



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

September 24, 2009

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 PROBLEM IDENTIFICATION AND  
RESOLUTION INSPECTION REPORT 05000269/2009006, 05000270/2009006,  
AND 05000287/2009006**

Dear Mr. Baxter:

On August 27, 2009, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station. The enclosed report documents the inspection findings, which were discussed on August 27, 2009, with Mr. Scott Batson and other members of your staff.

The inspection was an examination of activities conducted under your license as they relate to the identification and resolution of problems, and compliance with the Commission's rules and regulations and with the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of plant equipment and activities, and interviews with personnel.

On the basis of the samples selected for review, the team concluded that, in general, your corrective action program processes and procedures were adequate; thresholds for identifying issues were appropriate; and problems were generally evaluated and corrected within the problem identification and resolution program (PI&R). There was one green finding identified during this inspection associated with the depth and effectiveness of corrective actions associated with one apparent cause analysis. The finding was identified for failure to provide sufficient margin between the peak discharge pressure of the low pressure injection (LPI) system and the relief valve setpoint for the Unit 3 B-train LPI cooler (3LP-37). This resulted in the inadvertent opening of 3LP-37 during LPI startup for decay heat removal on April 25, 2009. However, because of its very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you wish to contest this non-cited violation, 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,

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Washington, DC 20555-0001; and the NRC Senior Resident Inspector at the Oconee Nuclear Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at Oconee. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, 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 the 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/*

Daniel J. Merzke, Chief  
Reactor Projects Branch 7  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000269/2009006, 05000270/2009006, and 05000287/2009006  
w/Attachment: Supplemental Information

cc w/encl. (See page 3)

Washington, DC 20555-0001; and the NRC Senior Resident Inspector at the Oconee Nuclear Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at Oconee. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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Sincerely,

*/RA/*

Daniel J. Merzke, Chief  
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cc w/encl:  
Robert Meixell  
Regulatory Compliance Manager  
Oconee Nuclear Station  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Scott L. Batson  
Engineering Manager  
Oconee Nuclear Station  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Clark E. Curry  
Mechanical and Civil Engineering Manager  
Oconee Nuclear Station  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Philip J. Culbertson  
Oconee Nuclear Station  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Preston Gillespie  
Manager  
Oconee Nuclear Station  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

R. L. Gill, Jr.  
Manager  
Nuclear Regulatory Issues & Industry Affairs  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Dhiaa M. Jamil  
Group Executive and Chief Nuclear Officer  
Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Lisa F. Vaughn  
Associate General Counsel  
Duke Energy Corporation  
526 South Church Street-EC07H  
Charlotte, NC 28202

Kathryn B. Nolan  
Senior Counsel  
Duke Energy Corporation  
526 South Church Street-EC07H  
Charlotte, NC 28202

Charles Brinkman  
Director  
Washington Operations  
Westinghouse Electric Company  
Electronic Mail Distribution

County Supervisor of Oconee County  
415 S. Pine Street  
Walhalla, SC 29691-2145

David A. Repka  
Winston Strawn LLP  
Electronic Mail Distribution

R. Mike Gandy  
Division of Radioactive Waste Mgmt.  
S.C. Department of Health and  
Environmental Control  
Electronic Mail Distribution

Susan E. Jenkins  
Director, Division of Waste Management  
Bureau of Land and Waste Management  
S.C. Department of Health and  
Environmental Control  
Electronic Mail Distribution

Beverly O. Hall  
Chief, Radiation Protection Section  
Department of Environmental Health  
N.C. Department of Environmental  
Commerce & Natural Resources  
Electronic Mail Distribution

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Letter to David A. Baxter from Daniel J. Merzke dated September 24, 2009

SUBJECT: OCONEE NUCLEAR STATION – NRC PROBLEM IDENTIFICATION AND  
RESOLUTION INSPECTION REPORT 05000269/2009006, 05000270/2009006,  
AND 05000287/2009006

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C. Evans, RII

L. Slack, RII

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

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

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

Report Nos: 05000269/2009006, 05000270/2009006, 05000287/2009006

Licensee: Duke Energy Carolinas, LLC

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

Location: Seneca, SC 29672

Dates: August 10, 2009 through August 27, 2009

Inspectors: M. Checkle, Allegations Coordinator  
R. Cureton, Catawba Resident Inspector  
M. King, Senior Projects Inspector  
C. Kontz, Senior Operations Engineer  
G. Ottenberg, Oconee Resident Inspector  
M. Pribish, Watts Bar Resident Inspector, Team Leader  
L. Suggs, Reactor Inspector

Approved by: Daniel J. Merzke, Chief  
Reactor Projects Branch 7  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000269/2009006, 05000270/2009006, 05000287/2009006; 08/10/2009 – 08/27/2009; Oconee Nuclear Station, Units 1, 2, and 3; Biennial Inspection of the Identification and Resolution of Problems.

The inspection was conducted by a senior projects inspector, a senior operations engineer, a reactor inspector, three resident inspectors, and an allegations coordinator. One Green self-revealing finding was identified. The significance of most findings is indicated by its color (Green, White, Yellow, Red) using the Significance Determination Process in Inspection Manual Chapter (IMC) 0609, Significance Determination Process (SDP). The cross-cutting aspect was determined using IMC 0305, Operating Reactor Assessment Program. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### Identification and Resolution of Problems

The team concluded that, in general, problems were identified, evaluated, prioritized, and corrected. Generally, the threshold for entering issues into the problem investigation process (PIP) system was appropriately low, as evidenced by the types of problems identified and large number of PIPs entered annually into the corrective action program (CAP). Employees were encouraged by management to initiate PIPs.

Generally, prioritization and evaluation of issues were consistent with the licensee's CAP guidance, formal root cause evaluations for significant problems were adequate, and corrective actions specified for problems were acceptable. Overall, corrective actions developed and implemented for issues were generally timely, effective, and commensurate with the safety significance of the issues.

The team determined that, overall, audits and self-assessments were adequate in identifying deficiencies and areas for improvement in the CAP, and appropriate corrective actions were developed to address the issues identified. Operating experience usage was found to be generally acceptable and integrated into the licensee's processes for performing and managing work, and plant operations.

Based on discussions and interviews conducted with plant employees from various departments, the inspectors determined that personnel at the site felt free to raise safety concerns to management and use the CAP to resolve those concerns.

### A. NRC Identified and Self-Revealing Findings

#### **Cornerstone: Initiating Events**

Green. A self-revealing, non-cited violation (NCV) of 10 CFR 50 Appendix B, Criterion III, Design Control, was identified for failure to provide sufficient margin between the peak discharge pressure of the low pressure injection (LPI) system and the relief valve setpoint for the Unit 3 B-train LPI cooler (3LP-37). This resulted in the inadvertent

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opening of 3LP-37 during LPI startup for decay heat removal on April 25, 2009. The licensee entered the issue into the corrective action program and revised the applicable operating procedure to provide additional margin during LPI startup for decay heat removal.

The failure to provide sufficient margin between the LPI relief valve set point and the peak discharge pressure of the LPI system upon startup was a performance deficiency. The finding was more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern, specifically for loss of inventory if the relief valve failed to reseal. Additionally, the finding was associated with the Initiating Events cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown, primarily inventory control. The finding was of very low safety significance (Green) because it met the availability requirements set forth in IMC 0609, Appendix G, Shutdown Operations SDP, which verified that the licensee was maintaining an adequate mitigation capability for shutdown operation. The cause of the finding had a cross-cutting aspect in the area of "human performance." It was directly related to the "licensee not conducting effectiveness reviews of safety-significant decisions to verify the validity of the underlying assumptions, identify possible unintended consequences, and determine how to improve future decisions" aspect of the "decision-making" component. Specifically, licensee calculation OSC-5616, reviewed and revised in 2008, identified a possible unintended consequence that 3LP-37 could lift during LPI pump start. This was not incorporated into plant procedures to prevent future relief valve lifts. Additionally, with the assumption that the relief setpoint for 3LP-37 was low, the licensee started the LPI system during the 3EOC24 outage under the same conditions that 3LP-37 lifted during the 3EOC23 outage (H.1(b)). (Section 4OA2.a.3)

B. Licensee Identified Violations

None



## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA2 Problem Identification and Resolution

##### a. Assessment of the Corrective Action Program

##### (1) Inspection Scope

The inspectors reviewed the licensee's corrective action program (CAP) procedures which described the administrative process for initiating and resolving problems primarily through the use of the problem investigation process (PIP). To verify that problems were being properly identified, appropriately characterized, and entered into the CAP, the inspectors reviewed PIPs that had been issued between August 2007 and June 2009, including a detailed review of selected PIPs associated with the following risk-significant systems: Emergency Feedwater (EFW), High Pressure Injection (HPI), Low Pressure Injection (LPI), and the Standby Shutdown Facility (SSF). Where possible, the inspectors independently verified that the corrective actions were implemented as intended. The inspectors also reviewed selected common causes and generic concerns associated with root cause evaluations to determine if they had been appropriately addressed. To help ensure that samples were reviewed across all cornerstones of safety identified in the NRC's Reactor Oversight Process (ROP), the team selected a representative number of PIPs that were identified and assigned to the major plant departments, including operations, maintenance, engineering, health physics, emergency preparedness, chemistry, and security. These PIPs were reviewed to assess each department's threshold for identifying and documenting plant problems, thoroughness of evaluations, and adequacy of corrective actions. The inspectors reviewed selected PIPs, verified corrective actions were implemented, and attended meetings where PIPs were screened for significance to determine whether the licensee was identifying, accurately characterizing, and entering problems into the CAP at an appropriate threshold.

The inspectors conducted plant walkdowns of equipment associated with the selected systems and other plant areas to assess the material condition and to look for any deficiencies that had not been previously entered into the CAP. The inspectors reviewed PIPs, maintenance history, completed work orders (WOs) for the systems, and reviewed associated system health reports. These reviews were performed to verify that problems were being properly identified, appropriately characterized, and entered into the CAP. Items reviewed generally covered a 22-month period of time; however, in accordance with the inspection procedure, a five-year review was performed for selected systems for age-dependent issues.

Control Room walkdowns were also performed to assess the main control room (MCR) deficiency list and to ascertain if deficiencies were entered into the CAP. Operator workarounds and operator burden screenings were reviewed, and the inspectors verified compensatory measures for deficient equipment which were being implemented in the field.

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The team conducted a detailed review of selected PIPs to assess the adequacy of the root-cause and apparent-cause evaluations of the problems identified. The inspectors reviewed these evaluations against the descriptions of the problem described in the PIPs and the guidance in licensee procedure NSD-212, Cause Analysis. The inspectors assessed if the licensee had adequately determined the cause(s) of identified problems, and had adequately addressed operability, reportability, common cause, generic concerns, extent-of-condition, and extent-of-cause. The review also assessed if the licensee had appropriately identified and prioritized corrective actions to prevent recurrence.

The team reviewed site trend reports, to determine if the licensee effectively trended identified issues and initiated appropriate corrective actions when adverse trends were identified.

The inspectors attended various plant meetings to observe management oversight functions of the corrective action process. These included PIP screening team meetings, corrective action review board (CARB) meetings, and the work order review (core team) meeting.

Documents reviewed are listed in the Attachment.

(2) Assessment

Identification of Issues

The team determined that the licensee was generally effective in identifying problems and entering them into the CAP and that there was a low threshold for entering issues into the CAP. This conclusion was based on a review of the requirements for initiating PIPs as described in licensee procedure NSD-208, Problem Investigation Process, and the management expectation that employees were encouraged to initiate PIPs for any reason, and a review of system health reports. Trending was generally effective in monitoring equipment performance. Site management was actively involved in the CAP and focused appropriate attention on significant plant issues.

Prioritization and Evaluation of Issues

Based on the review of audits conducted by the licensee and the assessment conducted by the inspection team during the onsite period, the team concluded that problems were generally prioritized and evaluated in accordance with the licensee's CAP procedures as described in licensee procedure NSD-208. Each PIP written was assigned a priority level at the PIP screening team meeting, and adequate consideration was given to system or component operability and associated plant risk.

The team determined that the station had conducted root cause and apparent cause analyses in compliance with the licensee's CAP procedures, and assigned cause determinations were appropriate considering the significance of the issues being evaluated. A variety of causal-analysis techniques were used depending on the type and complexity of the issue consistent with licensee procedure NSD-212. The licensee

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had performed evaluations that were technically accurate and of sufficient depth. The team further determined that operability, reportability, and degraded or non-conforming condition determinations had been completed consistent with the guidance contained in licensee procedures NSD-202, Reportability, and NSD-203, Operability/Functionality.

### Effectiveness of Corrective Actions

Based on a review of corrective action documents, interviews with licensee staff, and verification of completed corrective actions, the team determined that overall, corrective actions were timely, commensurate with the safety significance of the issues, and effective, in that conditions adverse to quality were corrected and non-recurring. For significant conditions adverse to quality, the corrective actions directly addressed the cause and effectively prevented recurrence in that a review of performance indicators, all PIPs, and effectiveness reviews demonstrated that the significant conditions adverse to quality had not recurred. Effectiveness reviews for corrective actions to prevent recurrence (CAPRs) were sufficient to ensure corrective actions were properly implemented and were effective. However, the team did have one finding for failure to implement prompt correct actions associated with a 2007 low pressure injection (LPI) system relief valve lift.

### (3) Findings

Introduction: A Green, self-revealing, non-cited violation (NCV) of 10 CFR 50 Appendix B, Criterion III, Design Control, was identified for failure to provide sufficient margin between the peak discharge pressure of the low pressure injection (LPI) system and the relief valve setpoint for the Unit 3 B-train LPI cooler (3LP-37).

Description: On April 25, 2009, Operations personnel were performing operating procedure OP/3/A/1102/010, Controlling Procedure for Unit Shutdown. The operating procedure required reactor coolant system (RCS) pressure less than 290 psig prior to starting an LPI pump. With RCS pressure at approximately 289 psig, the licensee proceeded to place LPI in service for decay heat removal (DHR). Shortly after placing LPI in service, relief valve 3LP-37 lifted and passed approximately 60 gpm of flow to the Unit 3 high activity waste tank (HAWT) for a period of approximately 14 minutes. The licensee initiated PIP O-09-02545 to investigate the cause of the relief valve lift.

Previously, on October 27, 2007, 3LP-37 lifted under similar circumstances during the shutdown for the Unit 3 cycle 23 refueling outage (3EOC23). The licensee initiated PIP O-07-5929 to investigate the cause of the relief valve lift. With the belief that the valve lifted early, the proposed corrective action was to bench test the valve online prior to the Unit 3 cycle 24 refueling outage (3EOC24). The online bench test was deferred and did not occur prior to 3EOC24.

On August 14, 2009, the inspectors reviewed licensee calculation OSC-5616, LPI Overpressure/Temperature Prevention Analysis, dated February 5, 2008, which provided the basis for the allowable RCS pressure for LPI pump initiation. The conclusion from this calculation was that for LPI entry conditions of an RCS pressure of 290 psig, the expected LPI pressure during pump start would be above the relief valve

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setpoint for the LPI cooler. The insufficient margin between the LPI relief valve set point and the peak pressure of the LPI system upon startup was not incorporated into plant procedures to prevent inadvertent relief valve lifts.

Analysis: The inspectors determined that the licensee's failure to provide sufficient margin between the LPI relief valve set point and the peak discharge pressure of the LPI system upon startup was a performance deficiency. The inspectors reviewed Inspection Manual Chapter (IMC) 0612 and determined that the finding was more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern, specifically for loss of inventory if the relief valve failed to reseal. Additionally, the finding was associated with the design control attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown. The inspectors determined that the finding was of very low safety significance (Green) because it had minimal effect on pressurizer level and met the availability requirements set forth in IMC 0609, Appendix G, Shutdown Operations Significance Determination Process (SDP), which verified that the licensee was maintaining an adequate mitigation capability for shutdown operation.

The cause of the finding had a cross-cutting aspect in the area of "human performance." It was directly related to the "licensee not conducting effectiveness reviews of safety-significant decisions to verify the validity of the underlying assumptions, identify possible unintended consequences, and determine how to improve future decisions" aspect of the "decision-making" component. Specifically, licensee calculation OSC-5616, reviewed and revised in 2008, identified a possible unintended consequence that 3LP-37 could lift during LPI pump start. This was not incorporated into plant procedures to prevent future relief valve lifts. Additionally, with the assumption that the relief setpoint for 3LP-37 was low, the licensee started the LPI system during the 3EOC24 outage under the same conditions that 3LP-37 lifted during the 3EOC23 outage (H.1(b)).

Enforcement: 10 CFR 50 Appendix B, Criterion III, Design Control, states, in part, that measures shall be established to assure that the applicable design basis for components are correctly translated into procedures and instructions. Contrary to this requirement, from March 27, 2003 to August 5, 2009, the conclusion from OSC-5616, LPI Overpressure/Overtemperature Prevention Analysis, that 3LP-37 may lift when placing the LPI system in service for decay heat removal was not correctly translated into licensee procedure OP/3/A/1102/010, Controlling Procedure for Unit Shutdown. Consequently, this resulted in the relief valve 3LP-37 lifting upon LPI startup during the 3EC23 and 3EC24 refueling outages. The licensee entered the issue into the corrective action program as PIP O-09-2945 and revised OP/3/A/1102/010 to provide additional margin during LPI startup for decay heat removal. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000287/2009006-01, Failure to Provide Margin Between the LPI Relief Valve Setpoint and the Peak Discharge Pressure of the LPI System.

b. Assessment of the Use of Operating Experience (OE)

(1) Inspection Scope

The team examined licensee programs for reviewing industry operating experience, reviewed licensee procedure NSD-204, Operating Experience Program Description, and reviewed the licensee's operating experience database to assess the effectiveness of how external and internal operating experience data was handled at the plant. In addition, the team selected operating experience documents (e.g., NRC generic communications, 10 CFR Part 21 reports, licensee event reports, vendor notifications, and plant internal operating experience items, etc.), which had been issued since August 1, 2007, to verify whether the licensee had appropriately evaluated each notification for applicability to the Oconee Nuclear Station, and whether issues identified through these reviews were entered into the CAP. Documents reviewed are listed in the Attachment.

(2) Assessment

Based on a review of documentation related to the review of operating experience issues, the team determined that the licensee was generally effective in screening operating experience for applicability to the plant. This was demonstrated by the inspectors finding no OE that wasn't screened for applicability, and no events occurring which would have been prevented by applying OE lessons learned. Industry OE was evaluated at either the corporate or plant level depending on the source and type of document. OE issues requiring action were entered into the CAP for tracking and closure. In addition, operating experience was included in all apparent cause and root cause evaluations in accordance with licensee procedure NSD-212.

(3) Findings

No findings of significance were identified.

c. Assessment of Self-Assessments and Audits

(1) Inspection Scope

The team reviewed audit reports and self-assessment reports, including those which focused on problem identification and resolution, to assess the thoroughness and self-criticism of the licensee's audits and self assessments, and to verify that problems identified through those activities were appropriately prioritized and entered into the CAP for resolution in accordance with licensee procedure NSD-607, Assessments, Benchmarking, and Observations.

(2) Assessment

The team determined that the scopes of assessments and audits were adequate. Self-assessments were generally detailed and critical, as evidenced by findings consistent with the team's independent review. The team verified that PIPs were created to document all areas for improvement and findings resulting from the self-assessments, and verified that actions had been completed consistent with those recommendations.

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Generally, the licensee performed evaluations that were technically accurate. Site trend reports were thorough and a low threshold was established for evaluation of potential trends, as evidenced by the PIPs reviewed that were initiated as a result of adverse trends.

(3) Findings

No findings of significance were identified.

d. Assessment of Safety-Conscious Work Environment

(1) Inspection Scope

The team randomly interviewed 25 on-site workers regarding their knowledge of the corrective action program at Oconee and their willingness to write PIPs or raise safety concerns. During technical discussions with members of the plant staff, the inspectors conducted interviews to develop a general perspective of the safety-conscious work environment at the site. The interviews were also conducted to determine if any conditions existed that would cause employees to be reluctant to raise safety concerns. The inspectors reviewed the licensee's Employee Concerns Program (ECP) and interviewed the ECP coordinator. Additionally, the inspectors reviewed a sample of completed ECP reports to verify that concerns were being properly reviewed and identified deficiencies were being resolved and entered into the CAP when appropriate.

(2) Assessment

Based on the interviews conducted and the PIPs reviewed, the team determined that licensee management emphasized the need for all employees to identify and report problems using the appropriate methods established within the administrative programs, including the CAP and ECP. These methods were readily accessible to all employees. Based on discussions conducted with a sample of plant employees from various departments, the inspectors determined that employees felt free to raise issues, and that management encouraged employees to place issues into the CAP for resolution. The inspectors did not identify any reluctance on the part of the licensee staff to report safety concerns.

(3) Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On August 27, 2009, the inspectors presented the inspection results to Mr. Scott Batson and other members of the site staff. The inspectors confirmed that proprietary information examined during the inspection was not retained.

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee personnel

S. Batson, Engineering Manager  
D. Baxter, Site Vice President  
D. Brewer, Safety Assessments Manager  
R. Brown, Emergency Preparedness Manager  
E. Burchfield, Reactor and Electrical Systems Manager  
C. Curry, Mechanical/Civil Engineering Manager  
P. Culbertson, Maintenance Manager  
R. Fruedenberger, Safety Assurance Manager  
M. Glover, General Manager of Projects  
J. Kammer, Modification Engineering Manager  
T. King, Security Manager  
R. Matheson, Performance Improvement  
B. Meixell, Acting Regulatory Compliance Manager  
B. Norris, Performance Improvement Manager  
J. Patterson, Engineering Supervisor  
J. Smith, Regulatory Compliance  
P. Street, Engineering  
W. Vassey, Performance Improvement

NRC

J. Bartley, Branch Chief  
D. Merzke, Branch Chief  
E. Riggs, Senior Resident Inspector

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

Opened and Closed

05000287/2009006-01	NCV	Failure to Provide Margin Between the LPI Relief Valve Set Point and the Peak Discharge Pressure of the LPI System (Section 4OA2.a.3)
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Closed

None

Discussed

None

## LIST OF DOCUMENTS REVIEWED

### Procedures

NSD-120, Equipment Reliability Process, Rev. 0  
NSD-202, Reportability, Rev. 21  
NSD-203, Operability/Functionality, Rev. 14  
NSD-204, Operating Experience Program Description, Rev. 9  
NSD-208, Problem Investigation Process (PIP), Revs. 30 and 31  
NSD-212, Cause Analysis, Rev. 16  
NSD-220, UFSAR Revision Process, Rev. 11  
NSD-223, PIP Trending Program, Rev. 6  
NSD-228, Applicability Determination, Rev. 4  
NSD-506, Operator Workaround, Rev. 4  
NSD-602, Safety Conscious Work Environment (SCWE) & Employee Concerns Program (ECP), Rev. 4  
NSD-607, Assessments, Benchmarking, and Observations, Rev. 12  
EP/1/A/1800/001, EOP-IMA's and SA's, Rev. 36  
EP/1/A/1800/001L, EOP- Rules and Appendix, Rev. 36  
MP/0/A/1300/020, Pump -Ingersoll Rand, High Pressure Injection – Removal and Replacement of Pump and Motor, Rev. 52  
PT/0/A/5001/007, Chemistry Audit of Red Tags and White Tags, Rev. 2  
OP/0/A/1600/010, Operation of SSF Diesel Generator, Rev. 59  
PT/0/A/0400/011, SSF Generator Test, Rev. 13  
OP/1/A/6101/009, Alarm Response Guide 1SA-09, Rev. 33  
OP/2/A/6102/009, Alarm Response Guide 2SA-09, Rev. 28  
OP/3/A/6103/009, Alarm Response Guide 3SA-09, Rev. 27  
AP/1/A/1700/002, Excessive RCS Leakage, Rev. 11  
AP/2/A/1700/002, Excessive RCS Leakage, Rev. 14  
AP/3/A/1700/002, Excessive Rcs Leakage, Rev. 14  
AP/1/A/1700/016, Abnormal Reactor Coolant Pump Operation, Rev. 26  
AP/2/A/1700/016, Abnormal Reactor Coolant Pump Operation, Rev. 20  
AP/3/A/1700/016, Abnormal Reactor Coolant Pump Operation, Rev. 20  
AP/1/A/1700/018, Abnormal Release Of Radioactivity, Rev. 18  
AP/2/A/1700/018, Abnormal Release Of Radioactivity, Rev. 14  
AP/3/A/1700/018, Abnormal Release Of Radioactivity, Rev. 20  
EP/1/A/1800/001, EOP - IMAs and SAs  
OMP 1-18, Implementation Standard During Abnormal And Emergency Events, Rev. 29

### PIPs associated with previous findings/LEAs

O-06-02903, With the withdrawal of the request for relief (04-ON-006), ONS did not meet requirements of the ASME code section XI for the third interval  
O-07-07674, During the performance of RCS makeup from 3B BHUT, the incorrect volume was added  
O-08-01265, NRC issue related to OSC-4254 (LPI NPSH analysis at saturated conditions)  
O-08-02523, NRC cited two requests for relief as untimely during U1 ISI inspection  
O-08-02525, Evaluate the timeliness for relief requests in the grace period  
O-08-08339, Max 1 seating material installed in valves 3RC-164 and 165 is not qualified to meet the design conditions shown on the OFD



O-09-02833, NRC Issuance of Inspection Report 2009-002 dated April 18, 2009  
 O-06-08576, Low Temperature overpressure protection RPS channel "C" computer point was found disconnected  
 O-08-00526, SSF D/G field flashing relay cover was found not latched after failure  
 O-08-00486, Received Blown Fuse alarm at D/G cubicle  
 O-07-02462, Unit 1 RCMU System declared inoperable due to exceeding U1 & U2 SFP level versus temperature requirements  
 O-07-05069, Lead SSF HVAC Compressor #2 found off with lag compressor running  
 O-07-00941, Unit 2 reactor trip due to grid disturbance (fault at Jocassee Switchyard)  
 O-07-00940, Unit 1 reactor trip due to grid disturbance (fault at Jocassee Switchyard)  
 O-08-01626, Unit 2 trip during condenser pressure transmitter calibration  
 O-07-06083, Some improvements could be made to eliminate potential for delaying emergency containment closure  
 O-08-07110, Unit 3 Tripped at 08:34 on 11/07/08. Trip Transient evaluations are in progress  
 O-08-05217, NCV 2008-08-01 Follow up  
 O-08-05218, NCV 2008-08-03 Follow up  
 O-08-05219, NCV 2008-08-02 Follow up  
 O-08-05220, NCV 2008-08-04 Follow up

#### Emergency Feedwater System PIPs

O-09-02079, Unexpected Tech Spec entry for 3A MDEFWP oiler  
 O-08-04045, Unable to obtain required recirc flow while performing U-1 TDEFWP PT (PT/1/A/0600/012)  
 O-00-03489, The chains do not match the chain operators for 2,3 FDW-313 and 314; time critical task  
 O-04-07466, Statalarm 2SA-18 D-12 (TDEFWD Pump Tripped) alarmed when Unit 2 TDEFWD pump was started per PT/2/A/0600/012  
 O-08-02358, Branch Connection does not meet Code Requirements  
 O-09-03675, Piping upstream of 3FDW-90 has a pin hole leak. Piping downstream of 3FDW-89 has pinhole leak too.  
 O-09-04512, 3MS SV-74 Did not energize when breaker was closed  
 O-98-03400, Safety concern for operating MS-94/95 due to limited egress if a problem (steam leak) were to develop  
 O-97-01266, EFDW Control System Deficiencies

#### Low Pressure Injection System PIPs

O-09-02545, Unplanned Entry in AP/3/A/1700/002 "Excessive RCS Leakage"  
 O-07-05929, Increase in HAWT  
 O-08-02720, Operability Assessment not performed for PIP O-07-5929  
 O-09-02529, Entered AP/3/A/1700/002 Excessive RCS Leakage  
 O-09-02541, Observed increase in HAWT rate  
 O-09-02551, LPI Cooler Rm and HPI Hatch (HAWT)

#### High Pressure Injection System PIPs

O-00-03393, 1B HPI pump could not rotate by hand  
 O-01-01937, 2A HPI pump mechanical seal failed during HPI full flow test  
 O-02-02687, 1 HP-16 control room switch broken  
 O-07-02895, 1 HP-16 control room switch broke

O-07-04674, 2A HPI pump shaft overheating  
 O-07-06093, Shaft sleeves on new HPI pumps out of position  
 O-08-02632, 1C HPI pump shaft sleeve discovered in a higher location in relation to the mechanical seal  
 O-08-04410, 3HP-15 flow totalizer failed  
 O-08-05172, 1HP-16 failed to open from the control room  
 O-08-05861, EDB numbers for HPI bypass switches have wrong location in number  
 O-08-06687, High level apparent cause for PIP O-08-05172  
 O-08-07036, Seat O-ring was found to be missing on valve 2HP-364  
 O-08-07483, 2B HPI pump shaft sleeve discovered out of normal position  
 O-08-07297, 2A HPI pump shaft sleeve discovered out of normal position  
 O-08-07928, 2HP-16 will not close  
 O-09-02476, Vendor (Flowserve) issued new drawings for seal cartridge assembly for HPI pumps

#### Standby Shutdown Facility PIPs

O-08-00534, SSF "A" D/G Engine 500 RPM red indicator lamp did not light during the SSF monthly runs  
 O-08-00656, Two wires improperly terminated on K2 relay during corrective maintenance  
 O-08-00850, SSF on-line ventilation supply flow not within required  
 O-08-05515, SSF "B" Diesel Engine's Left Bank Jacket Water Pump has mechanical seal leakage  
 O-08-07744, SSF D/G did not immediately start when idle start pushbutton was depressed  
 O-09-01808, During March 2009 full load run, SSF Diesel Engine Cylinder 12 was, at times, more than 200 degrees hotter than cylinders 15 and 16  
 O-09-00526, During a full load run, SSF Diesel Engine "A" Cylinder 12 was at times more than 200 degrees hotter than Cylinders 15 and 16  
 O-02-03570, During a full load run, SSF Diesel Engine "A" Cylinder 12 was more than 200 degrees hotter than Cylinder 16  
 O-09-01070, U2 ASW Flow fluctuating between 20 and 50 gpm

#### Chemistry Department PIPs

O-07-04865, Found Unit 2 West Tendon Gallery sump pump in the "OFF" position, normal position is in "AUTO"  
 O-08-01538, Evaluation to determine why Recirculating Cooling Water valves 200 and 199 failure rate is increasing and should PM frequency be shortened  
 O-08-03169, Chemistry tag-out greater than 90 days with no 10CFR50.59 screen  
 O-08-03564, 2RCSV0229 air solenoid valve replacement  
 O-08-06133, Unit 2 West Tendon Gallery High Level alarm received. Investigation found 2 West Tendon Gallery pump handswitch in the OFF position  
 O-08-07337, Screen reviewer not qualified per NSD 209  
 O-09-01771, Significant trends noted – an increase in Unit 2 FFW and MSR sodium, and Unit 3 FFW and MSR chloride  
 O-09-05066, List of 50.59 qualified evaluators and screeners not up-to-date

#### Emergency Preparedness PIPS

O-08-00607, Risk significant planning standard failures identified during Oconee drill 2008-01 which was conducted on February 5, 2008

O-08-00089, PIP trending results for all of 2007  
 O-08-01711, Risk Significant Planning standard failure occurred during Evaluated Exercise associated with event misclassification  
 O-08-06871, EP personnel received a pager message stating that >25% of the siren system is out of service

#### Security PIPs

O-08-00581, Security officer worked in an armed status after annual exam expired  
 O-08-01836, Security Officer inattentive on Post  
 O-08-04869, Oconee Security 2nd Quarter 2008 Integrated Performance Assessment "Gap to Excellence:" Increase in the Number of Category 3 PIPs that Identify Security as the Culpable Group  
 O-08-07597, Site NRC Identified a possible Seismic Issue at Security CAS and SFF Deisel Service water Pump  
 O-08-08217, Badge not terminated when reinvestigation expired  
 O-09-01068, Safety issues with the temporary steps that had been installed at the floodwall on the South end of the SSF  
 O-09-01100, Stop Work Implemented by Security for the Tornado/HELB Project "W8 I-Beam Work" Scheduled for 2/20/2009  
 O-09-01777, Security PIP Trending identifies three (3) events within a five (5) week period in which the violation of security requirements is attributable to the Tornado/HELB Project.  
 O-09-02511, Security Fatigue/ Work Hour Control Program (SD-15.0) exceeded  
 O-09-01722, Stop Work Implemented by Security for the Tornado/HELB Project "Segment # 3 of the PSW Ductbank"  
 O-08-00597, Improperly terminated wires  
 O-09-00107, Increase in number of Security events for failure to terminate access authorization due to 30 day CBOP rule  
 O-09-01996, A Security laptop computer containing safeguards information (SGI) was located in a Security Response location that has been vacated for brief periods of time  
 O-09-03241, Duke Energy Access Services Notified by Fluor that 17 Employees Had Not Met All Portions of Their Background Screening Criteria  
 O-09-03031, Increase in the number of events for Security vehicle gates that has either been left open or discovered to be inoperable

#### Radiation Protection PIPs

O-07-06747, breathing air to a delta suit was temporarily lost  
 O-08-02177, >300 sq. ft. of clean area floor space contaminated  
 O-08-07614, Exposure associated with 2A2 HPI Thermal Sleeve work exceeded estimated exposure by >25%  
 O-08-07626, Exposures associated with RWP 2302 (Cutout and replace 2 LP6 & 7) have exceeded estimated exposure by >25%.  
 O-08-04175, Appropriate corrective actions not taken following RP Count room equipment performance test failure  
 O-08-07540, Tendon Gallery sample results indicate higher than expected Tritium concentration  
 O-09-00190, A Hot Tool Crib tool was found in HTC above radiological limits  
 O-09-01518, Found tools greater than hot tool room limits  
 O-09-01639, Found hot tool greater than the hot tool limits

O-09-01654, three documented incidents in 2009 of finding tool(s) in the Hot Tool Room greater than radiological limits  
 O-09-02118, Radiation Protection failed to initiate SRPMP 8-2, Investigation of Unusual Radiological Occurrences,  
 O-09-02838, Personnel Contamination Event # 09-014  
 O-09-02847, Personnel Contamination Event # 09-015  
 O-09-02863, Investigation of events documented in the PCE evaluation PIPs listed as follows:  
 O-09-02838; 02847; 02850; 02855; 02858; 02861  
 O-08-03172 , Radioactive material outside the RCA in a clean area

#### Operating Experience

O-08-00442, This PIP is for RES to review and evaluate Operating Experience Item OEDB # 045450 NRC IN 07-2 Failure Of Control Rod Drive Mechanism Lead Screw Male Coupling At Babcock And Wilcox-Designed Facility  
 O-09-02237, Oconee Security review required for Homeland Security (HSIN 2009-030) Weapon malfunction at range @ Kewaunee - Dominion  
 O-07-04939, NRC Regulatory Issue Summary (RIS) 2007-21 Adherence To Licensed Power Limits  
 O-07-06883, NRC Information Notice 2007-36: Emergency Diesel Generator Voltage Regulator Problems OEDB No. 047533  
 O-08-00407, NRC Generic Letter 2008-01, Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems was issued on January 11, 2008  
 O-08-00444, This PIP is for MCE to review NRC IN07-27 Recurring Events Involving Emergency Diesel Generator (EDG) Operability. ONS does not have EDGs, however this IN may provide some useful information  
 O-08-06215, Electronic Communication from George Felgate (VP, Operations) INPO Tracking No. E08-56009 - October 10, 2008  
 O-09-01561, Part 21 Notification - Defective Tension Springs used on ABB, Type K-Line and HK Circuit Breakers (NRC Event Number 44896)  
 G-07-00269, This PIP was initiated to facilitate a 3 site review of NRC Information Notice 2007-05: Vertical Deep Draft Pump Shaft And Coupling Failures  
 G-08-01177, OEDB 50564 Subject: IN08-20 Failures Of Motor Operated Valve Actuator Motors With Magnesium Alloy Rotors  
 O-08-03594, OEDB No. 049071, IN08-09 Turbine-Driven Auxiliary Feedwater  
 G-09-00119, NRC Regulatory Issue Summary 2009-02, Use of Containment Atmosphere Gaseous Radioactivity Monitors as Reactor Coolant System Leakage Detection Equipment at Nuclear Power Reactors  
 G-09-00262, OEDB 51225 Subject: IN09-02 Biodiesel In Fuel Oil Could Adversely Impact Diesel Engine Performance

#### PIPs Associated With Performance Deficiencies Identified During the 2008 NRC Special Inspection of the Unit 1 RCP Seal Event

G-08-00695, GO Assessment REG-SA-2008-0005 Oconee 1EOC24 RCP Seal Leakage Issue: Duke Assessments vs. NRC Findings  
 O-08-01549, Procedure Use and Adherence as a Site Gap to Excellence  
 O-08-01656, Procedure Use and Adherence as a Site Gap to Excellence  
 O-08-01940, 1A2 and 1B2 seal failure issues for cause analysis purposes

O-08-01948, Control Room Team did not recognize RIA-48 alarm  
 O-08-02403, Evaluation of Operator Actions during Unit 1EOC24 RCP Seal Failure  
 O-08-03170, Review of ONS Response to RCP High Vibration and Seal Leakage  
 O-08-03206, RCS procedural C/D rate exceeded during 1EOC24 shutdown and C/D  
 O-08-03572, Evaluation of the differences between the NRC's findings and the results of the Duke assessments of the Unit 1 Seal Event  
 O-08-04482, GO Assessment REG-SA-2008-0005 Oconee 1EOC24 RCP Seal Leakage Issue: Duke Assessments vs. NRC Findings  
 O-08-05126, NRC identified four findings with cross-cutting issues.  
 O-09-02848, Assess progress of improvements in AP PU&A within Operations  
 O-09-02857, Assess progress of improvements in AP PU&A within Operations based on annual requal exam

#### UFSAR PIPs

O-00-02123, UFSAR discrepancy regarding Turbine building flood design basis.  
 O-00-03683, Interdependencies of SSF systems need further analyses.  
 O-00-01102, 10CFR50.59 evaluation for procedure change to AP/1/A/1700 (Uncontrollable Flooding Of Turbine Building)  
 O-07-06967, Oconee UFSAR Change identified for review Topic 36 "Safety Parameter Display System"  
 O-07-07154, ONS UFSAR Change identified for review Topic 33 "Natural Circulation Cooldown"  
 O-07-07170, ONS UFSAR Change identified for review Topic 28 "Masonry Walls"  
 O-07-07173, ONS UFSAR Change identified for review Topic 19 "Shielding"  
 O-07-07185, ONS UFSAR Change identified for review Topic 32 "Seismic Qualification of EFW System"  
 O-08-00669, ONS UFSAR Change identified for review Topic 30 "Piping Thermal Stresses"  
 O-08-00670, ONS UFSAR Change identified for review Topic 31 "Safety-Related Pump Loss"  
 O-08-00672, ONS UFSAR Change identified for review Topic 35 "IST Program"  
 O-08-00678, ONS UFSAR Change identified for review Topic 12 "Containment Monitoring"  
 O-08-02039, Group Self Assessment 08RGC03R – UFSAR Update Process and Status of Change Process S=0; D=2; AFI=2  
 O-08-03029, ONS UFSAR Change identified for review Topic 5 "Control Room Design Review"  
 O-08-05471, ONS UFSAR Change identified for review Topic O-MM10 "Revise LPI Flow Diagrams to Indicate Piping Connected to BWST is Rated at 3 psig"  
 O-09-00522, Use of references to Design Basis Document (DBD) information in the UFSAR not a recommended practice  
 O-09-05029, Inadequate UFSAR Maintenance – there are multiple examples of failure to update/correct the plant UFSAR in a timely manner as required by 10CFR 50.71 (INOS-Audit [Finding])

#### Additional PIPs

#### CAT 1 PIPs

O-98-02552, LTOP System may not be single failure proof due to only one train of Low Range Pressure transmitter available which serves both LTOP trains.  
 O-06-08576, Low temperature overpressure protection RPS channel "C" 1-RC-PT-0019P computer point was found disconnected in computer cabinet 1-I-2

CAT 3 PIPs

- O-96-01724, Manual loadshedding of DC loads required for DC system integrity
- O-97-01266, EFDW Control System Deficiencies
- O-07-07090, 3PR8 has possible diaphragm leak
- O-08-05094, Unit 2 Normal Feeder Breaker #1 Trip Coil light extinguished (N1-2 bkr)
- O-07-07069, SF temp indication increasing unexpectedly
- O-07-07374, RCS level decreasing at a higher rate than expected

CAT 4 PIPs

- O-03-06064, OSC-6115 may have used a nonconservative assumption to calculate temperatures in “stagnant” branch lines. This may have resulted in exclusion of certain components from the scope of an aging management review for potential embrittlement
- O-04-04595, EFW Digital Upgrade Modification, NSM-2992 cancelled
- O-04-06426, Two cards in the EFW control system are obsolete
- O-04-08602, The calibration and test computer (CTC) for the STAR Oconee Reactor Protection System (RPS) and Automatic Feedwater Isolation System (AFIS) needs to be replaced due to the obsolescence of the existing equipment
- O-05-04140, Valve 3HP-492 is obsolete
- O-06-01250, Valve 1 RC-110 is leaking past the seat. Reference WO 98725205. This valve is obsolete and need to be replaced with the current replacement. This PIP is to initiate the request for replacement.
- O-07-02600, Breaker 32 on 2DIB Panelboard would not open when performing 2DIB Panelboard removal
- O-07-04363, Breaker 31 on 2DIB Panelboard would not open
- O-07-05979, 3LP-92 (3A LPI Cooler Bypass) will not operate from the Control Room
- O-07-06800, 3PL-92 failed in the OPEN position (3A LPI Cooler Bypass)
- O-08-02590, The 125VDC breakers (ITE) installed in the Vital DC panelboards are obsolete, at the end of their life expectancy, and there are no identical qualified replacements.
- O-09-04435, Interface Agreements between OMP and INOS are obsolete and do not reflect the current arrangements regarding the oversight roles and responsibilities for project quality management
- O-09-05684, 3PR-8 light indication is off with no indication of valve position on ES panel
- O-08-03892, OE201624 is replacing LPSW-260. This is a Time Critical Valve and needs to have a chain wheel installed when replaced
- O-08-04215, Time Critical Valve 3SF-55 is hard to operate. Previous PIP 08-4186 was closed out without resolution
- O-08-04237, 0SF-21 is a Time Critical Valve that Operations has determined is hard to operate
- O-09-04177, 3RC-164 and 3RC-165 where installed with no open or closed indication for the remote valve actuators, and no component labels, Time Critical tag , or Containment Isolation tags for valves locally
- O-08-07124, Potential operator workaround (operations associated with U1 Quench Tank)
- O-09-04551, Recommendation for Performance Improvement (RFPI #1) identified as a result of Oconee assessment performed on the Boric Acid Control Program (BACP). (ONS assessment number 2009MCE07).

Self-Assessments/Audits

- 0903(INOS)(SEC)(ONS), Security Program Audit - Regulatory Program
- 2009MOD01, Review of Temporary Design Changes

2009MCE03, Evaluation of repeat equipment failures caused by insufficient troubleshooting or cause analysis  
 2009ENG03-R, Assessment of Plant Health Report Action Plans  
 08CHM04P2, Analytical Quality Control Program  
 CH-CH-09-SA-04, Hot Side Process - Liquid Radiological Effluent SLCs/Procedure comparison  
 PI-09-SA-01, Self-Assessment and Benchmarking Program Assessment  
 O-09-0846, Quick Hitter Assessment on 1,2,3 FDWVA0315/316 Problems (EFW level control valves)  
 RPS091Q02, Radioactive Material Taken to Clean Machine Shop for Machining/Repairs  
 2009 ONS Tech Spec & Licensing Quality Assurance Program Audit 09-19 (INOS)(TSL)(ONS)

#### Work Orders/Work Requests

01527114, PM Check valve 2HP-364  
 01543992, Remove/replace 2A HPI Pump  
 01624034, PM Check valve 2HP-364  
 01769207, Replace 2A HPI Pump  
 01469872, Inspect/Clean Field Flash Relay Contacts  
 01517022, Replace SSF K1 (Exciter Shutdown Relay)01472792, PM 3LP-92 Valve  
 01884016, 3PR-CV-8 I/R (OAC Indicates Not Open)(Possible Leak)  
 009337411, 3LP-92 Controller Broke Open

#### Other Documents

OSS-0254.00-00-1001, High Pressure Injection and Purification & Deborating Demineralizer Systems, Rev. 44  
 Catalog Identification 439199, HPI Pump Throttle Bushing  
 Catalog Identification 862508, HPI Pump Mechanical Seal  
 Engineering Change Request 1221, HP16 control room switch replacement  
 OSS-0254.00-00-1005, Design Basis Specification for the Standby Shutdown Facility Auxiliary Service Water System, Rev. 25  
 Duke Nuclear Fleet PM Template: I&C - Controllers  
 Fluor Procedure 770.042.A355.A3PB, Corrective Action, Rev. 0  
 NSD-506, Appendix C, Workaround Aggregate Assessment, dated 7/28/09  
 TR 08OPS40 – Request for training on HU/CD rate monitoring and controlling

#### Calculations

OSC-5616, LPI Overpressure/Overtemperature Prevention Analysis, dated 02/05/2008