



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

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

October 3, 2007

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

SUBJECT: OCONEE NUCLEAR STATION - NRC PROBLEM IDENTIFICATION AND  
RESOLUTION INSPECTION REPORT NO. 05000269/2007008,  
05000270/2007008, AND 05000287/2007008

Dear Mr. Hamilton:

On July 25, 2007, the U. S. Nuclear Regulatory Commission (NRC) completed a team inspection at your Oconee Nuclear Station. The enclosed report documents the inspection findings which were discussed with Mr. R. M. Glover and members of your staff during an exit meeting on July 25, 2007.

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

On the basis of the samples selected for review, the team concluded that, in general, problems were properly identified, evaluated, and corrected. There was one NRC-identified finding of very low safety significance (Green) identified during this inspection associated with the failure to take adequate corrective action to prevent unplanned inoperability of the Units 1 and 2 standby shutdown facility reactor coolant makeup system. This finding was determined to be a violation of NRC requirements. Additionally, two licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. However, because of their very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC's Enforcement Policy. If you contest any noncited violation in this report, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Oconee Nuclear Station.

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In addition, several examples of minor problems were identified, including conditions adverse to quality that were not being entered into the corrective action program, narrowly focused condition report evaluations, and corrective actions that were ineffectively tracked or had not occurred.

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

Sincerely,

**/RA/**

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

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

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

Enclosure: NRC Inspection Report 05000269/2007008, 05000270/2007008, and  
05000287/2007008 w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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cc w/encl:

B. G. Davenport  
Compliance Manager (ONS)  
Duke Power Company LLC  
d/b/a Duke Energy Carolinas, LLC  
Electronic Mail Distribution

Lisa F. Vaughn  
Associate General Counsel  
and Managing Attorney  
Duke Energy Corporation  
526 South Church Street-EC 07H  
Charlotte, NC 28202

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

David A. Repka  
Winston & Strawn LLP  
Electronic Mail Distribution

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

Henry J. Porter, Assistant Director  
Div. of Radioactive Waste Mgmt.  
S. C. Department of Health and  
Environmental Control  
Electronic Mail Distribution

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

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

Lyle Graber, LIS  
NUS Corporation  
Electronic Mail Distribution

R. L. Gill, Jr., Manager  
Nuclear Regulatory Issues  
and Industry Affairs  
Duke Power Company LLC.  
d/b/a Duke Energy Carolinas, LLC  
526 S. Church Street  
Charlotte, NC 28201-0006

Charles Brinkman  
Director, Washington Operations  
Westinghouse Electric Company  
12300 Twinbrook Parkway, Suite 330  
Rockville, MD 20852

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Letter to Bruce H. Hamilton from James H. Moorman, III, dated October 3, 2007

SUBJECT: OCONEE NUCLEAR STATION - NRC PROBLEM IDENTIFICATION AND  
RESOLUTION INSPECTION REPORT NO. 05000269/2007008,  
05000270/2007008, AND 05000287/2007008

Distribution w/encl:

L. Olshan, NRR

C. Evans, RII

L. Slack, RII

OE Mail

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

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

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

Report No: 05000269/2007008, 05000270/2007008, 05000287/2007008

Licensee: Duke Power Company

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

Location: 7800 Rochester Highway  
Seneca, SC 29672

Dates: July 9 through July 27, 2007

Inspectors: J. Reece, Senior Resident Inspector, North Anna Power Station  
(Team Leader)  
D. Rich, Senior Resident Inspector, Oconee Nuclear Station  
J. Reyes, Resident Inspector, Crystal River Nuclear Plant  
E. Michel, Reactor Inspector

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

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## SUMMARY OF FINDINGS

IR 05000269/2007-008, 05000270/2007-008, 05000287/2007-008; 07/09/2007 - 07/25/2007; Oconee Nuclear Station, Units 1, 2, and 3; biennial Identification and Resolution of Problems

This inspection was conducted by two senior resident inspectors, a resident inspector, and a region-based reactor inspector. One finding of very low safety significance (Green), which was a non-cited violation, was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### Identification and Resolution of Problems

The inspectors concluded that, in general, problems were properly identified, evaluated, and corrected. The licensee was effective at identifying problems and entering them into the corrective action program (CAP) for resolution; however, several minor plant material condition deficiencies were identified during plant system walkdowns that had gone undetected by licensee personnel. The licensee maintained a low threshold for identifying problems as evidenced by the continued large number of Problem Investigation Process reports (PIP) entered annually into the CAP. Generally, the licensee properly prioritized issues and examined issues; although several minor problems were noted where lower significance issues were mis-categorized or the investigations lacked thoroughness. Formal root cause evaluations for significant problems were generally thorough and detailed. Corrective actions specified for problems were generally adequate; although, several minor problems were noted where corrective actions were not complete or not comprehensive. Audits and self-assessments were effective in identifying deficiencies in the CAP. Personnel at the site felt free to raise safety concerns to management and to resolve issues through the CAP.

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

##### Cornerstone: Mitigating Systems

- Green. A non-cited violation of 10 CFR 50, Appendix B, Criterion XVI was identified by the NRC for failure to take adequate corrective action to prevent unexpected inoperability of the Unit 1 standby shutdown facility (SSF) reactor coolant makeup (RCMU) system during Unit 2 core offload.

The failure to promptly correct a condition adverse to quality involving proper control of Units 1 and 2 reactor core offload activities that ensure the SSF RCMU system remains operable during core offload was a performance deficiency. This finding is more than minor because it is associated with the human performance attribute of the mitigating systems cornerstone and affects the

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cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding is of very low safety significance because it did not result in a loss of operability due to a design or qualification deficiency, did not represent an actual loss of safety function, and was not potentially risk significant due to possible external events. This finding directly involved the cross-cutting area of Problem Identification and Resolution under the “timely corrective action” aspect of the “Corrective Action Program” component, in that the licensee failed to take corrective actions for an identified condition that could and did impact the operability of the opposite unit SSF RCMU system during reactor core offload [P.1.(d)]. (Section 4OA2 a.(2).1)

B. Licensee-Identified Violations

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

## REPORT DETAILS

### 4. Other Activities (OA)

#### 4OA2 Problem Identification and Resolution

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

###### (1) Inspection Scope

The inspectors reviewed Problem Investigation Process reports (PIPs) for issues across the reactor safety cornerstones to determine if problems were being promptly identified and entered into the corrective action program (CAP) for resolution. The reviews were primarily focused on selected issues associated with the following seven risk significant plant systems:

- high pressure injection (HPI) system
- low pressure injection (LPI) system
- standby shutdown facility (SSF) and related support systems
- emergency feedwater (EFW) system
- low pressure service water (LPSW) system
- component cooling water (CC) system
- AC power system, including Keowee Emergency Power System

Additionally, the inspectors selected a representative number of PIPs that were identified and assigned to the major plant departments, including operations, maintenance, engineering, health physics, chemistry, emergency preparedness, security and work control to assess each department's threshold for identifying and documenting plant problems.

The inspectors reviewed open and completed maintenance work orders (WOs), system health reports, trend reports, and the Maintenance Rule (MR) database for the aforementioned systems to determine if equipment deficiencies were being appropriately entered into the CAP. The inspectors conducted plant walkdowns of accessible portions the systems listed above with the responsible system engineers and/or operations personnel to determine if observable deficiencies existed. For identified deficiencies, the inspectors determined whether the deficiency had been entered into the CAP. The inspectors discussed the condition and status of each of these systems with system or component engineers and other plant personnel to verify that overall system health was monitored and trended to proactively identify corrective actions for deficiencies where necessary.

The inspectors reviewed selected control room operator logs for the inspection period to determine if equipment deficiencies, including those involving the systems listed above, were entered into the CAP.

The inspectors attended several plant daily status and PIP team screening meetings to observe management and PIP screening oversight functions in the corrective action

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process. The inspectors also interviewed plant personnel from various departments to evaluate their threshold for identifying and entering problems into the CAP.

The inspectors reviewed selected PIPs associated with the seven systems listed above and a representative sample of PIPs initiated by each of the major plant departments to determine if the identified problems were properly prioritized in accordance with the licensee's nuclear system directive, NSD-208, "Problem Investigation Process," Revision (Rev.) 27. The PIP action categories (Category 1 through 4) are defined in NSD-208 and are numbered based on decreasing significance and level of effort to resolve the problem. Action Category 1 PIPs were significant conditions adverse to quality (CAQs) that require formal root cause evaluations. Action Category 2 PIPs were defined as CAQs for which formal root cause evaluations were normally conducted, although management had discretion to forgo a formal root cause evaluation. Action Category 3 PIPs were problems for which an apparent cause analysis was sufficient to correct the immediate problem. Action Category 4 PIPs were low level CAQs or conditions not adverse to quality, neither of which required any type of causal evaluation. The inspectors attended daily management status meetings, PIP screening meetings, and engineering status meetings to observe and assess licensee problem processing and issue categorization.

Action Category 1, 2, and 3 PIPs were reviewed to assess the adequacy of the root/apparent cause evaluation of the selected problems. The inspectors reviewed the root/apparent cause evaluations against the description of the problem in the PIP and the guidance in procedure NSD-212, "Cause Analysis," Rev. 15.

The inspectors reviewed selected PIPs associated with the seven systems listed above and a representative sample of PIPs generated by each of the major plant departments to determine if the licensee had identified and implemented timely and appropriate corrective actions to address the associated problems. The inspectors reviewed corrective actions to determine if they were properly documented, assigned, and tracked to ensure completion. Where possible, the inspectors independently reviewed completed corrective actions to determine if the actions had been implemented as intended. The inspectors also determined whether common causes and generic concerns were appropriately addressed. Documents reviewed for this inspection are listed in the Attachment.

## (2) Assessment

### Identification of Issues

The inspectors determined that the licensee was generally effective in identifying problems and entering them into the CAP. PIPs generally provided complete and accurate characterization of the identified issues. In general, the threshold for initiating PIPs was low as evidenced by the continued large number of PIPs entered annually into the CAP. Employees were encouraged by management to initiate PIPs. Site management was actively involved in the CAP and focused appropriate attention on significant plant issues.

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During the system reviews and walkdowns, the inspectors determined that system deficiencies were, generally, being identified and placed in the CAP and that the system engineers were appropriately monitoring and trending these deficiencies. Minor deficiencies, for which PIPs had not been written, were identified by the inspectors during the walkdowns. The PIPs initiated as a result of the walkdowns are listed in the Attachment.

#### Prioritization and Evaluation of Issues

The inspectors determined that PIPs were, in general, categorized and prioritized correctly; and the licensee evaluations were technically accurate and of sufficient depth. The inspectors determined that the root cause process delineated in procedure NSD-212 relied solely on a search of preassigned 'codes' in the PIP database to determine if similar previous problems had occurred. The procedure did not specify the potentially more effective method of conducting word searches. This vulnerability was demonstrated by the disposition of PIP O-06-06221. This PIP documented a 'near miss' reactor trip due to a mispositioned valve. The associated root cause evaluation failed to identify five previous PIPs associated with valve mispositioning problems that involved LPSW to HPI motor cooler valves. The inspectors performed a detailed evaluation of these five PIPs and determined that the licensee had not taken timely, effective corrective action to prevent the mispositioning events that resulted in inoperability of the Unit 1 'C' HPI pump on August 18, 2004, and a reclassification of the LPSW maintenance rule function to an (a)(1) status June 30, 2005, due to another HPI pump motor functional failure. The inspectors concluded that the licensee's untimely response represented a weakness in the corrective action program which was also exhibited by an uncompleted corrective action for returning the LPSW function from an (a)(1) to (a)(2) status. Other corrective actions to address this issue had either been planned or completed.

#### Effectiveness of Corrective Action

The inspectors determined that, in general, corrective actions developed and implemented for problems were timely, effective, and commensurate with the safety significance of the problem. The inspectors noted that the licensee identified a problem involving inadequate corrective action which is documented in section 4OA7 of this report. The inspectors also identified that the PIP database software program allows the reopening of PIPs which presents a vulnerability not adequately addressed by the NSD. One example the team identified was PIP O-05-04359, which was reopened to add a problem involving reclassification of the LPSW maintenance rule function from (a)(1) to (a)(2) and back to (a)(1) due to an engineer's conclusion that work was complete when, in fact, it was not. The enforcement aspects of this example are discussed in section 4OA7 of this report. Another example was PIP O-04-05550 that documented two new electrical relays that failed to pass a bench test and was reopened to review 10 CFR 21 reportability aspects. The inspectors noted that the relays had been installed in safety-related applications associated with the emergency power supply from Keowee; however, the inspectors determined that no operability evaluations had been performed.

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The inspectors reviewed a subsequent operability assessment performed by the licensee which concluded that the emergency power supply was not adversely affected.

.1 Inadequate Corrective Action Resulted in the Inoperability of the Unit 1 Reactor Coolant Makeup Pump

Introduction: A Green, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI was identified by the NRC for failure to take adequate corrective action to prevent unexpected inoperability of the Unit 1 standby shutdown facility (SSF) reactor coolant makeup (RCMU) system during Unit 2 core offload.

Description: On May 6, 2007, the licensee declared the Unit 1 SSF RCMU system inoperable due to unexpectedly exceeding combined Unit 1/2 spent fuel pool (SFP) level versus temperature requirements which are specified in a graphical format. This occurred during a Unit 2 refueling outage while core offload to the SFP was in progress and was documented in PIP O-07-02462. The inspectors identified two PIPs that documented similar occurrences from a review of the licensee's PIP database. PIP O-00-04262, dated November 30, 2000, addressed an issue regarding the impact of the SFP level versus temperature graph on reactor core offload. The PIP corrective action was to add a mechanical systems engineer to the site reload interface team to be knowledgeable of changing conditions during core offload; however, the proposed corrective action to address the issue programmatically to ensure proper planning for the condition in the future was deleted. PIP O-06-06696, dated October 14, 2006, documented a refueling outage critical path delay that resulted when reactor core offload was delayed because the SSF RCMU system operability requirements specified in the SFP level versus temperature graph had not been met. This PIP was a Category 4 PIP with no corrective action required. The inspectors determined that offloading spent fuel to the combined Unit 1/2 spent fuel pool created a condition that would result in the unplanned inoperability of the Unit 1 or Unit 2 SSF RCMU system if not controlled properly. The licensee had reasonable opportunity to develop and implement corrective actions which would ensure adequate control of core offload and prevent the unplanned inoperability of the Unit 1 and 2 SSF RCMU systems.

Analysis: The failure to promptly correct a condition adverse to quality involving proper control of Units 1 and 2 reactor core offload activities that ensure the SSF RCMU system remains operable during core offload was a performance deficiency. This finding is more than minor because it is associated with the human performance attribute of the mitigating systems cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding is of very low safety significance (Green) because it did not result in a loss of operability due to a design or qualification deficiency, did not represent an actual loss of safety function, and was not potentially risk significant due to possible external events. This finding directly involved the cross-cutting area of Problem Identification and Resolution under the "timely corrective action" aspect of the "Corrective Action Program" component, in that the licensee failed to take corrective actions for an identified condition that could and did

impact the operability of the opposite unit SSF RCMU system during reactor core offload [P.1.(d)].

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires, in part, that measures shall be established to ensure that conditions adverse to quality are promptly identified and corrected. Contrary to this, from November 30, 2000 until May 6, 2007, the license failed to promptly identify and correct a condition adverse to quality involving proper control of reactor core offload activities which could and did result in the Unit 1 SSF RCMU system being declared inoperable on May 6, 2007. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program as PIP O-07-02462, this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000269,270/2007008-01, Inadequate Corrective Action Resulting in the Inoperability of the Unit 1 Reactor Coolant Makeup Pump.

.2 Unresolved Item for Untimely Corrective Action Associated With Use of Steel Plate with Possible Laminations

Introduction: The inspectors identified an unresolved item (URI) involving untimely corrective action associated with the use of potentially defective materials in ASME Boiler and Pressure Vessel Code applications.

Description: On July 22, 2003, the licensee initiated PIP O-03-04686 to document the discovery of a lamination in a section of 3/4" steel plate (ASTM A36) that was slated for use as a pipe hanger in the Unit 1 Low Pressure Injection (LPI) System (WO 98538193, NSM 13093). The entire plate was then examined using ultrasonic testing and all laminations were removed. However, four additional plates from the same manufacturing heat (A2WT) were subsequently used in other safety-related applications without first being examined for laminations.

Over three years later, on September 28, 2006, a licensee corporate office audit (referenced in PIP O-06-06244) identified that the four additional, and potentially defective, plates had not been segregated as required by 10 CFR 50, Appendix B, Criterion XV. The licensee has identified the following applications for which the potentially defective plate was used without having been examined prior to installation to determine if laminations were present:

- WO 98538272-03, NSM 23093 AM1, Install Passive LPI Cross Connection - Unit 2
- WO 98588295-28, NSM 23107 BM1, Modify LPSW Piping to RB Aux Cooler - Unit 2
- WO 98541284-05, OE-17029, Modify Supports for U-3 CC Relief Valves - Unit 3
- WO 98561352-03, NSM 13105, Installation of Pipe Supports - Unit 1

The inspectors reviewed PIP O-03-04686 and noted that proposed corrective action sequence number 8 was approved on November 12, 2006 to identify the locations of all potentially defective material from heat A2WT and create work orders for the inspection of these locations. PIP O-03-04686 identified four of the above WOs (98588295-28,

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98538272-03, 98541284-05, and 9860989-11) which had not yet been inspected to assure operability. The inspectors determined that specific corrective actions for sequence number 8 were not identified or completed as of July 12, 2007, almost four years after the initial discovery of the laminations on July 22, 2003. Based on the inspectors' investigation the licensee initiated work requests to inspect the affected plates at the next available opportunity:

- WR 930555 - Inspect base plate for hanger 2-51-1478A-H6164 used in WO 98538272-03
- WR 930558 - Inspect base plate used for hanger 2-53A-1478A-H6673 in WO 98538272-03
- WR 930559 - Inspect 3/4" plate used for hanger 2-53A-1479A-PR1004 in WO 98538272-03
- WR 930560 - Inspect base plate used for hanger 2-53A-1479A-PR1001 in WO 98538272-03
- WR 930561 - Inspect accessible portions of base plate used in WO 98588295-28
- WR 930562 - Inspect base plate used for hanger 3-50-2479G-H6462 in WO 98541284-05
- WR 930565 - Inspect base plate used for hanger 3-50-2479G-H6664 in WO 98541284-05
- WR 930568 - Inspect base plate used for hanger 3-50-2479G-H6665 in WO 98541284-05
- WR 930569 - Inspect base plate used for hanger 3-50-2479G-H6666 in WO 98541284-05

It should be noted that WO 1716957 was written to inspect plate used in WR 98561352-03 on November 1, 2006, but results of the inspection were not available in PIP O-03-04686.

The first opportunity that the licensee had to inspect a portion of the affected plates located within the Unit 2 containment was during the 2007 spring refueling outage; however, the plates were not inspected at this time.

Analysis: The inspectors identified a performance deficiency involving untimely corrective action to inspect the installed plates used for safety-related applications and thereby assure operability through the absence of laminations or defects. The determination of whether the performance deficiency is minor or more than minor, as described in MC 0612, remains open pending completion of the licensee's inspections detailed in WR 930561, WR 930555, WR 930559, WR 930560, WR 930558, WR 930562, WR 930565, WR 930568, WR 930569, and WO 1716957.

Enforcement: 10 CFR 50, Appendix B, Criterion XVI requires, in part, that conditions adverse to quality shall be promptly identified and corrected. Contrary to the above, on September 28, 2006, corrective actions to inspect and verify the absence of laminations in steel plate identified on July 22, 2003 and used for safety-related components, had not yet been completed. In order to fully assess the enforcement implications and safety significance of this issue, additional information from the licensee will be needed.

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Consequently, pending NRC review of completed inspections identified by the work requests listed above, this issue is identified as URI 05000269,270,287/2007008-02, Untimely Corrective Action To Determine If Steel Plate Laminations Existed In Safety-Related Applications.

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

(1) Inspection Scope

The inspectors conducted a review of the licensee's Operating Experience (OE) program to verify actions were completed in accordance with licensee procedure NSD-204, "Operating Experience Program," Rev. 9. The inspectors focused on NRC generic communications and OE items associated with recent industry operating experience for a detailed review to verify issues were appropriately evaluated and entered into the CAP.

(2) Assessment

The licensee was generally effective in evaluating internal and external industry operating experience items as well as NRC generic communications for applicability and entering issues into the CAP. Industry OE was evaluated at either the corporate or plant level depending on the source and type of the document. Relevant information was then forwarded to the applicable department for further action or informational purposes. Any documents requiring action were entered into the CAP for tracking and closure. Additionally, OE was regularly included in System Health Reports and PIPs associated with station events as part of the causal investigations and corrective action development process.

c. Assessment of Self-Assessments and Audits

(1) Inspection Scope

The inspectors conducted a review of the licensee's self-assessment and audit program to verify actions were completed in accordance with licensee procedures NSD-607, "Self-Assessments and Benchmarking," Rev. 9, and NSD-600, "Technical Audits," Rev. 5. The inspectors reviewed samples of self-assessments and audits to verify that identified deficiencies and areas needing improvement were entered into the CAP tracking system. The documents reviewed are listed in the attachment.

(2) Assessment

Departmental self-assessments and audits performed by the Nuclear Performance Assessment Section (NPAS) and the Independent Nuclear Oversight Team were generally effective in identifying deficiencies and areas for improvement. The inspectors verified that issues raised during the assessments were entered into the CAP for resolution.

d. Assessment of Safety-Conscious Work Environment

(1) Inspection Scope

The inspectors reviewed the licensee's Employee Concerns Program (ECP), which provides an alternate method to the PIP process for employees to raise safety concerns with the option of remaining anonymous. The inspectors reviewed the program as defined by licensee procedure NSD-602, "Safety Conscious Work Environment (SCWE) & Employee Concerns Program," Rev. 4, to determine if concerns were being properly reviewed and resolved. The inspectors interviewed selected licensee personnel from plant departments to develop a general view of the safety-conscious work environment at Oconee Nuclear Station and to determine if any conditions exist that would cause personnel to be reluctant to raise safety concerns. Other related documents and training packages reviewed are listed in the attachment.

(2) Assessment

The inspectors concluded that licensee management fostered a safety-conscious work environment by emphasizing safe operations and encouraging problem reporting through a multifaceted communications and training programs. The inspectors verified a method for anonymous reporting of safety concerns. The inspectors did not identify any reluctance on the part of the licensee staff to report safety concerns.

40A6 Meetings, Including Exit

On July 26, 2007, the inspectors presented the inspection results to Mr. R. M. Glover, Engineering Manager, and other members of the plant staff. The inspectors confirmed that proprietary information was not provided or examined during this inspection.

40A7 Licensee-Identified Violations

The following findings of very low significance were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for characterization as NCVs.

- 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires in part that activities affecting quality shall be prescribed by documented procedures and shall be accomplished in accordance with the procedures. Contrary to this, on May 8, 2007, the licensee identified that Nuclear System Directive 104, "Materiel Condition/Housekeeping, Cleanliness/Foreign Material Exclusion and Seismic Concerns," was not accomplished in that a nail was found within piping associated with the safety-related Low Pressure Injection system piping. The finding is identified in the licensee's corrective action program as Problem Identification Process (PIP) O-07-02513. The finding is of very low safety significance because an evaluation determined that it likely would not have rendered the system inoperable.

Enclosure

- 10 CFR 50.65 (a)(1) requires in part that appropriate corrective action shall be taken when the performance of a system does not meet established goals. Contrary to this, on January 15, 2007, the Unit 1 low pressure service water system did not meet performance goals, but the licensee returned the Unit 1 system to an (a)(2) status without taking all of the appropriate corrective actions as required for a system in (a)(1) status. The finding is identified in the licensee's corrective action program as PIP O-05-04359. The finding is of very low safety significance because a failure similar to that which initially forced the system to (a)(1) status did not occur during the period the system was incorrectly classified.

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee Personnel

S. Batson, Superintendent of Operations  
D. Baxter, Station Manager  
J. Burchfield, Reactor and Electrical Systems Manager  
S. Capps, Mechanical/Civil Engineering Manager  
C. Curry, Maintenance Manager  
G. Davenport, Compliance Manager  
B. Hamilton, Site Vice President  
M. Glover, Engineering Manager  
T. Grant, Engineering Supervisor  
T. King, Security Manager  
R. Matheson, SRG Engineer  
L. Nicholson, Safety Assurance Manager  
J. Smith, Regulatory Affairs  
P. Stovall, SRG Manager  
J. Weast, Regulatory Compliance

NRC Personnel

J. Moorman, III, Branch Chief, Division of Reactor Projects, Region II

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

Opened and Closed

05000269,270/2007008-01	NCV	Inadequate Corrective Action Resulting in the Inoperability of the Unit 1 Reactor Coolant Makeup Pump (Section 4OA2 a.(2).1)
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Opened

05000269,270,287/2007008-02	URI	Untimely Corrective Action To Determine If Steel Plate Laminations Existed In Safety-Related Applications (Section 4OA2 a.(2).2)
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Closed

None

Discussed

None

## LIST OF DOCUMENTS REVIEWED

### Section 40A2:Problem Identification and Resolution

#### PIPs initiated during system walkdowns by the inspectors

- PIP O-07-03828 documented a problem associated with the seal supply tubing observed deformed in a downward direction on the 'A' and 'B' motor driven emergency feedwater pumps on all three units. The licensee performed an operability evaluation and concluded that the affected components remained operable.
- PIP O-07-03883 documented a problem involving installed scaffolding which did not comply with the licensee's scaffold manual. The problem involved direct contact with nonsafety-related conduit associated with the '3B' LPSW strainer backwash motor.
- PIP O-07-03923 documented a concern regarding installation of restraining rods or control units for the expansion joints associated with LPSW strainers. Several of the rods were not adjusted in a uniform manner which led to a question of installation practices. The licensee determined that operability was not affected; however, no procedure existed to ensure proper installation for these safety-related components. The licensee initiated corrective action to ensure the necessary procedure changes were made.
- PIP O-07-03752 documented a concern regarding partial installation of a scaffold above the Unit 1 turbine driven emergency feedwater pump (TDEFWP). The inspectors determined that the ladder portion of the scaffold was loose, but other sections appeared appropriately restrained. The inspectors also identified that a maintenance team used for modifying part of the scaffold to allow access to equipment was not qualified to the specific type of scaffold installation.
- PIP O-07-03856 documented a problem with a packing leak on 3LPSW-113 that was identified in WO 1713626-01 and was not placed in the Fluid Leak Management Program for additional monitoring.
- PIP O-07-03864 documented a problem with loose fasteners on a support for 1LWD-28 (containment isolation vent valve). The licensee performed a review to ensure pipe operability was unaffected and initiated a work request to the fasteners to a design-required condition.
- PIP O-07-03867 documented two separate ladder storage problems; a ladder inadequately stored in the Units 1 and 2 'B' LPI pump room and a ladder in the Unit 2 West Penetration room.
- PIP O-07-03868 documented a concern regarding proper hoist trolley storage to ensure no seismic interaction with safety-related components. An example noted was a hoist located in the Unit 2 LPI Cooler room near valve 2LP-12. The licensee performed an evaluation to ensure the valve would not be adversely affected for this example.
- PIP O-07-03866 documented a problem associated with the Unit 1 'B' reactor building spray pump on which two adjacent flange nuts were identified with less than full thread engagement. While the licensee's evaluation determined that component operability was not affected, the component engineer recommended that all flange studs be replaced to ensure that procedure requirements of one full thread greater than the surface of the nut.
- PIP O-07-03901 documented a problem with a locked quarter turn valve, 1CCW-89 (U1 TDEFWP turbine oil cooler outlet valve), in which the chain ring was installed too close

to the valve handle pivot point. The licensee took interim action to more securely lock the valve in place with cable.

- PIP O-07-03887 documented a problem involving a deficiency tag installed on valve 2HP-106 that referenced work request 0775669 which was closed on August 2, 1999.

#### CAT 2 Descriptions

- O-04-08873, Indication of contamination on clean material shipped to Arkansas
- O-05-00144, Keowee – KHU-1, KHU-2 MR A1 due to new equipment with no history
- O-05-00695, U3 ICCM is MR A1 due to repetitive MPFF
- O-05-01920, Unit 1 and 2 SFC system Maintenance Rule A1
- O-05-03788, The B finger auxiliary contact has experienced a repetitive failure
- O-05-04359, Unit 1 LPSW system is MR A1 due to repetitive MPFF
- O-06-00283, Containment Isolation penetrations MR A1 due to repetitive MPFF
- O-06-03596, Indications of an adverse trend in site mispositions
- O-06-04515, LPI system is classified A1 per Maintenance Rule
- O-06-06121, Valve being out of position cause unanticipated lowering of CC surge tank
- O-06-06244, Appendix B nonconforming material requires segregation of items
- O-07-00320, The Turbine building flood super system should be declared MR A1
- O-07-00937, NRC letter dated February 13, 2007, issued the Final Significance Determination for a White Finding, associated with the Inadequate Foreign Material Exclusion Controls for the Unit 3 A and B Train Reactor Building Emergency Sump Suction.

#### CAT 3 Descriptions

- O-94-00807, LPSW-164, LPSW outlet valve for 1C HPI pump motor found shut
- O-98-01517, 3LPSW-160 was not in its checklist required lineup
- O-99-01492, 3-LPSW-155 discovered open
- O-01-03969, CC system transient occurred due to a loss of CC surge tank level
- O-01-03994, Emergent trend related to near miss and mispositions
- O-02-01836, ¼ turn valve ICS-6 operator found closed
- O-02-02624, Instrument air valve found in throttled position
- O-03-02794, Trending purposes of Operations mispositioned components
- O-04-05365, Unplanned TS entry due to low flow to 3C HPI bearing cooler
- O-04-05550, Two new Struthers-Dunn Relays failed to pass a bench test
- O-05-03223, 1LPSW-159, 1B HPI pump temperature control outlet found closed
- O-05-03580, Decrease in effectiveness of emergency plan
- O-05-04609, Mismatch between control room indicated flowrate and computer
- O-05-05254, Problems identified for 2005 ERO augmentation drill
- O-05-05930, Keowee Generator system is MR A1 due to exceeding unavailability
- O-05-06097, Penetration WO 98305694 has not been implemented in a timely fashion
- O-05-06386, Radiation Monitoring System is MR A1
- O-05-07951, Discovered all nitrogen valved out to 2FDW-315/16, TS 3.7.5 entry
- O-06-00557, An emerging trend in mispositioning components has been identified
- O-06-01219, 1B CC Pump vent valve found open approx 1 turn
- O-06-04070, Error made during 2005 IRIA-37 annual calibration
- O-06-04137, A rag was hung in the impeller of the CC Drain Tank pump
- O-06-07382, 'Site' Risk Management is often challenged

- O-07-00396, 1B HPI pump oil level found low while pump was running
- O-07-01589, Drill objective for alert/notification not successfully demonstrated
- O-07-01852, Removal/replacement of the "3B" CC pump and motor

#### CAT 4 Descriptions

- O-03-05057, Oil hazard on HPI pump room floor
- O-04-07084, Tees/elbows on RIA-43 skid do not conform to ANSI NI3.1-1969 App B
- O-04-08997, EPRI lubrication program follow-up assessment results
- O-05-04515, July 11, 2005 Tornado warning
- O-05-04647, Evaluate potential white finding at TMI related to ERO training
- O-05-05200, Vibration induced degradation of butterfly valves
- O-05-06827, EP Drill 05-04 critique summary report
- O-05-08467, Report from Oconee and Pickens Counties of problems with area sirens
- O-06-00977, Pipe hanger clearance in field does not match hanger sketch
- O-06-01196, WCC failed to isolate 3 "A" CC Cooler for work beginning 03/01/2006
- O-06-01610, Corrective actions for EP Drill 06-01 conducted on 1/25/06
- O-06-02586, Makeup pump environmental documentation could not be located
- O-06-02823, OPS cycled Valve 3-HP-21 while work was in progress on 3-HP-69
- O-06-04055, 1-inch SS pipe, safety-related, has variations in wall thickness
- O-06-04550, (M-06-2628) Letter to Nuclear Regulatory Commission (NRC) Dated June 28, 2006 contains an inaccurate material statement
- O-06-06227, Failure to process a potential Part 21 issue in a timely manner as required by NSD-229 and 10CFR 21.21
- O-06-06919, 1HP-020 motor failed when valve was cycled for maintenance
- O-06-07466, Valve 1HP-143, damaged beyond repair
- O-06-08179, Cable flex conduit going to TB 354 broken
- O-06-08738, 2<sup>nd</sup> quarter EP assessment
- O-07-00037, 2006 declared emergencies
- O-07-00092, Work order 01722073 scheduled for 07W01 cannot be performed
- O-07-00523, Apparent trend of site PA system problems
- O-07-00860, Corrosion identified on replacement starter bucket from Joslyn Clark
- O-07-01735, Correction to NSD 229 guidance on commercial grade dedication
- O-07-01905, Review PIP C-07-01608 for applicability and OE for Oconee fire brigade
- O-07-01955, 1B HPI pump upper oil pot level low out of red band with pump running
- O-07-00639, Safety concern: Complex doors failed in the locked position during power

#### Work Orders

- 00906981, 1LPS-164 Needs to be rotated 180 for handle type change
- 01560676, Replace valve 1HP-322 with item #9J-2005
- 01589004, 1HP-25 Replace valve wedge
- 01620548, U1, Replace valve HPS-VA-0610
- 01646439, Replace 1LPS-164 Valve handle
- 01649486, I/R test valve for 1HPSW-57
- 01650175, Install oil sample ports 1C HPI MTR
- 01668644, Remove, replace 2LWD VA381 for piping leak repair (boron)
- 01660776, Re-torque 1HP-0472 Packing
- 01669935, Replace 1HPSW-57DRN, leaks past seat

- 01670326, Replace valve 1HP-112 and inlet piping
- 01676506, 2HPS-57 Replace or repair the VAC breaker
- 01681575, 1HPSW-51 Inspect manifold
- 01682496, 1HP-355 boron at pressure gage elbow
- 01715875, 2HP-43 Replace spring due to PIP 06-5973
- 01718127, 1HP-0143 Disc and seat damaged beyond repair
- 01719822, 1HP-VA-0242 Replace ratchet handle and check spot welds
- 01720626, 1HP-VA Valve position indicator missing
- 01722073, Ship HPI motor to Westinghouse for repair
- 01733867, U1 HP VA 0209 Repair seat leak
- 01742403, Down stream pressure gauge isolation valve needs replacement
- 01743181, 1HP-43, Replace spring due to PIP 06-5973
- 01743182, Repair seat leak on 2HPSW-33
- 01746762, 1B HPI pump motor perform visual inspection of vent bolt
- 01748728, 1HPS-VA-0477 Replace existing valve with CAT ID#858761
- 01749580, 2HP-444 inactive boric acid leak on pipe cap for valve
- 01754670, 2 HPS-Va-0085 Alarm bypass valve has seat leak
- 01757427, U1 HP-VA-0131 Active packing leak

#### Procedures

- PT/0/A/0400/015, SSF Submersible Pump Test, Revision 16, 7/18/2006
- PT/0/A/0620-016, Keowee Hydro Emergency Start Test, Revision 37, 11/10/2006
- IP/1/A/4980-027A, CV-2/CV-7 Class 1E Relays
- PT/2/A/0150-005, Electrical Penetration O-Ring Seal Leak Rate Test, Revision 14
- PT/2/A/0150/29, Performance Containment Verification, Revision 31
- NSD 208, Problem Investigation Process (PIP), Revision 27
- NSD 209, 10 CFR 50.59 Process, Revision 12
- NSD 210, Corrective Action Program, Revision 4
- NSD 212, Cause Analysis, Revision 15
- NSD 216, Operational Even Investigation, Revision 9
- NSD 223, Trending Program, Revision 5
- NSD 229, Evaluation and Reporting of Potential Defects and Noncompliance per 10 CFR Part 21, Revision 3
- NSD 413, Fluid Leak Management Program, Revision 4
- NSD 600, Technical Audits, Revision 5
- NSD 602, Safety Conscious Work Environment (SCWE) & Employee, Revision 4
- NSD 607, Self Assessments and Benchmarking, Revision 9

#### Keowee Hydro System PIPs

- O-01-00708, Statalarms 1SA1-38 and 2SA1-38 shown on KEE-106 and KEE-206 do not exist.
- O-02-04743, Keowee Unit 1 did not come up to rated speed during weekly normal start
- O-03-02846, Per EM 4.9, this PIP addresses configuration management actions associated with revisions to engineering calculations that support Keowee frequency limits
- O-03-03440, ABB type HK switchgear auxiliary switches are Maintenance Rule A1

- O-04-07747, 4.16 kV System Feeder Breakers to nonsafety load center transformers may not coordinate with load center feeder breakers for three phase faults on a load center feeder
- O-05-01060, CT 1 Transformer locked out
- O-05-01598, Framatome ANP notified Duke on March 7, 2005, of a potentially inaccurate statement in the TELPERM SER related to cyclic testing of the EEPROM
- O-05-03599, Contactor for source 1 cooling power on Keowee main transformer cannot function
- O-05-05255, Keowee Main transformer emergency fan power control fuse clip repeat failure
- O-05-05720, Emerging Trend PIP concerning receipt of numerous Exciter Warning StatAlarms
- O-05-01812, Procedure PT/0/A/2200/009 (KHS Auxiliary Power Transfer Surveillance) puts the Keowee Units in a particular alignment which is subject to a postulated single failure that would affect both power paths
- O-05-03770, This PIP tracks recommended actions from the Oconee SSF Risk Reduction Review
- O-05-03788, Safety related MCC starters B contact experienced a repetitive failure
- O-05-06804, All high voltage surge arrestors are reaching end of life and need a priority based changeout plan begun
- O-05-08074, Voltage margin needed on safety related 600/208V system
- O-06-01134, While investigating points to check continuity for Unit 3 Main Feeder Bus #1 Lock-Out test, discovered a permissive close contact for breaker B2T-7, S23 which is not shown on OEE-117-21A. The contact was from 86XXSB1, standby bus #1 lock-out auxiliary relay
- O-06-06105, Root Cause, KHU 2 2006 Emergency Lockout
- O-04-07067, Failure of KHU 1 Governor Actuator System
- O-07-00412, Areva Qualification of Teleperm XS Modules
- O-04-06523, KHU 1 Governor Pilot Valve
- O-04-06579, Loss of KHU 1 Governor Local Touch Panel during black start
- O-04-08347, TXS cannot detect failed high signals
- O-05-00983, Dual Devices input to KHU governor systems cause statalarms
- O-05-02195, KHU-1 Governor Touch Screen failed
- O-04-07061, KHU 1 exciter did not increase voltage when given a raise input
- O-06-04006, ACB 2 did not close during startup
- O-06-05077, Starting KHU per OP/0/A/2000/041
- O-07-03329, MVARs could not be adjusted
- O-06-06935, ACB 1 would not close
- O-05-05720, Emerging Trend on Exciter Warning StatAlarms

#### Standby Shutdown Facility (SSF) PIPs

- O-05-04978, Access Panel on South Side of SSF below flood level
- O-04-04395, SSF Electrical Conduit Holding Water
- O-07-00549, Assessment of SSF groundwater/rainwater intrusion
- O-05-03770, Background of SSF Risk Reduction Review
- O-04-0495, SSF Electrical Conduit holding water 07/01/2004

- O-07-00669, Corrective actions of PIP 05-3124 do not adequately ensure the SSF HVAC system declared inoperable when the SSF Constant Ventilation system shutdown 02/01/2007
- O-05-03124, Operability Assessment required for performance of SSF gravity assisted damper procedure 05/02/2005
- O-05-04978, Access panel on South side of SSF below flood level 08/03/2005
- O-05-06642, A problem evaluation should be performed for PIP 05-4978 10/18/2005
- O-07-02462, Unit 1 SSF RCMU System declared inoperable due to exceeding U1&U2 SFP level versus temperature requirements 05/06/2007
- O-00-04362, Lack of process for Spent Fuel Pool level requirements prior to offload 11/30/2000
- O-06-06696, Critical path delay due to spent fuel temperatures 10/14/2006
- O-06-06580, Unexplained increasing trend in RCW heat exchanger outlet temperature and SFP temperature 10/12/2006
- O-02-03304, Engineering evaluation of U2EC19 Core offload plan revealed elevated SFP temperatures after offload in the SFP.
- O-07-02406, OP/1,2,3/A/1502/007 Enclosure 3.1, Defueling/Refueling prerequisites, enhancements 05/04/2007
- O-05-07154, Review of Section XI and Regulatory Guide 1.26 11/01/2005
- O-07-01445, This PIP documents the results of an independent assessment lead by the Nuclear Performance Assessment Section and completed by members of Catawba, McGuire, NGO and MPR Associates. Signed copy accessible through NGO Sitelog GO-07-01 (NPA)(SSF)(ONS)

#### Maintenance Department PIPs

- O-06-00270, Actuator diaphragm leaking
- O-06-00277, Fabrication details are incomplete
- O-06-05172, IP/0/A/2001/003 L needs further enhancement to clarify torque values for K-2000 breakers
- O-06-05256, Work on PCB-28 CT will not complete as scheduled WO 98793874
- O-06-05335, A potential configuration management issue exists where a pipe stand is supporting a piping system
- O-06-05400, Defects in new 'Letdown' 0.1 micron filter
- O-06-05415, Discrepancies between equipment labels and controlled drawings on some MCC compartments
- O-06-05513, Work on AHU-1-11 could not be performed due to OPS emergent activities
- O-06-05627, Unexpected results obtained from the piping pressurization test after repair of 2LP-7
- O-06-05740, Pressure switches issued from Supply found to operate incorrectly
- O-06-05858, FME cleanliness zone not in compliance with NSD104 requirements
- O-06-05860, SOER effectiveness review per root cause O-06-2503 has determined that ONS response to SOER 85-2, Recommendation 7 was not effective
- O-06-05960, Alloy 600 Facilities not moved inside Protected Area, as agreed
- O-06-06016, Cell levels low on K1 Battery
- O-06-06081, This PIP is to document management observation ONS-32514 per plan 06MNT03P11, Observation of Unit ½ new fuel receipt
- O-06-07155, Apparent manufacturing error on new RBCU coils

RP PIPs

- O-05-06365, Uncontrolled radioactive material 10/04/2005
- O-05-08310, Radioactive material found outside the RCA 12/08/2005

CHM PIPs

- O-06-03042, Chemical addition made to the WC system instead of the CW system 05/16/2006

OPS PIPs

- O-05-03093, 1B RB Aux Cooler LPSW return line leak
- O-05-04470, Standby LPSW Pump Auto Start Circuit Power Switch not in expected position
- O-05-05198, Determined ACB-4 was inoperable rendering Keowee Zone Overlap inoperable. Entered TS 3.8.1 Condition F
- O-06-04177, Connecting eye-bolt (rod) to aux switches bent. Unexpected entry into TS 3.8.1 Condition F for Keowee Zone Overlap circuitry due to ACB-3 being inoperable

EFW System PIPs

- O-07-02012, Unit 2 EFW system should be declared Maintenance Rule a1 04/18/2007
- O-05-06251, Welds on riser piping excluded from ISI plan for the fourth interval 09/29/2005
- O-05-04538, Retrofit of printed circuit cards for 7300 based systems - capacitor C105 replacement with fuse protection 07/12/2005

CC System PIPs

- O-01-02658, Motor (s/c 0496610) will not work as received 07/12/2001
- O-05-06115, Increased leakage from Unit 3 RCS into the CC system (L/D coolers) 09/23/2005
- O-05-06595, Unit 3 CC system in-leakage increase 10/16/2005
- O-05-06628, Unit 3 CC cooler inleakage and subsequent isolation 10/17/2005
- O-03-04686, Defect in 3/4" plate discovered during prefab of supports for NSM-13093 LPI Crossties 07/22/2003
- G-06-00422, GO-06-16(NPA)(NSC)(ALL) Nuclear Supply Chain Audit performed by NPAS 10/05/2006

LPI System PIPs

- O-97-00240, Water hammer of LPSW piping on RBCU discharge - Unit 2
- O-97-03373, Anderson & Greenwood relief valve (81P) adverse trend
- O-98-00707, PIP 0-O98-0150 SITA Audit identified a possible problem with not having a zero ref. of the BWST on the Drawing
- O-98-01323, During a review of OP/0/A/1102/24, it was discovered that potential valve failures could prevent alignment of the suction flow path for LPI decay heat removal
- O-99-00902, Have manual active valves been either sized or tested to meet their design basis required functions?
- O-05-05564, Lead removal work in RM 81 (U3 LPI, RBS) has blocked air flow paths assumed in accident calculations

LPSW System PIPs

- O-97-00310, Water hammer of LPSW on RBCU discharge - Unit 1
- O-97-00311, Water hammer of LPSW Piping - Unit 3
- O-97-00380, Investigate the possibility of anti-sweat piping insulation used inside the Reactor Buildings becoming displaced by a high energy pipe rupture and clogging the Emergency Sump Screens
- O-99-02433, Excessive corrosion of 1" LPSW drain line resulted in the drain line breaking off during valve manipulation.
- O-02-04477, "Manual Valves" are Maintenance Rule A(1) due to repetitive MPFFs
- O-05-05863, 1B LPI Cooler LPSW Flow
- O-07-01921, Repeated Failures of Motorized Strainers for LPSW and HPSW
- O-07-02332, Piping support 2-14B-1481E-H6293 on the 2D RB Aux Cooler Supply piping does not exist.
- O-07-02746, Minimum Wall Thickness Reading on ONS Unit 2 LPSW Piping (MetLab Results)

PIPS Associated with Previous Findings

- O-04-04878, Loss of all AC auxiliaries for 230KV & 525KV Switchyards (breakers 1TE-11 and 2TE-11 open at the same time) - TS 3.0.3 entry
- O-02-06240, PIP written to summarize field inspection of Main Feedwater Rupture Restraints adjacent to RB Penetrations 25 & 27
- O-05-04144, Possible procedure deficiency found during review of IP/O/B/0125/003 - Seismic Trigger Calibration
- O-05-04028, Failure to follow NSD 704, Procedure Use and Adherence, during 2003 performance of IP/O/B/0125/003 - Seismic Trigger Calibration under WO 98582404
- O-05-04724, Near miss during scheduled work to DW-18
- O-05-06354, Inspection of the Main Steam (MS) terminal end in the East Penetration Room, in accordance with the High Energy Line Break (HELB) Design Basis Report, has not been performed
- O-06-03002, Unit 3 Lost power while on decay heat removal
- O-04-05099, Standby Lee Combustion Turbine Tripped
- O-04-04896, Unplanned entry into TS
- O-05-03599, Contactor for source 1 cooling power on Keowee Main Transformer cannot function
- O-05-02152, Documentation of NRC 71111.11 Licensed operator requal inspection
- O-05-04491, During a penetration room walkdown, several electrical penetration junction boxes were found with loose or missing cover fasteners and/or missing or improperly secured inspection covers
- O-05-06097, Work order 98305694 to repair the Unit 2 East Penetration Room (EPR) has not been implemented in a timely fashion
- O-05-07479, Unable to restore SSF to operable following Diesel Generator Runs, which heated the Unit 2 CCW inlet piping above allowed limits
- O-06-00138, NRC inspectors identified an unresolved item (URI) regarding the failure to identify a condition adverse to quality, in that feedwater terminal ends had not been identified and therefore actions to mitigate the affects from a terminal end line break had not been implemented (Reference Oconee Nuclear Station Integrated Inspection Report 05000269/2005004, 05000270/2005004, and 05000287/2005004, dated 10/28/05)

- O-06-02903, With the withdrawal of Request for Relief 04-ON-006 ONS did not meet requirements of the ASME Code Section XI for the third interval.
- O-07-00964, 1A MDEFW Pump Outboard Bearing Temperature reads 360 Degrees on OAC point O1A1190 and 330 degrees locally
- O-04-07007, Declaration of Unusual Event due to uncontrolled water level decrease in the Unit 3 spent fuel pool
- O-04-03739, 2A RBCU Hi vibration
- O-04-07937, B Outside Air Booster Fan tripped during testing
- O-04-02703, States Terminal Block not protected from Environment
- O-02-03830, This PIP documents a recurring leakage problem from the Unit 1 RCP seals which requires a root cause evaluation
- O-05-02361, Unplanned Tech Spec/SLC entry due to "B Outside Air Booster Fan tripping
- O-05-03580, The NRC EP auditor performing the annual NRC EP audit concluded that the change to EAL 4.7.U.2.A, which was revised under 10CFR50.54 (q) on February 1, 2005, was a decrease in the effectiveness of the Emergency Plan (EPLAN). Changes, which are considered to be decreases in the effectiveness of the EPLAN, cannot be performed under the 10CFR50.54 (q) process
- O-05-04874, An operability assessment should have been performed on the unit vent particulate sampling program, since this sampling is credited for meeting SLC requirements
- O-04-08873, On 12/17/04, Oconee RP was notified that clean material shipped from Oconee to Arkansas to support their outage was surveyed and found to have indications of contamination
- O-06-04070, An error was made during the 2005 1RIA-37 (low range Gaseous Waste Disposal effluent monitor) annual calibration resulting in a non-conservative detector output

#### HPI Thermal Sleeves PIPs

- O-07-02505, During video inspection of the HPI thermal sleeves, cracks were seen in the 2A1 & 2A2 thermal sleeves 05/08/2007
- O-06-05766, 2HP-120 is not operating in a similar manner as similar valves 3HP-120 has very low demand and does not indicate throttled in the control room 09/10/2006
- O-06-04650, RCS makeup flow on Unit 3 cycling 07/24/2006
- O-05-06181, Indicated makeup flow oscillations 09/27/2005

#### System Health Reports

- Protective Relay Health Report, 2007Q2
- Keowee Supersystem Health Report, 2006T3
- SSF Supersystem Health Report, 2006T3
- High Pressure Injection, 2006T3
- Emergency Feedwater, 2006T3
- Component Cooling Water, 2006T3

#### Self Assessment/Audit Reports

- O-06-00077, Assessment of Common Causes for Findings of M&TE Audits
- O-06-01265, Level One Breaker Refurbishment Assessment

- O-06-04849, Foreign Material Exclusion Assessment for 3EOC22 Refueling Outage
- O-06-04892, Maintenance Human Performance Assessment for 1<sup>st</sup> and 2<sup>nd</sup> quarter 2006
- O-06-08720, Human Performance Common Cause Analysis for the period July 1, 2005 through June 30, 2006
- O-07-07592, Oconee Maintenance Correct Component Verification
- O-07-00012, 2006 Effectiveness of Previous Corrective Actions
- O-07-03637, Maintenance Rework in 2006
- O-07-03174, 2006 Corrective Action to Prevent Recurrence (CAPR) Assessment report
- O-07-03247, Level 1 SRG Assessment of Effectiveness and Finality of PIP Closure to Work Management System Activities (Work Requests / Work Orders)
- O-05-03981, Duke Corrective Action Program Assessment, GO-05-12 (NPA)(CAP)(ALL)
- GO-06-12(NPA)(SRG/RGC)(ALL), Duke Energy Company Assessment Report 06-23-2006 - 10/05/2006

#### Relay PIPs

- O-07-00940, Jocassee Switchyard Fault Resulting in Oconee Dual Unit Trip (Unit 1)
- O-07-00941, Jocassee Switchyard Fault Resulting in Oconee Dual Unit Trip (Unit 2)
- O-04-05550, Two new Struthers Dunn relays failed
- O-07-04079, Testing Discrepancies identified in PIP O-04-05550 regarding failed Struthers Dunn relays
- O-07-02551, Unit 2, Main Feeder Bus 1 Lockout Relay Failures
- O-07-02724, Main Feeder Bus Lockout Relay Testing
- O-07-02435, Overheating ABB type CO-8 and CO-5 relays
- O-97-01050, MCC Starters are MR A1 due to failure of B finger auxiliary contacts
- O-05-03788, The B finger auxiliary contact has experienced a repetitive failure
- O-07-01735, NSD 229 contains incorrect Part 21 guidance

#### Electrical Penetration Enclosures PIPs

- O-05-04491, Several Electrical Penetration junction boxes were found with missing fasteners
- O-07-01806, Electrical Penetration enclosures have loose covers and missing fasteners.

#### Operating Experience Items

- OEDB 01-027365, Regulatory Information Summary 2001-09, Control of Hazard Barriers

#### Passive Civil Features PIPs

- G-01-00140, Control of Hazard Barriers, NRC RIS 2001-09
- O-01-00815, Rivets and Screws on East Pen Room Blowout Panels
- O-02-07269, Oconee Passive Civil Features
- O-02-03645, Passive Civil Features not included in Maintenance Rule

#### Other Documents

- PO ON 46703 for 3/4" plate 06/18/2001
- SD 2.1.9, ASME Section XI Repair/Replacement, Revision 001
- WO 01657073-05, I/R the SSF diesel generator tripping

- WO 01649300-01, Inspect SSF electrical conduits/water
- WR 00912141, Remove calcium deposits from SSF pump room and stairwell walls 12/13/2006
- PT/2/A/0600/001, portion reviewed - Enclosure 13.1, TS 3.10.1 SFP Level required conditions
- OP/0/A/1108/001, Curves and General Information, Revision 072
- OP/2/A/1502/007, Operations Defueling/Refueling Responsibilities, Revision 071
- NIS-2 for NSM-23093, WO 98614170-15 05/20/2004
- NIS-2 for NSM-23093, WO 98614170-12 05/15/2004
- NIS-2 for NSM-17029, WO 98544284-01 05/31/2003
- NIS-2 for NSM-17029, WO 98541284-09 05/31/2003
- NIS-2 for NSM-17029, WO 98541284-10 05/31/2003
- Root Cause Failure Analysis Report, Unit 2 HPI Thermal Sleeve Cracking, Revision 1
- ODM Documentation Form, 2A1 and 2A2 HPI Inner Thermal Sleeve ID Cracking 5/14/2007
- Structural Integrity Associates Drawing 04013, Safe End and Thermal Sleeve Assembly, Revision 1
- CAL No 2-97-003, Confirmation of Action Letter - Oconee Units 1, 2, and 3, 05/05/1997
- OFD-101A-2.1, Flow Diagram of High Pressure Injection System (Letdown Section), Revision 40
- OFD-100A-2.1, Flow Diagram of Reactor Coolant System, Revision 39
- OFD-101A-2.3, Flow Diagram of High Pressure Injection System (Charging Section), Revision 20
- OFD-101A-2.2, Flow Diagram of High Pressure Injection System (Storage Section), Revision 38
- MDS Report OS-73.2, Analysis of Effects Resulting From Postulated Piping Breaks Outside Containment, Supplement 2, (original report dated April 25, 1973)
- Duke Letter to the NRC dated September 9, 2004, Withdrawal of License Amendment Request
- Drawing, KEE-108, Elementary Diagram Turbine No. 1 Bearing Oil Pump
- Drawing, KEE-113-4, Elementary Diagram Master Control System Turbine Miscellaneous Relaying
- Drawing, KEE-113-5, Elementary Diagram Master Control System Turbine Miscellaneous Relaying
- Drawing, KFD-101A-1.1, Flow Diagram of Turbine Guide Bearing Oil System
- Duke Automated Reading and Training for NSD 602, SCWE and ECP
- Duke Computer Based Training Module for SCWE
- Duke Energy public web site, Ethics Line, conducted by a third party to maintain confidentiality and ensure anonymity if requested, for reporting employee misconduct, harassment, safety concerns, conflicts of interest, fraud, and regulatory violations.