete delivery time, flow distance, layer thickness and concrete consolidation or vibration conformed to industry standards established by the American Concrete Institute. Concrete batch tickets were examined to verify that the specified concrete mix was being delivered to the site. The inspectors observed that concrete placement activities were continuously monitored by the Duke and contractor quality control personnel and engineers. The inspectors witnessed in-process testing and reviewed the results for slump, air content, temperature, unit weight, and molding of the concrete cylinders for compressive strength testing, and also witnessed sample points and truck loads to verify that concrete samples for the field testing and cylinders for the testing were obtained at the point of placement (end of chute line) and the middle portion of the truck loads. The inspectors reviewed cylinders to determine whether they were molded in accordance with applicable American Society for Testing and Materials (ASTM) requirements of ASTM C 172, Standard Method of Sampling Freshly Mixed Concrete, and determined whether concrete field testing was performed by Quality Control (QC) inspectors from the contractor or Duke. Documents reviewed are listed in the Attachment.

b. Findings

Introduction: An NRC-identified Green NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” was identified. The licensee failed to adhere to drawings and instructions during the installation of rebar in the Unit 3 BWST Natural Phenomena Barrier System foundation.

Description: The licensee was constructing a Natural Phenomena Barrier System to protect the BWST against damage from windborne debris. The initial phase of the project involved pouring a concrete foundation that encased an internal framework of steel rebar. The modification package contained drawing A31Q-2153-15-01, Revision 2, which required three inches of concrete coverage for all rebar subject to soil contact based on ACI Code 301-89. On June 16, 2010, after all the required rebar was placed a QC inspection was performed on the Unit 3 BWST foundation rebar to verify that it would meet the coverage requirement. The QC inspectors documented that the rebar met dimensional requirements.

On June 17, 2010, prior to the actual concrete pour the inspectors performed a walkdown of the foundation. The inspectors identified several rebars on the lower section that did not meet the coverage requirement. Some of the rebars only had approximately one-half inch clearance from the mud mat. Following discussions with project personnel, the licensee issued Advance Work Authorization (AWA) 97958-F to modify the minimum concrete coverage requirement for the lower section of rebar to two inches based on ACI Code 301-05, Specifications for Structural Concrete, for concrete to be poured on the top of existing mud mat. The licensee then performed rework to provide a two-inch coverage. QC then performed another inspection and approved the structure for concrete pour.

On June 18, 2010, the inspectors again walked down the area and identified that many rebars on the upper section did not meet the required concrete coverage of two inches specified by ACI Code 301-89, referred to by Specification No.OSS-0160.00-00-0002, Specification for Receiving and Placing Concrete for QA Condition Structure. The licensee performed additional rework on the upper section to provide the required concrete coverage. Following rework and re-inspection, the Unit 3 BWST concrete pour was completed.

Analysis: The inspectors determined that the licensee's failure to follow approved drawings and instructions for construction of the Unit 3 BWST Natural Phenomena Barrier System foundation was a performance deficiency. The inspectors determined that the finding was more than minor because, if left uncorrected, insufficient concrete coverage on the rebar could lead to rebar corrosion and challenge the integrity of the Unit 3 BWST Natural Phenomena Barrier System. The inspectors used Inspection Manual Chapter 0609, "Significance Determination Process", Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings" and determined that the finding was of very low safety significance (Green) because the finding did not result in the actual loss of function of the Unit 3 BWST. This finding had a cross-cutting aspect in the area of Human Performance under the "Procedural Compliance" aspect of the "Work Practices" component because the licensee failed to effectively communicate expectations to follow procedures. [H.4(b)]

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" required, in part, that activities affecting quality shall be accomplished in accordance with instructions, procedures, or drawings appropriate to the circumstances. Drawing A31Q-2153-15-01, Revision 2, and ACI Code 301-89 required rebar installation to provide for a minimum of three inches of concrete coverage for all reinforced concrete subject to soil contact for the lower section of rebars. ACI Code 301-89, Specifications for Structural Concrete for buildings, required a two-inch concrete coverage for the top section of rebars. Contrary to the above, between June 16, 2010, and June 18, 2010, the licensee did not accomplish rebar installation, an activity affecting quality, in accordance with approved drawings and instructions for the construction of the Unit 3 BWST Natural Phenomena Barrier System foundation. The inspectors observed rebar installations that did not provided the required concrete coverage of A31Q-2153-15-01, Revision 2 or ACI Code 301-89. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as PIP O-10-4985, this violation is being treated as a NCV consistent with Section VI.A of the NRC Enforcement Manual: NCV 05000287/2010003-02, Failure to Install Structural Rebar as Required by Instructions and Drawings.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed three permanent plant modifications and one temporary modification to verify the adequacy of the modification packages, as well as 10 CFR 50.59 screenings, and to evaluate the modifications for adverse affects on system

availability, reliability and functional capability, or potential impact to fuel in the core. Documents reviewed are listed in the Attachment.

Permanent Plant Modifications

- EC 100145, Install new high point vents in the Unit 2 high pressure injection (HPI) system for Generic Letter 08-01 (2 EOC 24)
- EC 103784, Add cross-connect between 0CCW PG-0433 and 0CCW PG-0535 instrument lines
- High Energy Line Break (HELB) Commitments 29H, 37H and 43H, Closure of Plant Heating Isolation Valves thereby Eliminating Potential HELBs

Temporary Plant Modifications

- EC 103904, Temporary Installation of "Top Hat" for 2LP-40 Stem

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following eight post-maintenance test procedures and/or test activities to assess if: (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 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.

- 1B Low Pressure Service Water Pump Test following lubrication PM
- 1BS-1 (Unit 1 "A" Reactor Building Spray header isolation valve) Valve Stroke Test following actuator mechanical/electrical PM
- 1LP-22 (Unit 1 "B" Low Pressure Injection train BWST suction valve) Valve Stroke Test following actuator mechanical/electrical PM
- "A" Chiller 24-hour run following power supply circuit board and diode bridge replacement
- Unit 2 pressurizer spray valve (2RC-1) testing following valve replacement
- SSF Diesel Engine Service Water Pump Test following inline strainer cleaning
- Keowee Hydro Unit 2 Test following quarterly PMs
- Keowee Hydro Unit 2 Air Circuit Breaker-4 relief valve pressure set test and IST surveillance following relief valve replacement

b. Findings

No findings were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

Unit 2 EOC 24 Refueling Outage: The inspectors evaluated licensee outage activities to determine if the licensee considered risk in developing outage schedules; adhered to administrative risk reduction methodologies they developed to control plant configuration; adhered to operating license, TS and Selected Licensee Commitment requirements and procedural guidance that maintained defense-in-depth; and developed mitigation strategies for losses of the key safety functions. The inspectors reviewed the licensee's outage risk control plan to assess the adequacy of the risk assessments that had been conducted and that the licensee had implemented appropriate risk management strategies as required by 10 CFR 50.65(a)(4). The inspectors conducted portions of the following activities associated with the refueling outage. Documents reviewed are listed in the Attachment.

- Observed Just-in-Time training conducted for the shift involved in the unit cooldown which simulated bringing the unit from Mode 3 to Mode 5
- Observed power reduction process, removing the reactor from service and cooldown from normal operating pressure and temperature to ensure that the requirements in the TS and Selected Licensee Commitments were followed
- Conducted a containment entry once Mode 3 had been reached to observe the condition of major, normally-inaccessible equipment and check for indications of previously unidentified leakage from the reactor coolant system including the reactor vessel upper and bottom head penetrations were not present
- Observed the cooldown process to verify that TS cooldown restrictions and administrative guidelines were followed
- Reviewed the licensee's responses to emergent work and unexpected conditions to verify that resulting configuration changes were controlled in accordance with the outage risk control plan
- Observed the removal and reinstallation of the reactor vessel head to ensure the lift was conducted in accordance the station procedures and heavy lift guidance
- Observed fuel handling operations during new fuel receipt, movement into the spent fuel pool, and reactor core offload to verify that those operations and activities were being performed in accordance with TS and procedural guidance
- Reviewed system lineups and/or control board indications to substantiate that TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant configurations
- Observed refueling activities to substantiate that the location of the fuel assemblies was tracked through core offload including review of the videotape core loading verification with Reactor Engineering personnel

- Observed Just-in-Time training covering the approach to criticality and Zero Power Physics Testing for the personnel involved in these activities
- Periodically reviewed the setting and maintenance of containment integrity, to establish that the Reactor Coolant System and containment boundaries were in place and had integrity when necessary
- Conducted containment walkdown to inspect for overall cleanliness and material condition of plant equipment after the licensee completed their closeout inspection
- Observed the approach to criticality, placing the main generator on-line which completed the refueling outage and portions of the power ascension activities
- Reviewed the items that had been entered into the CAP to verify that the licensee had identified outage related problems at an appropriate threshold
- Observed activities to verify that the licensee maintained defense-in-depth commensurate with the outage risk control plan for key safety functions and applicable TS when taking equipment out of service

Unit 3 EOC-24B Forced Outage Due to the 3F-2 Feedwater Heater Leak: The inspectors observed portions of the Unit 3 shutdown on April 18, 2010, from 100 percent RTP to Mode 4 and subsequent forced outage activities resulting from tube leakage in the 3F-2 feedwater heater. Activities observed by the inspectors included the unit shutdown to Mode 4, taking the turbine offline, portions of the feedwater heater repair, and reviewed Low Temperature Overpressure controls in place while in the mode of applicability. An inspector accompanied licensee personnel on a containment walkdown prior to unit startup to assess the overall material condition of safety related and risk significant SSC's. Inspectors reviewed the items entered into the licensee's CAP, to establish that the licensee identified problems related to the outage activities at an appropriate threshold and had entered them into the CAP. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either witnessed and/or reviewed test data for the nine surveillance tests listed below to assess if 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. Documents reviewed are listed in the Attachment.

Routine Surveillances

- PT/2/A/0610/001L, Load Shed Channel Verification, Rev. 12
- MP/0/A/1150/030, Reactor Vessel – Lower Head Penetrations – Visual Inspection, Rev. 4

- PT/2/A/0600/013, Motor Driven Emergency Feedwater Pump Test, Rev. 63
- PT/2/A/0400/020, SSF RC Letdown Line Discharge Test, Rev. 1

In-Service Tests
- PT/1/A/0600/012, Turbine Driven Emergency Feedwater Pump Test, Rev. 95

Containment Isolation Valve Testing
- PT/2/A/0151/019, Penetration 19 Leak Rate Test, Rev. 14
- PT/2/A/0151/020, Penetration 20 Leak Rate Test, Rev. 12
- PT/2/A/0151/048, Penetration 48 Leak Rate Test, Rev. 9

Reactor Coolant System Activity Sampling Surveillance
- CP/3/A/2002/001, Unit 3 Primary Sampling System, Rev. 62

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Control

a. Inspection Scope

Radiological Hazard Assessment: The inspectors reviewed a number of radiological surveys, including those performed for airborne areas, of locations throughout the facility including the Unit 2 containment, Unit 1, Unit 2, and Unit 3 reactor buildings, the turbine building, the Radwaste Facility, and the independent spent fuel storage installation (ISFSI). The inspectors also walked down those same areas and select radioactive material storage locations with a survey instrument, evaluating material condition, postings, and radiological controls. The inspectors observed jobs in radiologically risk-significant areas including high radiation areas (HRAs) and areas with, or with the potential for, airborne activity. The inspectors determined that the surveys were adequate in thoroughness and frequency for the identified hazards.

Instructions to Workers: During plant walk downs, the inspectors observed labeling and radiological controls on containers of radioactive material. The inspectors also reviewed radiation work permits (RWP) used for accessing HRAs and airborne areas, verifying that appropriate work control instructions and electronic dosimeter (ED) setpoints had been provided and to assess the communication of radiological control requirements to workers. For selected tasks, the inspectors attended pre-job briefings that reviewed RWP details with the workers. The inspectors reviewed selected ED dose and dose rate alarms, to verify workers properly responded to the alarms and that the licensee's review of the events was appropriate. Through observation of pre-job RWP briefings and health

physics technician (HPT) coverage of workers, the inspectors determined the licensee had established adequate means to notify workers of changing radiological conditions.

Contamination and Radioactive Material Control: The inspectors observed the release of potentially contaminated items from the radiologically controlled area (RCA) and from contaminated areas such as the Unit 2 containment personnel hatch. The inspectors also reviewed the procedural requirements for, and equipment used to perform, the radiation surveys for release. During plant walk downs, the inspectors evaluated radioactive material storage areas and containers to include satellite RCAs, assessing material condition, posting/labeling, and control of materials/areas. In addition, the inspectors reviewed the sealed source inventory and verified labeling, storage conditions, and leak testing of selected sources located in Room Numbers (Nos.) 332 and 362 of the U2 Auxiliary Building.

The inspectors walked-down the ISFSI facility, observing the physical condition of the casks, radiological postings, and barriers. The inspectors performed independent gamma radiation surveys of the area and reviewed gamma radiation surveys of the ISFSI facility performed by licensee personnel. Inspectors compared the independent survey results to previous surveys and against procedural and TS limits. The inspectors evaluated implementation of radiological controls, including labeling and posting, and discussed controls with radiation protection (RP) staff. Environmental monitoring results for direct radiation from the ISFSI were reviewed and inspectors observed the placement and physical condition of thermoluminescent dosimeters around the facility.

Radiological Hazards Control and Work Coverage: The inspectors evaluated licensee performance in controlling worker access to radiologically significant areas and monitoring jobs in-progress associated with the U2 EOC 24 refueling outage. Established radiological controls were evaluated for selected tasks including alloy 600 weld overlay, steam generator (S/G) eddy current testing (ECT), pressurizer piping work activities, and RCP “B” work activities. The inspectors evaluated the effectiveness of radiation exposure controls, including air sampling, barrier integrity, engineering controls, and postings through a review of both internal and external exposure results.

During walk downs with a radiation survey meter, the inspectors independently verified ambient radiological conditions were consistent with licensee performed surveys, RWPs, and pre-job briefings; observed the adequacy of radiological controls; and observed controls for radioactive materials stored in the spent fuel pool. The inspectors also reviewed the procedural guidance for multi- and extremity badging. Select multi-badge packets were reviewed to verify consistency with procedural and regulatory guidance. For high radiation area tasks involving significant dose rate gradients, the inspectors evaluated the use and placement of whole body and extremity dosimetry to monitor worker exposure. The inspectors also reviewed and discussed selected whole-body count analyses conducted during 2009 and the Unit 2 refueling outage. The inspectors reviewed RWPs for use in airborne areas, ensuring the prescribed controls were appropriate for the conditions as identified in radiological surveys and air samples. ED alarm set points and worker stay times were evaluated against area radiation survey results for drywell and refueling floor activities.

Risk-Significant HRA and Very HRA (VHRA) Controls: The inspectors discussed the controls and procedures for locked-high radiation areas (LHRAs) and VHRAs with health physics supervisors and the RP Manager. The inspectors observed the issuance of LHRA keys and evaluated the storage, inventory, and handling of LHRA/VHRA keys. During plant walk downs, the inspectors verified the posting/locking of LHRA/VHRA areas.

Radiation Worker Performance and Radiation Protection Technician Proficiency: The inspectors observed radiation worker performance through direct observation, via remote camera monitoring, and via telemetry. Jobs observed associated with the U2 EOC 24 outage included S/G ECT, alloy 600 welding overlays, pressurizer piping work activities, and RCP "B" work activities. These jobs were performed in high radiation, airborne, and/or contaminated areas. The inspectors also observed HPTs providing field coverage of jobs and providing remote coverage.

Problem Identification & Resolution: Licensee CAP documents associated with radiation monitoring and exposure control were reviewed and assessed. This included review of selected CAP records related to radiation worker and HPT performance. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure NSD 208, Problem Investigation Process, Revision 31. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Documents reviewed are listed in the Attachment.

RP activities were evaluated against the requirements of UFSAR Section 12; TS Section 5.7; 10 CFR Parts 19 and 20; and approved licensee procedures. Radiological control activities for ISFSI areas were evaluated against 10 CFR Part 20, 10 CFR Part 72, and TS details. Documents reviewed are listed in the Attachment.

The inspectors completed 1 sample, as described in Inspection Procedure (IP) 71124.01. The inspectors also completed the RP line-item sample activities specified in IP 60855.1.

b. Findings

Introduction: A self-revealing NCV of 10 CFR 20.1501(a) was identified for the licensee's failure to conduct an adequate area radiation survey to evaluate the magnitude and extent of radiation levels for an area located in the Radwaste Facility.

Description: On June 23, 2009, an individual checked in at the Surveillance and Control Single Point of Access window and informed the HPT that he had to go into Room No. RW-227 of the Radwaste Facility to manipulate some valves. Also, the individual informed the HPT that on a previous day he had entered the same area and had received a ED dose rate alarm of 76 mrem/hr on a dose rate setting of 75 mrem/hr. The HPT reviewed the last area radiation survey of the area conducted on June 18, 2009, and noted that the dose rates in the area were found to be 70 mrem/hr at the location where the individual had to work. Based on those discussions with the individual and the most recent area radiation in that area, the HPT along with RP supervision decided

to raise the RWP ED setpoint for that individual from 75 mrem/hr to 100 mrem/hr. The worker proceeded to go to Room No. RW-227 of the Radwaste Facility to manipulate the valves and received an ED dose rate alarm and immediately left the area and went to RP. RP reviewed the ED's histogram and determined that he had entered a radiation field of 112 mrem/hr. An HPT and supervisor resurveyed the area and identified dose rates of 120 mrem/hr at 30 centimeters (cm) and 350 mrem/hr at contact in the work area near the "G" demineralizer. Based on those dose rates RP controlled and posted the area as a HRA. A plan was developed and implemented to backwash the solids from "H" and "G" demineralizers which reduced the dose rates in the area to 80 mrem/hr at 30 cm and 205 mrem/hr at contact. In addition to the two remote monitoring devices that were already in the room, RP installed two more remote monitoring devices one foot in front of the "H" and "G" demineralizers to provide additional live time radiation dose data in the area.

Analysis: The failure to conduct an adequate area radiation survey to evaluate the magnitude and extent of radiation levels for an area located in the Radwaste Facility is a performance deficiency. This finding is more than minor because it is associated with the Occupational Radiation Safety cornerstone attribute of exposure control and monitoring and it affected the associated cornerstone objective because the failure to conduct an adequate area radiation survey to evaluate the magnitude and extent of radiation levels for an area located in the Radwaste Facility did not ensure the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The finding was evaluated using IMC 0609, Appendix C, and was determined to be of very low safety significance. The failure to conduct an adequate area radiation survey of the room did not pose a substantial potential for overexposure and did not affect the ability to assess doses because the involved individual was monitored for exposure from external radiation fields using an alarming ED. The cause of this finding is related to the cross-cutting aspect of radiological safety in the work control component of Human Performance because the licensee did not conduct an adequate area radiation survey to evaluate the magnitude and extent of radiation levels for an area located in the Radwaste Facility. [H.3(b)]

Enforcement: 10 CFR 20.1501(a) states that each licensee shall make or cause to be made, surveys that: (1) may be necessary for the licensee to comply with the regulations in this part; and (2) are reasonable under the circumstances to evaluate: (i) the magnitude and extent of radiation levels; (ii) concentrations or quantities of radioactive material; and (iii) the potential radiological hazards. Contrary to the above, on June 23, 2009, the licensee failed to make an adequate survey to evaluate the magnitude and extent of radiation levels for an area located in the Radwaste Facility. The finding was documented in the licensee's corrective action program as PIPs O-09-04475 and O-10-01503. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, it is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-269, 270,287/2010003-03, Failure to conduct an adequate area radiation survey of a room in the Radwaste Facility.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported PI data for the nine indicators during periods listed below. To determine the accuracy of the report PI elements, the reviewed data was assessed against PI definitions and guidance contained in Nuclear Energy Institute 99-02, Regulatory Assessment Indicator Guideline, Revision 5. Documents reviewed are listed in the Attachment.

Cornerstone: Mitigating Systems
- Mitigating System Performance Index (MSPI) – High Pressure Injection (3 units)
- MSPI – Support Cooling Water Systems (3 units)

Cornerstone: Barrier Integrity
- Reactor Coolant System Activity (3 units)

For the period April 1, 2009, through March 31, 2010, the inspectors reviewed Operating Logs, Train Unavailability Data, Maintenance Records, Maintenance Rule Data, PIPs, Consolidated Derivation Entry Reports, and System Health Reports to verify the accuracy of the PI data reported for each PI.

b. Findings

No findings 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 CAP. This review was accomplished by reviewing copies of PIPs, attending daily screening meetings, and accessing the licensee's computerized database.

.2 Annual Sample

a. Inspection Scope

The inspectors reviewed PIPs O-09-5082 and O-10-1108 and the associated corrective actions to assess the effectiveness of the actions that had been implemented to address issues identified in the December 2009 to January 2010 time frame related scaffold construction and placement at Oconee. The sample activities included conducting walkdowns and inspections of scaffolds erected throughout the plant, performing a

review of the recently implemented Duke Nuclear Scaffold Manual and interviewing personnel associated with the scaffold program within the station and Oconee Major Projects work groups. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.3 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of deficiencies that constituted operator workarounds to determine whether or not they could: affect the reliability, availability, and potential for misoperation of a mitigating system; affect multiple mitigating systems; or affect the ability of operators to respond in a correct and timely manner to plant transients and accidents. The inspectors also assessed whether operator workarounds were being identified and entered into the licensee's corrective action program at an appropriate threshold.

b. Findings

No findings were identified.

.4 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 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, licensee human performance results and inspector observations made during in-plant inspections and walk-downs. The inspectors' review primarily considered the six-month period of January 2010 through June 2010, 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 lists, Independent Nuclear Oversight reports, system and component health reports, self-assessment reports, and maintenance rule 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. Observations and Findings

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

the following three trends that the licensee had not previously recognized. The inspectors will continue to monitor this area and assess the effectiveness of the licensee's corrective actions. Documents reviewed are listed in the Attachment.

Capturing Plant Issues in the Corrective Action Program: The inspectors identified a trend during the second half of 2009 associated with weaknesses in the implementation of the PIP program. The trend was related to the inconsistent initiation of PIPs when the criteria in the licensee CAP implementing guidance document was met or not fully describing the issue to allow appropriate corrective actions to be developed or trends identified. As a result of this NRC-identified trend, the licensee initiated PIP O-10-0182. The licensee has implemented corrective actions to address these aspects of the CAP; however, examples continue to be noted in both the inconsistent initiation of PIPs when required and describing the issue in sufficient detail and clarity to enable the appropriate corrective actions to be developed and trends identified in a timely manner. The inspectors will continue to monitor the licensee's progress in this area.

Control of Vehicles Within the Protected Area (PA): The inspectors identified a trend during the second half of 2009 associated with the failure to properly control vehicles within the PA. As a result of this NRC-identified trend, the licensee initiated PIP O-10-0225. Although improvement was noted during the first half of 2010, additional examples have occurred. As a result, the inspectors will continue to monitor this trend and assess the effectiveness of the licensee's corrective actions.

Contractor Activities Impacting Plant Security Measures: The inspectors identified a trend during the second half of 2009 associated with the failure of Oconee Major Project vendors to comply with site security requirements. As a result of this NRC-identified trend, the licensee initiated PIP O-10-0232. Although improvement was noted during the first half of 2010, the inspectors will continue to monitor this trend and assess the effectiveness of the licensee's corrective actions.

Coordination of Outage Activities: The inspectors identified a trend during the second half of 2008 that the licensee had not previously recognized associated with the coordination of outage activities. Improvement was noted during the 2009 Unit 1 and Unit 3 refueling outage; however, the inspectors continued to monitor this area during the Unit 2 refueling outage to assess the effectiveness of corrective actions. While isolated coordination issues were noted during the Unit 2 outage, the additional oversight provided by the station's Outage organization and the formalized look-aheads documented in turnover and update sheets resulted in a significant reduction in the number of unplanned system interactions or schedule delays. Accordingly, this trend statement will no longer be followed in subsequent integrated inspection reports.

4OA3 Event Follow-up

Fire Brigade Response to Two Fires Within the Turbine Building

a. Inspection Scope

On April 30, 2010, two separate fires were reported within the turbine building. The first

involved a motor on a permanent space heater and the second was a portable welding machine that shorted internally. In both cases the station fire brigade responded promptly and extinguished the fires in less than the 15-minute time frame at which the Emergency Plan would have been activated. The resident inspectors responded to the scene of both fires and observed the fire brigade performance in extinguishing the fires. The inspectors also attended one of the post-fire response critiques and reviewed the PIPs associated with both events. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA5 Other Activities

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 were identified.

4OA6 Management Meetings (Including Exit Meeting)

Exit Meeting Summary

The resident inspectors presented the inspection results to Mr. David A. Baxter and other members of licensee management at the conclusion of the inspection period on July 1, 2010. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary and no proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

K. Alter, Regulatory Compliance Manager
S. Batson, Engineering Manager
D. Baxter, Site Vice President
S. Boggs, Emergency Services Coordinator
J. Bohlmann, Organization Effectiveness Manager
R. Brown, Emergency Preparedness Manager
E. Burchfield, Superintendent of Operations
C. Cash, PSW Building Superintendent
P. Culbertson, Maintenance Manager
W. Edge, Engineering Supervisor II
P. Fisk; Mechanical/Civil Engineering Manager
D. Galloway, BWST Implementation Manager
P. Gillespie, Station Manager
J. Kammer, Modification Engineering Manager
T. King, Acting Safety Assurance Manager
W. Lindsay, Duck Bank Superintendent
R. Medlin, HELB Tornado-Project Manager
B. Meixell, Regulatory Compliance
K. Nicholson, Technical Specialist, Reg Compliance
W. Pursley, General Supervisor, Radiation Protection
D. Robinson, Manager, Radiation Protection
J. Schwalm, BWST Superintendent
S. Severance, Regulatory Compliance
J. Smith, Regulatory Compliance
B. Stares, Civil Engineer
D. White, Surveillance and Control, Radiation Protection

NRC
J. Stang, Project Manager, NRR

LIST OF REPORT ITEMS

Opened and Closed

05000269, 270/2010003-01	NCV	Inadequate Risk Management Associated With the Unit 2 Electrical Generator Rotor Lifts (Section 1R13)
05000287/2010003-02	NCV	Failure to Install Structural Rebar as Required by Instructions and Drawings (Section 1R17)

05000269, 270, 287/2010003-03	NCV	Failure to Conduct an Adequate Area Radiation Survey of a Room in the Radwaste Facility (Section 2RS1)

DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

OP/0/B/1106/041, Turbine Building Ventilation, Rev. 9
OP/0/A/1104/041, Auxiliary Building Ventilation, Rev. 32
OP/0/A/1600/002; Standby Shutdown Facility Heating Ventilation & Air Conditioning System Operation (HVAC), Rev. 28
OP/1/A/1104/051, ESV System, Rev. 21
OP/0/A/1104/019, Control Room Ventilation System, Rev. 23
PIP O-10-0641; Throughwall leak on 1 ½ inch LPSW line
WO 01925929; 1 VS AH 0016EX: Replace fan bearings and shaft
WO 01860181; 3 VS AH 0002EX: Replace Aux Building EX fan motor 3-2
WO 01819287; 0PH-VA-245 Replace broken positioner spring
PIP O-10-5274, ONS does not have a formal Hot Weather Program
AP/1/A/1700/034; Degraded Grid, Rev. 6
NSD-417; Nuclear Facilities/ Generation Status Communications, Rev. 10
ARG SA-15, A-2, Channel 1 Underfrequency
ARG SA-15, A-4, Channel 2 Underfrequency
ARG SA-15, B-2, Channel 1 Undervoltage Initiated
ARG SA-15, B-4, Channel 2 Undervoltage Initiated
ARG SA-15, C-1, Channel 1 Undervoltage
ARG SA-15, C-3, Channel 2 Undervoltage
ARG SA-15, C-2, Channel 1 Underfrequency Initiated
ARG SA-15, C-4, Channel 2 Underfrequency Initiated
ARG SA-16, C-1, 230 kV SWYD Isolate ES Permit
Duke Energy Nuclear Switchyard Operating Guidelines, Rev. 3
PT/0/A/0610/002; External Grid Trouble Protective System Logic and Switchyard Isolation Logic Test, Rev. 29, completed 4/14/10
WO 01911695; U0: Perform CT4 Lockout Logic Verification
PIP O-10-02737; Received OAC Alarm O1A0891 “230KV Yellow Bus” Lo, which resulted in all 3 units entering AP/*/A/1700/034 “Degraded Grid”
PIP O-06-00215; Elective WO for 06W02 dropped, Yellow Buss Y phase potential circuit has a voltage drop which is affecting calibration of the transducer providing input to the OAC point for Yellow Buss Volts

Section 1R04: Equipment Alignment

91-01 Evolution Plan, Reduced Inventory – Drain Down RCS to Remove Nozzle Dams (2 EOC 24)
OP/2/A/1103/011, Draining and Nitrogen Purging RCS, Enclosure 4.7, Requirements for Draining to Reduced Inventory, Rev. 78
OP/0/A/1102/026, Enclosure 4.2, Pre-job Briefing for Draining RCS to Reduced Inventory/Mid-Loop
OP/0/A/1106/019, Keowee Hydro at Oconee, Rev. 84

KFD-100A-1.1, Flow Diagram of Turbine Generator Cooling Water System, Rev. 17
KFD-101A-1.1, Flow Diagram of Turbine Guide Bearing Oil System, Rev. 5
KFD-102A-1.1, Flow Diagram of Turbine Sump Pump System, Rev. 6
KFD-105A-1.1, Flow Diagram of Governor Oil System, Rev. 5
KFD-106A-3.0, Flow Diagram of Lube Oil System, Rev.
KFD-107A-1.1, Flow Diagram of Air Circuit Breaker Air System, Rev. 16
KFD-109A-1.1, Flow Diagram of Service Water System, Rev. 9
KFD-110A-1.1, Flow Diagram of Station Air System, Rev. 5
KFD-102A-1.1, Flow Diagram of Instrument Air System, Rev. 5

Section 1R05: Fire Protection

Fire Area Tours

SLC 16.9.2, Sprinkler and Spray Systems
SLC 16.9.4, Fire Hose Stations
SLC 16.9.6, Fire Detection Instrumentation
Zone 108, Fire Pre-plan, Unit 1 East Penetration Room
Zone 107, Fire Pre-plan, Unit 1 West Penetration Room
Zone 123, Fire Pre-plan; Unit 2 Reactor Building, Basement thru 4th Floor (Elevation 777' thru 861')
Zones 34 - 36 and 44, Fire Pre-Plan; Unit 1 Turbine Building Mezzanine (Elevation 796')
Zones 30 – 37, Fire Pre-Plan; Unit 2 Turbine Building Mezzanine (Elevation 796')
Zones 26 – 29, Fire Pre-Plan; Unit 3 Turbine Building Mezzanine (Elevation 796')
Zones 42 and 43, Fire Pre-Plan; Unit 1 Turbine Building, Turbine Deck and Offices (Elevation 822' and 838')
Zones 40 and 41, Fire Pre-Plan; Unit 2 Turbine Building, Turbine Deck and Offices (Elevation 822' and 838')
Zones 38, 39 and 39A, Fire Pre-Plan; Unit 3 Turbine Building, Turbine Deck and Offices (Elevation 822' and 838')
MP/0/A/1705/032, Fire Protection Equipment Inspection, Rev. 30
O-310-K-13, Auxiliary & Reactor Building- Unit 1, Fire Protection Plan & Fire, Flood, & Pressure Boundaries Plan at EL 822+0 & EL 825+0, Rev. 8

Fire Drill

NSD 112, Fire Brigade Organization, Training and Responsibilities, Rev. 8
UFSAR Section 9.5.1, Fire Protection Systems
Oconee Nuclear Station Fire Drill Scenario Guide for Fire Drill 02-10-05
PIP O-10-4814, Critique of Fire Drill conducted on June 11, 2010

Section 1R06: Flood Protection Measures

Removal & Restoration Tagout # 09-2904, 2 EOC 24 CCW System

Section 1R11: Licensed Operator Requalification

ASE-13, Active Simulator Exam, dated 5/20/10
RP/0/B/1000/001, Emergency Classification, Rev. 28

Section 1R12: Maintenance Effectiveness

Critical Activity Plan for the SSF Outage for Repair of 0CCW-284, Rev. 1
PIP O-10-2951, High Dp reading was discovered on the SSF Service Water Strainer

PIP O-10-4610, INOS (Deficiency) - The frequency for performing the preventive maintenance on valve OCCW-284 (SSF Diesel Engine Service Water pump discharge check valve) has been inadequate
PIP O-10-3825, Design Change EC103784 did not document expected impact on SSF Service Water strainer differential pressure measurement
PIP O-10-3622, Indicated SSF service water strainer differential pressure exceeded limit stated in OP/0/A/1600/002
PIP O-10-3285, Excessive cooling Water temperature required shutdown of SSF HVAC Compressors
PIP O-10-3379, Excessive cooling Water temperature required shutdown of SSF HVAC Compressors (2nd time)
PIP O-10-3591, 0CCW-284 valve reassembly with QA part without Section XI paperwork
PIP O-10-4384, Document results from EC103850 implementation testing to restore the original low side pressure tap to the SSF Service Water Strainer
OSC-4171, SSF ASW Design Inputs Calculation Volume 1, Rev. 32
OSC-4171, SSF ASW Design Inputs Calculation Volume 1, Rev. 33
EC103850, Replace ¾" Class C IRV 0CCW-IV-0004
OP-OC-EAP-SSF-26, SSF ASW System, Rev. 1
OP/0/A/1600/002, Standby Shutdown Facility Heating Ventilation and Air Conditioning System Operation (HVAC), Rev. 28
PT/0/A/0400/004, SSF Diesel Engine Service Water Pump Test, Rev. 35

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Critical Activity Plan for the Unit 2 Generator Rotor Lifts (On-Line), Rev. 1 & Rev. 3
Generator Rotor Lift Plan for 1EOC25
ONS Spare Generator Rotor Lift Plan, Rev. 14
Risk Management Alert Communication Plan for the Unit 2 Main Generator Rotor lift dated June 22, 2010
Letter from Morris Material Handling to Oconee Nuclear Station, Subject: Engineering Evaluation of P&H Turbine Crane, Date: August 13, 2009
91-01 Activity Plan, Replacement of Plenum during 2EC24, dated 4/27/10
PIP O-10-2193, Evaluate MNS PIP 10-2497 for applicable insights at ONS, measurements of MNS reactor lower internals elevation after reinstallation varied by 1/8"
Oconee Nuclear Station Emergency Plan, Revision 2010-01
PT/0/A/0230/001, Radiation Monitor Check, Rev. 151
HP/0/A/1008/005, RIA Setpoints, Rev. 3
91-01 Evolution Plan, Reduced Inventory – Drain Down RCS to Remove Nozzle Dams (2 EOC 24)
OP/2/A/1103/011, Draining and Nitrogen Purging RCS, Enclosure 4.7, Requirements for Draining to Reduced Inventory, Rev. 78
OP/0/A/1102/026, Prejob Briefings, Enclosure 4.2, Prejob brief for draining the RCS to reduced inventory / mid loop, Rev. 22
Critical Activity Plan Unit 2 Generator Rotor Lifts (On-Line), Rev. 1
Complex Lift Plan 2 EOC 24 Generator Rotor Lift Plan, Rev. 1
NC0000DB, Lifting Program Manual, Rev. 14
NSD 213, Risk Management Process, Rev. 7
NSD 415, Operational Risk Management (Modes 1-3) per 10 CFR 50.65(a)(4), Rev. 5

PIP O-10-2477, Questions regarding the electrical generator rotor lift performed on April 10, 2010
PIP O-10-2830, Unit 2 electrical generator rotor move lift height restriction violated
PIP O-10-2655, A concern has been raised regarding the change to RIA 3 set point (fuel transfer canal area inside containment) during the movement of the plenum and its effect on the Emergency Plan.
PIP O-10-2448, 1HP-417 (RC Makeup Pump recirc to SFP) would not operate from the SSF control switch
PIP O-10-2444, 1KE-9 tripped open. Lost power to some components in Unit 1 Control Room.
PIP O-10-2951, High differential pressure reading was discovered on the SSF Service Water Strainer
Critical Activity Plan for the SSF Outage for Repair of 0CCW-284, Rev. 1
PIP O-10-2410, During an observation, Sensitive Equipment Monitoring and Control methods at the Unit 1 BWST were inconsistent with risk management actions and expectations
PIP O-10-5059, GO CMTH to update Anomalous Fuel and Component Database for fuel assemblies NJ168K and NJ08HF.

Section 1R15: Operability Evaluations

PIP O-05-1114, Unit 3 Control Room Air Conditioning is not single failure proof as stated in the UFSAR.
AP/1-2/A/1700/036, Degraded Control Room Area Cooling, Rev. 7
PIP O-10-2172, Unevaluated Single Failure of Control Room Ventilation System
OEE-345-A, Elementary Diagram of Condensate DC interlocks, Rev. 12
OEE-317-18, Elementary Diagram of 4160V Switchgear 3TC-7 3A Hotwell pump motor, Rev. 12
OEE-317-30, Elementary Diagram of 4160V Switchgear 3TD-5 3B Condensate Booster Pump motor, Rev. 13
OEE-317-17, Elementary Diagram of 4160V Switchgear 3TC-6 3A Condensate Booster Pump motor, Rev. 13
OEE-317-44, Elementary Diagram of 4160V Switchgear 3TE-5 3C Condensate Booster Pump motor, Rev. 13
OFD-133A-2.5, Condenser Circulating Water System (SSF Aux. Service), Rev. 45
PIP O-10-3622, Indicated SSF service water strainer differential pressure exceeded limit stated in OP/0/A/1600/002
OSC-4171, SSF ASW Design Inputs Calculation Volume 1, Rev. 32
OSC-4171, SSF ASW Design Inputs Calculation Volume 1, Rev. 33
PIP O-09-4247, Keowee Inlet Cooling Water Temperature Issues

Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

Specification No. OSS-0160.00-00-0001, Specification for Procurement of Concrete For QA Condition Structure, Rev. 8
Specification No. OSS-0160.00-00-0002, Specification for Structural Concrete for Building, Rev. 8
Procedure MP/O/A/1800/141, Trench and Excavation
PIP O-10-4985, Clear cover issues on rebar on the Unit 3 BWST foundation
Form QAC-18, Duke Power Company Prepour Site Inspection, Rev. 2, Unit 3 BWST Foundation, Section A and B, June 16, 2010
AWA-97958-E and F, Unit 3 BWST rebar and concrete placement specifications

Unit 3 BWST TN/3/A/EC97958/001, Reinforced Concrete Foundation for Unit 3 BWST – NPBS
Work Order EC97958/0D302153-NPBS-U3 BWST SSF Trench Foundation
EC 97958, U3 BWST/SSF Trench Protection Foundation, Rev. 5
Traveler T500920C20, PSW Building Concrete Pour
FCR C-392, Construction Joints
FCR C-459, Add 0.50% Moisture Data to the Concrete Mix Design Chart Mix C-2 #57 Stone
Fluor NCR A3PB-NC-10-105, A Detail of a Bar Weld to the Embedded Plate is Incorrect
Fluor NCR A3PB-NC-10-122, Concrete Placed for Wall 9 was Rejected
Fluor NCR A3PB-NC-10-184, 3 Vertical Bars Did not have a Minimum Concrete Cover
Drawings A31Q-2153-15-01 to -16, Unit 3 BWST/SSF Trench Protection Foundation
Drawing 0-398-A2-103A, Rebar Detail

Section 1R18: Plant Modifications

EC 100145- Install new high point vents in the Unit 2 HPI system for Generic Letter 08-01 (2 EOC 24)
Modification Test Plan for Engineering Changes, EC 100145, Rev. 0
Letter dated May 8, 2008, from Thomas P. Harrall, Duke Energy, to U.S. NRC Document Control Desk, "Generic Letter 2008-01, 3-Month Response"
Letter dated October 13, 2008, from Thomas P. Harrall, Duke Energy, to U.S. NRC Document Control Desk, "Generic Letter 2008-01, 9-Month Response"
10 CFR 50.59 Applicability Determination, A/R 279542
WO 01866950, Task 32, EC100145 OPS Perform UT at Valve 2HP-987
WO 01866950, Task 33, EC100145 OPS Perform UT at Valve 2HP-988
WO 01866950, Task 34, EC100145 OPS Perform UT at Valves 2HP-985 & 2HP-986
WO 01866950, Task 35, EC100145 OPS Perform UT at Valves 2HP-983, 2HP-984 & 2HP-989
WO 01866950, Task 36, EC100145 OPS Perform UT at Valve 2HP-990
PIP O-98-5293, High Energy Line Break submittal doesn't address the potential for RCP seal LOCA
PIP O-09-0458, 3AS-182 is obsolete and needs to be replaced
PIP O-09-1891, 1AS-182 is leaking past its seat
EC 100988, Replace 4", Class G, isolation Valve 3AS-182
WO 01863766, I/R 1 AS-182 seat leak
OP/0/B/1104/037, Plant Heating, Rev. 45
OP/1/A/1102/001, Controlling Procedure for Unit Startup, Rev. 277
OP/2/A/1102/001, Controlling Procedure for Unit Startup, Rev. 242
OP/3/A/1102/001, Controlling Procedure for Unit Startup, Rev. 241
OFD-148B-1.2, Unit 1, Diagrammatic Layout of Plant Heating & Condensate Heating System (TB Mezzanine Floor, Operating Floor & Aux. Building)
OFD-148B-2.2, Unit 2, Diagrammatic Layout of Plant Heating & Condensate Heating System (TB Mezzanine Floor, Operating Floor & Aux. Building)
OFD-148B-3.2, Unit 3, Diagrammatic Layout of Plant Heating & Condensate Heating System (TB Mezzanine Floor, Operating Floor & Aux. Building)
Duke Energy Carolinas Letter to USNRC dated June 26, 2008, Proposed License Amendment Request to Revise the Oconee Nuclear Station Current Licensing Basis for HELB events outside of the Containment Buildings, (ADAMS Accession No. ML081910559)
Duke Energy Carolinas Letter to USNRC dated December 22, 2008, Proposed License Amendment Request to Revise the Oconee Nuclear Station Current Licensing Basis for HELB events outside of the Containment Buildings, (ADAMS Accession No. ML090020355)

Duke Energy Carolinas Letter to USNRC dated June 29, 2009, Proposed License Amendment Request to Revise the Oconee Nuclear Station Current Licensing Basis for HELB events outside of the Containment Buildings, (ADAMS Accession No. ML091871223)
PIP O-10-5163, 2LP-40 'top-hat' active leak
EC 103904- Temporary Installation of "Top Hat" for 2LP-40 Stem, Rev. 5
Modification Test Plan for Engineering Changes, EC 103904, Rev. 2
EC 103904, Sketch 3, Item 1 Base Plate, Rev. 5
EC 103904, Sketch 4, Item 2 Pipe, Rev. 5
EC 103904, Sketch 5, Item 3 Custom Cap, Rev. 5
EC 103904, Sketch 6, Final Assembly, Rev. 5
PT/2/A/0203/004, Low Pressure Injection System Leakage, Rev. 30, Completed May 22, 2010
PT/2/A/0203/004, Low Pressure Injection System Leakage, Rev. 30, Completed May 27, 2010
NSD-301, Engineering Change Program, Rev. 35
NSD-122, Temporary Configuration Changes, Rev. 1
NSD-413, Fluid Leak Management Program, Rev. 5
EM 5.2, Evaluation by Station Management in the TSC- Beyond Design Basis Mitigation Strategies, Rev. 2
OSC-7549, Low Pressure Injection (LPI) Single Failure Analysis, Rev. 13
OSC-9014, Allowable Backleakage from ECCS to BWST, Rev. 0
OFD-102A-2.2, Flow Diagram of Low Pressure Injection System (LPI Pump Discharge), Rev. 44

Section 1R19: Post-Maintenance Testing

PT/1/A/0251/001, Low Pressure Service Water Pump Test, Rev. 93
PIP O-10-2288, 1&2 'B' LPSW Pump inoperable due to developed head during comprehensive test
OFD-124A-1.1, Flow Diagram of Low Pressure Service Water System Turbine Bldg. (Low Pressure Service Water Pumps), Rev. 46
OFD-124B-1.1, Flow Diagram of Low Pressure Service Water System (Auxiliary Building Services), Rev. 61
OFD-124B-2.1, Flow Diagram of Low Pressure Service Water System (Auxiliary Building Services), Rev. 68
ONTC-1-124A-0001-001, Oconee Nuclear Station, Unit 1&2 LPSW Pump Test Acceptance Criteria, Rev. 2
ONTC-1-124A-0002-001, Oconee Nuclear Station, Unit 1&2 LPSW Pump Strainer Test Acceptance Criteria, Rev. 1
PT/1/A/0152/002, Building Spray System Valve Stroke Test, Rev. 31
PT/1/A/0152/012, Low Pressure Injection Valve Stroke Test, Rev. 34
Critical Activity Plan, 1LP-22 Mechanical / Electrical PM, dated 4/14/10
Critical Activity Plan, PT/1/A/0152/012 Stroke Test 1LP-21 and 1LP-22, dated 4/14/10
WO 01923090, "A" Chiller Performing Cycling Shutdowns I/R
MP/0/A/3007/054A, Chillers - A and B – York- Codepak – Preventive Maintenance (QA-5), Rev. 24
MP/0/A/3007/054C, Chillers - A and B – York- Codepak – Diagnostic (QA-5), Rev. 2
PIP O-10-3192, AP-36 Entry due to unexpected 'A' Chiller cycling shutdown
PT/2/A/2200/003, KHU-2 Quarterly Surveillance, Rev. 16
PIP O-10-4575, Keowee 2 train Maintenance on 6/2/10 was scheduled for 12 hours including restoration time but exceeded the scheduled out of service time due to work on ACB-2 with WOs 0184369 and 01898467

IP/0/A/2001/002, Inspection and Maintenance of Keowee Hydro Station Air Circuit Breakers, Rev. 32
WO 0199564, Perform K1 Operability Check Prior to Removal of K2
WO 01891023, K2, PM of Keowee TXS GCS Power Supply & Cabinet
WO 01927894, KHU-2 Turb/Governor Weekly PM (PT/2/A/2200/001)
WO 01898467, Inspection and Maintenance on ACB#2
WO 01884369, K2AB-PS-63T2: Replace ACB-2 Low/Low Pressure Switch
WO 01878981, KHU-2 Governor Oil Sump Tank Perform Governor Oil Filtration
PIP O-10-4384, Document results from EC103850 implementation testing to restore the original low side pressure tap to the SSF Service Water Strainer
PT/0/A/0400/004, SSF Diesel Engine Service Water Pump Test, Rev. 35
MP/0/A/1200/010A, Relief Valve Set Pressure Testing and Adjustment, Rev. 19
PT/2/A/2200/020, KHU-2 ACB IST Surveillance, Rev. 9
WO 01896855, EC101112: Replace Relief Valves K1 AB-17, 37 & K2 AB-27, 47
PIP O-09-5536, Reoccurring Keowee ACB statalarms result in Operators become de-sensitized to occurances.
KFD-107A-1.1, Flow Diagram of Air Circuit Breaker Air System, Rev. 15A
KTC-2-AB-027, Keowee Hydro Station Unit 2 AB Relief Valve Test Acceptance Criteria QA Condition 1, Rev. 2

Section 1R20: Refueling

Supply Chain Directive 320, Receipt Inspection of Nuclear Fuel and Core Components, Rev. 2
MP/0/A/1500/008, New Fuel Assembly – Receipt, Inspection and Storage, Rev. 28
Unit Shutdown/ Cooldown Depressurization JITT Night Shift, dated 4/5/2010
Zero Power Physics Testing (ZPPT) and Reactor Startup Following ZPPT JITT (SNO-L11), dated 11/6/2009
OP/0/A/1108/001, Curves and General Information, Rev. 85
OP/3/A/1104/049, Low Temperature Overpressure Protection (LTOP), Rev. 49
OP/2/A/1102/010, Controlling Procedure for Unit Shutdown, Rev. 191
OP/2/A/1102/004, Operation at Power, Rev. 102
MP/0/A/1150/002, Reactor Vessel – Closure Head – Removal, Rev. 49
OP/2/A/1502/009, Containment Closure Control, Rev. 42
PT/0/A/0775/015, Core Alignment Verification Procedure, Rev. 10
PT/0/A/0750/002, Core Inspections Procedure, Rev. 29
MP/0/A/1150/006A, Reactor Vessel- Plenum Assembly- Installation, Rev. 31
PT/0/A/0711/001, Zero Power Physics Test, Rev. 58
SOMP 01-02, Reactivity Management, Rev. 7
OP/2/A/1105/019, Control Rod Drive System, Rev. 14
OP/2/A/1102/001, Controlling Procedure for Unit Startup, Rev. 243
PIP O-10-2634, 3B MFDWP Lube Oil contains water
PIP O-10-2661, U3 EOC 24B Forced Outage Critical Path Schedule Delay greater than 2 hours due to equipment failures on the 3D2 FDW Heater.
PIP O-10-2674, Relief valve 3HD-331 lifted and manual valve 3HD-332 packing blew out when 3C Condensate Booster Pump was started
PIP O-10-4245, Results of NRC containment inspection following establishment of containment control requirements prior to entering Mode 4
PIP O-10-4246, NRC containment walkdown identified a wiring condition that needs to be addressed

PIP O-10-3405, Debris discovered and removed during Unit 2's post-defuel debris scan.
PIP O-10-3453, Entered AP-35 due to U1&2 Spent Fuel Pool level decrease > 0.1 ft in short period of time.
PIP O-10-3765, Unexpected entry into AP/1/A/1700/024, Loss of LPSW and AP/2/A/1700/024, Loss of LPSW
PIP O-10-4203, Engineering evaluation required per MP/0/A/3005/012 for excessive paint chips in containment
PIP O-10-4206, Foreign Material discovered in Rx Bldg
PIP O-10-4211, Wire left in Reactor Building used to secure mirror insulation on the 2A2 and 2B2 J-Leg drain line.
PIP O-10-4220, Material Permanently Left in Containment
PIP O-10-4221, Materials left in 2B1 cavity
PIP O-10-4223, Undocumented material removed from U2 Reactor Bldg
PIP O-10-4226, Orex material observed flaking off individuals PCs and in masslinn "sweepings" from contaminated area at Unit 2 personnel hatch.
PIP O-10-4245, Miscellaneous items found by the NRC in the Unit 2 containment building after the establishment of FME controls
PIP O-10-4246, NRC walkdown identified wiring needing to be addressed in Unit 2 Reactor Building
PIP O-10-4252, U2 RB Tour by Eng/Mnt, 235F 400psig, during aborted heatup from 2EC24, prior to cooldown for 2A1 RCP seal work
PIP O-10-4452, Boric Acid Residue – Annulus
PIP O-10-4939, INOS-Performance Recommendation for Performance Improvement: During observation of PT/0/A/0775/015 Core Alignment Verification Procedure, an apparent lack of establishing communication protocol between RxE, OPS and Maintenance, introduced avoidable distractions and potential error by both the J-test and unassociated Fuel Handling tasks.
PIP O-10-4973, INOS-Performance Assessment: 2 EOC 24 Core Alignment, Core Verification and Core Inspection

Section 1R22: Surveillance Testing

PT/2/A/0610/001L, Load Shed Channel Verification, Rev. 12
O-1753-C, Connection Diagram Emergency Power Switching Logic Panel No. 2EPSLP1 Channel A, Rev. 21
O-1753-D, Connection Diagram Emergency Power Switching Logic Panel No. 2EPSLP1 Channel B, Rev. 17
O-EE-217-1H, Elementary Diagram Standby Breaker Closing Initiation and Load Shedding Initiation and Testing, Rev. 8
O-EE-217-1I, Elementary Diagram Standby Breaker Closing Initiation and Load Shedding Initiation and Testing, Rev. 8
O FD-121D-1.1, Flow Diagram of Emergency Feedwater System, Rev. 36
O FD-121A-1.7, Flow Diagram of Condensate System (Upper Surge tanks 1A & 1B, Upper Surge tank Dome, & Condensate Storage tank), Rev. 38
O FD-121A-1.8, Flow Diagram of Condensate System (Condensate Make-up & Emergency FDW Pump Suction), Rev. 23
O FD-122A-1.4, Flow Diagram of Main Steam System (Emergency FDW Pump Turbine Steam Supply and Exhaust), Rev. 23
OP/1/A/1106/006, Emergency FDW System, Rev. 119

PIP O-02-2149, US NRC Information Notice 2002-13, Possible Indicators of On-going Reactor Pressure Vessel Head Degradation
MP/0/A/1150/030, Reactor Vessel – Lower Head Penetrations – Visual Inspection, Rev. 3
OM 201.-3153-001, Arrangement Reactor Vessel Longitudinal Section, Rev. D-18
OM 201.-0017-001, Reactor Building Functional Requirements Elevation Section W-W, Rev. D-7
OM 2271.-0006-001, Reactor Building Functional Requirements Elevation Section Z-Z, Rev. D2
OM 271.-0065-001, Reactor Building Functional Requirements Elevation Section X-X, Rev. D4
O-1069D, Reactor Building Primary & Secondary Shield Walls Sections & Elevations Concrete, Rev. 13
O-1068A, Reactor Building Unit 2 Reactor Foundation Concrete, Rev. 1
WO 01871989, Perform a VT-2 Exam on ID# 2-RPV-BMI-Nozzles
WO 01880672, U2 Inspect Rx. Vessel Lower Head for Bare Metal
NDE-68, VT-2, Visual Examination for Leakage and Boric Acid Corrosion Control, Rev. 2
NDE-68, VT-2, Visual Examination for Leakage and Boric Acid Corrosion Control, Rev. 3
TI2515/152, Reactor Pressure Vessel Lower Head Penetration Nozzles (NRC Bulletin 2003-02), Rev. 1
NRC Bulletin 2003-02, Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity
PIP O-10-0112, Requirements of ASME Code Case N-722 not incorporated into MP/0/A/1150/030 prior to use of procedure
CSM 3.10, Primary Lab Sampling Frequencies, Specifications, and Corrective Actions, Rev. 39
HP/0/B/1000/091, Evaluation of Germanium Detector Gamma Spectroscopic Results, Rev. 4
HP/0/B/1001/026, Operation of the Count Room Analysis System, Rev. 3

Section 2RS1: Radiological Hazard Assessment and Exposure Control

Procedures, Guidance Documents, and Manuals

HP/0/B/1000/005, Entry into Containment at Power, Rev. 0
HP/0/B/1000/016, Radiological Protection Requirements for Steam Generator Maintenance, Rev. 30
HP-0-B/1000/054, Radiation Protection Routines, Rev 40
HP/0/B/1000/060, Vent and Air Ejector Sampling, Rev. 44
HP/0/B/1000/063, Body Burden Analysis – Evaluation of Results, Rev. 2.3
HP/0/B/1000/093, Defueling/Refueling Posting, Monitoring and Access Controls, Rev. 28
HP-0-B/1000/097, Radiological Protection Requirements for Independent Spent Fuel Storage Installation Phase V, Rev. 11
HP/0/B/1000/099, Diving Operations, Rev. 6
HP/0/B/1000/106, Crudburst Posting, Monitoring and Access Controls, Rev. 1
HP/0/B/1006/015, Use of Portable Ventilation Systems in Radiologically Controlled Areas, Rev. 4
NSD 208, Problem Investigation Process, Rev. 31
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SH/0/B/2000/004, Taking, Counting and Recording Surveys, Rev. 10
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SH/0/B/2000/012, Access Controls for High, Locked High, and Very High Radiation Areas, Rev. 11
SH/0/B/2000/013, Removal of Items from RCA/RCZs, Rev. 2
SH/0/B/2001/001, Internal Dose Assessment, Rev. 4
SH/0/B/2001/002, Investigation of Unusual Dosimetry Occurrence or Possible Overexposure, Rev. 7
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SQ/0/B/2000/009, Control and Notification of Radiography Operations, Rev. 6

Records and Data
Annual Inventory Reconciliation, Dated 01/11/10
Effluent Samples, U1 – Tech Spec Unit Daily Vent (Routine), Dated 04/12/10 and 05/12/10
Inventory of Non-Fuel Items Stored in the Spent Fuel Pool, Dated 10/10/09
ISFSI TLD Boundary Dose Report, Oconee Nuclear Station, 4th Quarter 2009 and 1st Quarter 2010
National Source Tracking Transaction Report, Dated 01/21/09
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RP Area Sample, U2 – Reactor Building B Cavity (Routine), Dated 05/12/10
RP Area Sample, U2 – Reactor Building Fourth Floor B Cavity Side (Routine), Dated 05/13/10
RP Job Sample, U2 – Bsmt - Grinding on J-Leg Drain Line, Dated 05/10/10
RP Job Sample, U2 – Grinding on CS Line Rm. 60, Dated 05/12/10
SH/0/B/2001/001, Enclosure 5.3, Tritium Dose Assessment, Dated 03/15/10

Radiation Work Permits (RWPs)
RWP No. 31, Radwaste Chemistry Activities in General Area Dose Rates >25 mrem/hr < 100 mrem/hr, Rev. 25
RWP No. 34, Radiography Operations Inside of the Nuclear Station Owner Control Fence NOT in a Highly Contaminated Area, Rev. 24
RWP No. 2007, U2 RX Bldg Deep End of Canal Decon
RWP No. 2032, U2 RX Bldg Radiography Testing and Associated Work, Rev. 11
RWP No. 2063, U2 RX Bldg – Letdown Nozzle Weld Overlay & Associated Work
RWP No. 2064, U2 RX Bldg – Alloy 600 RCP Piping Inspections & Associated Work
RWP No. 2297, U2 Aux Bldg Radiography Testing and Associated Work, Rev. 11
RWP No. 2320, U2 Aux Bldg Miscellaneous Plant Modification Activities
RWP No. 5028, Units – 1/2 & 3 SFP – Diving Operations and Associated Work
RWP No. 5145, U1, 2 & 3 Aux Bldg – NRC GL 08-01 Piping Surveillance and Associated Activities

Radiation Surveys
Survey No. M-032309-14, Rad Waste Room 227 L.W. Demineralizer Room & Sample, Dated 03/23/09
Survey No. M-040910-7, Independent Spent Fuel Storage Installation, Dated 04/09/10
Survey No. M-041209-4, Rad Waste Room 227 L.W. Demineralizer Room & Sample, Dated 04/12/09
Survey No. M-041609-18, Rad Waste Room 227 L.W. Demineralizer Room & Sample, Dated 04/16/09
Survey No. M-050810-1, Pressurizer Top Area, Dated 05/08/10

Survey No. M-050810-21, Unit 2 4th Floor Containment, Dated 05/08/10
Survey No. M-050810-22, Unit 2 3rd Floor Containment, Dated 05/08/10
Survey No. M-050810-39, Unit 2 2nd Floor Containment, Dated 05/05/10
Survey No. M-050810-41, Unit 2 1st Floor Containment, Dated 05/03/10
Survey No. M-050910-16, Top of Pressurizer, Dated 05/09/10
Survey No. M-050910-17, Unit 2 Reactor Building Basement, Dated 05/09/10
Survey No. M-050910-22, Unit 2 "B" Cavity Cut Away View, Dated 05/09/10
Survey No. M-051009-43, Rad Waste Room 227 L.W. Demineralizer Room & Sample, Dated 05/10/09
Survey No. M-051010-31, Unit 2 "A" S/G Upper Playpen, Dated 05/10/10
Survey No. M-051010-32, Unit 2 "A" S/G Lower Playpen, Dated 05/10/10
Survey No. M-051010-7, Unit 2 "B" S/G Upper Playpen, Dated 05/10/10
Survey No. M-051110-2, Unit 2 "B" S/G Lower Playpen, Dated 05/10/10
Survey No. M-051210-24, Independent Spent Fuel Storage Installation, Dated 05/12/10 Survey No. M-051410-22, Top of Pressurizer, Dated 05/12/10
Survey No. M-061009-14, Rad Waste Room 227 L.W. Demineralizer Room & Sample, Dated 06/10/09
Survey No. M-061309-4, Rad Waste Room 227 L.W. Demineralizer Room & Sample, Dated 06/12/09
Survey No. M-061909-2, Rad Waste Room 227 L.W. Demineralizer Room & Sample, Dated 06/18/09
Survey No. M-071009-20, Rad Waste Room 227 L.W. Demineralizer Room & Sample, Dated 07/10/09
Survey No. O-051310-14, U-2 RX Bldg. Top of PZR W. Wall, Dated 05/13/10

CAP Documents
PIP G-10-0413, Self Assessment review and evaluation of impact of NRC Inspection Manual 2515/179 to ensure that responses to NRC requirements for Inventories of materials tracked in NSTS
PIP O-09-4475, Worker received a dose rate alarm while manipulating valves at Demineralizer area of room RW-227
PIP O-10-0474, Review of issue logs at the S&C issue area showed 7 discrepancies where the Key Issue Log – Issued To was not initialed as required
PIP O-10-1503, An un-posted HRA existed in the plant which was not recognized by the RP Group
Self Assessment Report No. G-RPS-SA-10-11, Verification of NRC Licensee Responses to NRC Nationally Tracked Sources as Defined in 10 CFR 20.2207, Dated 03/29/10

Section 4OA1: Performance Indicator Verification
NSD 225, NRC Performance Indicators, Rev. 4
Nuclear Energy Institute 99-02, Regulatory Assessment Performance Indicator Guide, Rev. 5
Mitigating Systems Performance Index (MSPI) Basis Document, Rev. 10
PIP O-10- 3765, Unexpected entry into AP/1/A/1700/024, Loss of LPSW and AP/2/A/1700/024, Loss of LPSW
PIP O-10-0778, This PIP is to address that Oconee's unimpaired procedures will be revised to require entering into operability process right away if there is significant differences in flow.
PIP O-10-0663, Removal of valve 2LPSW-251 for PM requires a seismic evaluation by engineering

PIP O-10-0641, Throughwall leak on 1 ½ inch lpsw line
PIP O-09-8192, 1LPSW-1134 found open issuing water after system startup
2010Q1 LPSW System Health Report

Section 4OA2: Problem Identification & Resolution

PIP O-10-0534; Auxiliary Building walkdown results of scaffolding due to questions in regards to seismic scaffolds in the auxiliary building.
PIP O-10-0636; Scaffolding improperly installed adjacent to Station ASW Switchgear
PIP O-10-0682; Housekeeping Zones not established per NSD 104, Material Condition/Housekeeping, Foreign Material Exclusion and Seismic Concerns in the Radwaste Facility.
PIP O-10-0785; Scaffold too close to 3FDW-315
PIP O-10-0849; Scaffold board against a thread hanger coming from ceiling in Aux Building
PIP O-10-1075; Keowee Scaffold Does Not Meet Standard
PIP O-10-1108; This PIP is written to document the results of a scaffold walk down performed due to issues identified in PIP O-10-00969 using rope as means to secure scaffolds seismically.
PIP O-10-1616; Scaffold for 2C-573 has scaffold pole within 2" of instrument tubing
PIP O-10-2002; Scaffold not built safely and scaffold tag not filled out correctly
PIP O-10-2840; Scaffold program assessment findings.
NSD 506, Operator Workarounds and Control Room Deficiencies, Rev. 5

Control of Vehicles within the Protected Area Trend Statement

PIP O-09-0032, Unsecured vehicle inside the PA
PIP O-09-2434, Driver unsure of vehicle control requirements
PIP O-09-2722, Improperly Escorted Vehicle in the PA
PIP O-09-3171, Vehicle not secured inside PA
PIP O-09-4467, Unsecured vehicle in the PA
PIP O-09-5364, During routine patrol of the PA, officer # 1 discovered keys that had been left in a vehicle. Officer removed the keys and stored them in the proper storage location.
PIP O-09-6440, Unsecured Vehicle inside PA
PIP O-09-6508, Uncontrolled vehicle in the PA
PIP O-09-8449, Vehicle not properly secured
PIP O-10-0275, Uncontrolled Vehicle in the Protected Area
PIP O-10-1363, Unsecured Vehicle in the Protected Area
PIP O-10-2340, Unsecured Vehicle
PIP O-10-4977, Vehicle operated by escorted visitor was not escorted by Security
Plant Awareness Note dated September 17, 2009, Control of Vehicles inside the PA
2010 Duke Specific Plant Access Training/Radiation Worker Training Student Study Guide
NSD-217, Nuclear Security Program

Contractor Activities Impacting Plant Security Measures Trend Statement

PIP O-09-0925, Tailgate CAD 531
PIP O-09-1100, Stop Work Implemented by Security for the Tornado/HELB Project "W8 I-Beam Work" Scheduled for 2/20/2009
PIP O-09-1722, Stop Work Implemented by Security for the Tornado/HELB Project "Segment # 3 of the PSW Ductbank"

PIP O-09-1777, Security PIP Trending: Three (3) Events Within an Approximate Five (5) Week Period in Which the Violation of Security Requirements is Attributable to the Tornado/HELB Project
PIP O-09-2434, Driver unsure of vehicle control requirements
PIP O-09-6440, Unsecured Vehicle inside PA
PIP O-09-6508, Uncontrolled vehicle in the PA
PIP O-09-8654, Security Barrier left open and unattended. (This is not a PA Barrier)
PIP O-09-8660, Uncontrolled badge in the PA
PIP O-09-8830, Security delay barrier moved without prior authorization from Security
PIP O-09-8864, Vacuum truck placed in an unauthorized area
PIP O-09-8884. Unapproved Excavation Work
PIP O-09-9151, Adverse Trend on Security Issues
PIP O-10-0403, Employee passing item into the PA without Security knowledge
PIP O-10-0451, Tornado/High Energy Line Break (HELB) Protected Service Water (PSW) Project Duct Bank schedule slippages are challenging the ability to meet required schedules
PIP O-10-0491, Visitor not under positive control inside the P/A
PIP O-10-0511, Temporary security fence gate found blocked open and unattended (Flour)
PIP O-10-1015, Piping Exposed
PIP O-10-1363, Unsecured Vehicle in the PA
PIP O-10-1804, Review to Determine Need for Security Plan Change
PIP O-10-2359, Security Barrier Inadvertently Hit by Machinery
PIP O-10-2548, Concrete placement for wall W-9 East was aborted due to problems encountered
PIP O-10-3926, Fluor equipment incident
PIP O-10-4189, Security pathway for routine patrol at Unit 1 West Pen door needs to be reconfigured
PIP O-10-4603, Punch List items are not being responded to or resolved in a timely manner
PIP O-10-4803, Recurring Issues with Fluor Scheduling of Security Resources
PIP O-10-4856, Area for Improvement (AFI) for OMP Human Performance
PIP O-10-4977, Vehicle operated by escorted visitor was not escorted by Security

Section 4OA3: Event Follow-up

PIP O-10-3108, Fire Brigade Response for Fire on Plant Space Heater H-33
PIP O-10-3138, Air Arc machine shorted out resulting in a small fire
PIP O-10-3137, 4911 call for fire in Air Arc machine
PIP O-10-3252, Post fire event critique
RP/0/B/1000/029, Fire Brigade Response, Rev. 16
RP/0/B/1000/001, Emergency Classification, Rev. 26

LIST OF ACRONYMS

ADAMS	-	Agency Wide Documents Access and Management System
ASW	-	Auxiliary Service Water
BWST	-	Borated Water Storage Tank
CAP	-	Corrective Action Program
CCW	-	Condenser Circulating Water
CFR	-	Code of Federal Regulations
dP	-	Differential Pressure
ECT		Eddy Current Testing
ED	-	Electronic Dosimeter
EOC	-	End-of-Cycle
HELB	-	High Energy Line Break
HPI	-	High Pressure Injection
HPT	-	Health Physics Technician
HRA	-	High Radiation Area
HVAC	-	Heating, Ventilation and Air Conditioning
ICDP	-	Incremental Core Damage Probability
IMC	-	Inspection Manual Chapter
IP	-	Inspection Procedure
IR	-	Inspection Report
ISFSI	-	Independent Spent Fuel Storage Installation
LER	-	Licensee Event Report
LHRA	-	Locked-High Radiation Area
LOCA	-	Loss of Coolant Accident
LPSW	-	Low Pressure Service Water
LPI	-	Low Pressure Injection
KHU	-	Keowee Hydro Unit
MPSI	-	Mitigating System Performance Index
NCV	-	Non-Cited Violation
NPBS	-	Natural Phenomenon Barrier System
NRC	-	Nuclear Regulatory Commission
NSD	-	Nuclear System Directive
ORS	-	Occupational Radiation Safety
OSC	-	Operations Support Center
PARS	-	Publicly Available Records
PI	-	Performance Indicator
PIP	-	Problem Investigation Process
PM	-	Preventive Maintenance
PSW	-	Protected Service Water
RCA	-	Radiation Controlled Area
RCMUP	-	Reactor Coolant Makeup Unit Pump
RCS	-	Reactor Coolant System
RCP	-	Reactor Coolant Pump
Rev.	-	Revision
RP	-	Radiation Protection
RTCA	-	Real Time Contingency Analysis
RTP	-	Rated Thermal Power

RWP		Radiation Work Permit
SDP	-	Significance Determination Process
SFP	-	Spent Fuel Pool
S/G	-	Steam Generator
SSC	-	Structures, Systems, and Components
SSF	-	Standby Shutdown Facility
TS	-	Technical Specifications
UFSAR	-	Updated Final Safety Analysis Report
VHRA	-	Very High Radiation Area
WO	-	Work Order