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

July 28, 2005

Duke Energy Corporation (DEC)
ATTN: Mr. Ronald A. Jones
Sit Vice President
Oconee Site
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION - NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT NO. 05000269/2005008, 05000270/2005008, AND 05000287/2005008

Dear Mr. Jones:

On July 1, 2005, 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 July 1, 2005, with Mr. Ron Jones and other members of your staff.

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 a selected examination of procedures and representative records, observation of activities, and interviews with personnel.

On the basis of the sample selected for review, there were no findings of significance identified during this inspection. The inspectors concluded that generally, problems were properly identified, evaluated and resolved within the corrective action programs. However, during the inspection, a few minor problems were noted involving corrective actions that were incomplete, some issue investigations that lacked thoroughness, and some issues that were categorized at a level which may have impacted the thoroughness of the reviews.

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/

Michael E. Ernstes, 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 05000269/2005008, 05000270/2005008, and 05000287/2005008 w/Attachment: Supplemental Information

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OFFICE	RII/DRP	RII/DRP	RII/DRS	RII/DRS			
SIGNATURE	JXZ	GJM1	DSS	GAH2			
NAME	JZeiler	GMcCoy	DSimpkins	GHutto			
DATE	7/27/2005	7/27/2005	7/27/2005	7/27/2005			
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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:	05000269/2005008, 05000270/2005008, 05000287/2005008
Licensee:	Duke Energy Corporation
Facility:	Oconee Nuclear Station, Units 1, 2, and 3
Location:	7800 Rochester Highway Seneca, SC 29672
Dates:	June 13 - 17, 2005 and June 27 - July 1, 2005
Inspectors:	J. Zeiler, Senior Resident Inspector, Virgil C. Summer G. McCoy, Senior Resident Inspector, Vogtle D. Simpkins, Senior Resident Inspector, Hatch A. Hutto, Resident Inspector
Approved by:	Michael E. Ernstes, Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

SUMMARY OF ISSUES

IR 05000269/2005-008, 05000270/2005-008, 05000287/2005-008; 06/13/2005 - 07/01/2005; Oconee Nuclear Station, Units 1, 2, and 3; additional baseline inspection of the problem identification and resolution program.

The inspection was conducted by three senior resident inspectors and a resident inspector. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

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 (PIPs) 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 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 via the CAP.

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution

a. Effectiveness of Problem Identification

(1) Inspection Scope

The inspectors reviewed Problem Investigation Process reports (PIPs) for issues across the reactor safety cornerstones to determine if problems were being properly identified and entered into the corrective action program (CAP) for resolution. The reviews were primarily focused on selected issues associated with seven risk significant plant systems, including: high pressure service water system (HPSW), low pressure service water system (LPSW), standby shutdown facility (SSF), emergency feedwater system (EFW), component cooling water system (CC), low pressure injection system (LPI), and Keowee Hydro Units (for emergency AC power). In addition, 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, and security, 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 seven selected systems to verify that equipment deficiencies were being appropriately entered into the CAP. The inspectors conducted plant walkdowns of the seven systems with the responsible system engineers and/or operations personnel to identify any deficiencies that had not been entered into the CAP. The inspectors discussed the condition and status of each of the seven systems with system engineers and other plant personnel.

The inspectors reviewed selected industry operating experience items, including NRC generic communications, to verify that they were appropriately evaluated for applicability and whether issues identified through these reviews were entered into the CAP.

The inspectors reviewed control room operator logs for January to February 2005 to verify that equipment deficiencies, especially those involving the selected systems for the focused review, were entered into the CAP.

The inspectors reviewed licensee audits and self-assessments (focusing primarily on problem identification and resolution) to verify that findings were entered into the CAP and to verify that these findings were consistent with the NRC's assessment of the licensee's 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 process. The inspectors also interviewed personnel from operations, maintenance, engineering, security, health physics, chemistry, and emergency preparedness to evaluate their threshold for identifying issues and entering them into the CAP.

Documents reviewed to support the inspection are listed in the Attachment.

(2) Assessment

The inspectors determined that the licensee was effective in identifying problems and entering them into the CAP. PIPs normally provided complete and accurate characterization of the subject 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. The inspectors' independent review did not identify any significant adverse conditions which were not in the CAP for resolution.

During the system reviews and walkdowns of accessible portions of the HPSW, LPSW, SSF, EFW, CC, LPI, and Keowee Hydro systems, the inspectors determined that system deficiencies were being identified and placed in the CAP and that the system engineers were appropriately tracking and trending these issues. The inspectors did not identify any significant conditions adverse to quality during the system walkdowns; however, several minor deficiencies were identified for which PIPs had not been written as detailed below:

- During walkdown of the EFW system, the inspectors identified that scaffold erected during the previous refueling outage on Unit 1 was still installed next to the motor driven EFW pumps. The removal date on the scaffold tag had expired. The licensee initiated PIP O-05-4272 to address why the scaffold had not been removed and whether it was adequate for online operation. A subsequent licensee evaluation determined that the scaffold had been built to acceptable online standards, but had been intended to be removed at the end of the refueling outage. The licensee removed the scaffold and a subsequent extent of condition determined that this was an isolated case.

- During walkdown of the EFW system, the inspectors identified a small active boron leak from the packing and downstream pipe cap of a Unit 1 high pressure injection system drain valve, 1HP-69. The boron was dripping onto and penetrating the insulation of carbon steel EFW piping located directly below the valve. The licensee initiated WO 98348520 and PIP O-05-4091 to isolate/capture the leakage and to investigate the potential boric acid corrosion of the EFW piping. The inspectors determined that most likely the leakage had been ongoing since restart from the previous refueling outage, but had gone undetected by plant personnel.

- During a walkdown of the SSF, the inspectors noted an oily substance running down cables and on top of a pressurizer heater control cabinet. The licensee

initiated WO 98348395 to clean the cabling and cabinet and to inspect inside the cabinet for any potential degradation.

- During a walkdown of the Unit 3 LPSW system, the inspectors noted that the plexiglass covers installed on the 3A LPSW pump motor bearing reservoirs, were cracked and missing sections of the corners. The inspectors noted that this same issue had caused a problem for another LPSW pump when it had gotten wetted down. The licensee initiated WO 98348547 to replace the degraded covers.

The licensee was effective in evaluating internal and external industry operating experience items for applicability and entering issues into the CAP. Operator logs were detailed regarding information associated with equipment deficiencies and almost always provided reference to PIPs that were generated for the problems.

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

b. Prioritization and Evaluation of Issues

(1) Inspection Scope

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

Selected licensee audits and self-assessments were reviewed to determine if identified issues were correctly classified for resolution in accordance with procedure NSD-607, Self-Assessments. 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. Documents reviewed are listed in the Attachment to this report.

(2) Assessment

The inspectors determined that PIPs were generally categorized correctly; however, the inspector's identified several PIPs associated with lower significance issues that were incorrectly classified as Category 4 versus Category 3. These PIPs included O-03-5058, O-03-7578, O-04-4108, and O-05-3148.

Generally, the licensee performed adequate evaluations of issues that were technically accurate and of sufficient depth. Formal root cause evaluations for Category 1 and Category 2 PIPs were especially thorough and detailed. The inspectors did not identify any risk significant issues that had not been appropriately prioritized and evaluated. However, the inspectors identified several minor problems involving PIPs that lacked thorough investigation and documentation. These issues included the following:

- PIP O-03-5531 described the 3A motor driven EFW pump failure to meet its required recirculation flow during testing due to debris plugging the impulse lines to the flow transmitter. The inspectors identified that there was no documented information on the nature of the debris found, nor how it got there. Also, in the problem description of the PIP, a statement was made that the surveillance test procedure would be revised with a caution alerting to the potential for impulse line plugging. However, a formal corrective action to implement this change was not opened in the PIP. Although the procedure change request was initiated, it was later rejected without any subsequent reference to the original PIP. The licensee initiated PIP O-05-4298 to address the inadequacies with handling the original PIP evaluation.

- PIP O-04-4896 described the failure of Keowee circuit breaker ACB-2 to operate due to a broken auxiliary contact connecting rod. The PIP investigation determined that the failed connecting rod had been cannibalized from the old breaker following breaker replacement in 1999. The inspectors identified that the investigation did not address the adequacy/appropriateness of the process that allowed using the old part on the new breaker. The licensee decided to re-open the PIP to add a corrective action item to re-investigate the circumstances and process used to replace the breaker connecting rod.

- PIP O-03-8181, documented an equipment deficiency related to the sump level high level alarm switch, 2LPILSS0091, for the Unit 2 Auxiliary Building Sump system. The inspectors identified that the PIP failed to identify that the switch function was scoped under the MR when the issue was originally screened. As a result, a 10 CFR 50.65(a)(1) review was not performed and there was a subsequent MR functional failure of the level switch in early 2005. The licensee initiated PIP O-05-4318 to address the inadequate MR review. During subsequent discussions with the licensee following the exit meeting, the licensee completed the MR review and determined that the original level switch problem was not a functional failure.

- PIP O-04-7004, described the failure of circuit breaker ACB-8 that supplies auxiliary power to KHU-2, which rendered the Keowee hydro unit inoperable. One of the corrective actions in the PIP was to determine why there was a 25

minute delay in declaring the Keowee unit inoperable after the circuit breaker failure. The licensee identified that the Keowee unit operators failed to recognize initially that the condition rendered the Keowee unit inoperable; however, the inspectors noted that the investigation did not address the underlying reason for this lack of sensitivity to Technical Specification requirements for Keowee. The licensee indicated that the original PIP would be re-opened to add additional Technical Specification training for Keowee operators.

- PIP O-04-5776 involved a HPSW fitting that failed and partially drained the HPSW system. This fitting, along with several others, were installed as part of a modification of the HPSW system to support security modifications. The inspectors identified that the apparent cause evaluation failed to consider the risk of common cause failures to other, newly installed fittings. Subsequently, one month after the first failure, another fitting failed in a similar manner. The inspectors determined that this second failure may have been averted if adequate common causal consideration had been applied to all the new fittings.

c. Effectiveness of Corrective Actions

(1) Inspection Scope

The inspectors reviewed selected PIPs associated with the seven risk significant plant systems and a representative sample of PIPs generated by each of the major plant department to verify that the licensee had identified and implemented timely and appropriate corrective actions to address the associated problems. The inspectors verified that the corrective actions were properly documented, assigned, and tracked to ensure completion. Where possible, the inspectors independently verified that the corrective actions were implemented as intended. The inspectors also verified that common causes and generic concerns were appropriately addressed. Documents reviewed are listed in the Attachment to this report.

(2) Assessment

The inspectors determined that, overall, corrective actions developed and implemented for problems were timely, effective, and commensurate with the safety significance of the problem. However, several minor problems were identified related to the effectiveness of corrective actions for several lower significance issues. These issues included the following:

- PIP O-04-5704 involved problems aligning the EFW from the opposite Unit within the necessary 15 minutes during a High Energy Line Break (HELB) design basis accident. One of the licensee's planned corrective actions to address this issue was to uprate the EFW cross-connect valves (i.e., EFW313, 314) to allow them to be capable of opening under the higher turbine driven EFW pump discharge pressures (from 1400 to 1600 psig). The inspectors noted that the licensee had decided not to hydro test the valves at the higher pressure which was contrary to the valve vendor recommendations. The PIP did not include adequate justification for not conducting the hydro test. Following discussions with the

licensee concerning this matter, the licensee decided to implement the vendor recommendations.

- PIP O-02-6304 identified a non-conforming condition where a raised portion of the SSF cable trench was not adequately protected from tornado missiles as specified in the Updated Final Safety Analysis Report. The corrective action to provide a natural phenomenon barrier was combined with the licensee's overall tornado mitigation project which was much more complex and still in the developmental stage. The inspectors were concerned that the relatively simple correction to the SSF cable trench was being delayed by combining it with the larger project. As a result of this observation, the licensee's SSF risk reduction team decided it was prudent to expedite completion of the trench corrective action independent of the more comprehensive tornado mitigation project.

- PIP O-04-8171 involved the system design pressure of the LPSW being exceeded during the system startup following a refueling outage. The inspectors noted that there was no formal evaluation performed nor resulting corrective actions to address the issue. The PIP disposition indicated that no further action was necessary since the design pressure was not exceeded by too much. The inspectors determined that, most likely, weaknesses in the system startup procedure allowed the condition to occur, and it was reasonable that the licensee should have examined the procedure to identify any necessary enhancements to prevent exceeding the system design pressure in the future.

- PIP O-04-5018 identified that the LPSW maintenance rule database was updated with a new system function (i.e., LPS.15 - provide capability to manually sample the system) without developing any surveillance procedures to ensure that the function could be met. While the immediate problem to provide new surveillance procedures was addressed, the inspectors noted that the PIP failed to address why consideration for developing the procedures was not recognized to begin with and what corrective actions were necessary to address the cause of this oversight.

- PIP O-04-5365 identified a low bearing cooling water flow condition to a High Pressure Injection pump. During maintenance activities in the vicinity of the pump, a worker accidently bumped an isolation valve for the LPSW system and caused a low flow alarm. The issue was quickly identified and corrected. As part of the corrective action, WOs were initiated in 2004 to change this and many other similar valve handles in the area to a new handle type in order to minimize the possibility of this situation occurring again. However, the inspectors noted that none of the WO's had been accomplished, and only one had been planned.

d. Assessment of Safety-Conscious Work Environment

(1) Inspection Scope

The inspectors interviewed selected licensee personnel from each of the major plant departments to develop a general view of the safety-conscious work environment at Oconee Nuclear Station (ONS) and to determine if any conditions exist that would cause

personnel to be reluctant to raise safety concerns. The inspectors also 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 to determine if concerns were being properly reviewed and resolved.

(2) Assessment

The inspectors concluded that licensee management fostered a safety-conscious work environment by emphasizing safe operations and encouraging problem reporting. The inspectors did not identify any reluctance on the part of licensee staff to report safety concerns.

4OA6 Meetings, Including Exit

On July 1, 2005, the inspectors presented the inspection results to Mr. Ron Jones, Site Vice President, and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during this inspection.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

S. Batson, Superintendent of Operations
S. Capps, Mechanical/Civil Engineering Manager
T. Carroll, SRG Engineer
N. Clarkson, Regulatory Compliance Senior Engineer
G. Davenport, Compliance Manager
B. Hamilton, Station Manager
R. Jones, Site Vice President
R. Matheson, SRG Engineer
J. Smith, Regulatory Compliance
P. Stovall, SRG Manager
J. Weast, Regulatory Compliance

NRC Personnel

M. Ernstes, Branch Chief, Division of Reactor Projects (DRP) Region II (RII)
E. Riggs, Resident Inspector, RII
M. Shannon, Senior Resident Inspector, RII

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

NONE

Opened and Closed

NONE

Closed

NONE

Discussed

NONE

LIST OF DOCUMENTS REVIEWED

Procedures
Nuclear Station Directive (NSD)-203, Operability
NSD-204, Operating Experience Program (OEP) Description
NSD-208, Problem Investigation Process
NSD-210, Corrective Action Program Directive
NSD-212, Cause Analysis
NSD-223, Trending of PIP Data
NSD-602, Employee Concerns
NSD-607, Self Assessment

High Pressure Service Water System PIPs
O-03-4695, Lower than expected flow from drain downstream of HPSW-893 and HPSW-895
O-03-4835, Pinhole leaks discovered in LPSW piping
O-03-5724, Flow and pressure in Aux Building 2nd floor header less than predicted
O-03-5740, Implementation of SLC change to establish minimum EWST level
O-04-0166, Unable to get flow while testing the A HPSW pump
O-04-0168, No flow observed into EWST while performing HPSW pump test
O-04-2482, Inadvertent entry into SLC due to low elevated water storage (EWST) tank level
O-04-5776, HPSW header low pressure alarms due to HPSW pipe break
O-04-6438, Raw water system piping degradation
O-04-6467, 1HPSW-691 pressure gauge indicates 34 psig
O-04-6575, Aquagrip connector failed during pressurization
O-04-7510, Corrosion on 1B HPSW pump base plate and base plate bolting
O-04-7755, Emerging trend evaluation, HPSW jockey pump fail to start
O-04-8228, A HPSW pump performance test did not meet acceptance criteria
O-05-0482, Corrosion damage on 1B HPSW pump casing
O-05-0597, HPSW valve stroke test not performed due to possible failure of HPI cooling flow
O-05-2822, Discrepancies in the EDB and the OFD

Low Pressure Service Water System PIPs
O-02-7286, Ongoing study of closed loop LPSW system within reactor building
O-03-1702, 1B auxiliary fan leak
O-03-4813, Water hammer heard in Unit 1 and 2 control room and auxiliary building
O-03-5018, Spurious closure of the LPSW pump suction valves could result in a loss of LPSW flow
O-03-5032, LPSW-67 difficult to operate
O-03-7248, Determine if 1 or 2 LPSW pumps are required to be operating
O-03-7578, 3B LPSW pump suction gauge failed
O-03-7679, LPSW inputs to Safety Analysis Inputs Manual require revision
O-04-0659, Possible overpressurization of 3A LPSW pump suction piping
O-04-1549, 5000 gpm limit for LPSW flow is no longer applicable, and documents need revision
O-04-3273, 2LPSW-308 and 2LPSW-311 found leaking
O-04-3493, Low LPSW header pressure could cause pump to auto-start
O-04-5018, Maintenance rule function not periodically tested
O-04-5365, Low bearing cooling water flow to the 3C HPI pump bearing cooler

O-04-5756, During backwash of LPSW suction strainers cooling flow to MDEFW pump coolers may be reduced
O-04-5782, Unscheduled entry into technical specification LCO due to excessive packing leak on B LPSW pump
O-04-6258, LPSW piping degradation
O-04-7214, LPSW flow to RBCUs is erratic
O-04-7230, Relief valve 3LPSW-314 observed to be leaking
O-04-8171, Design pressure of LPSW system exceeded during system startup
O-04-8177, Reactor building evacuated due to high airborne radiation levels
O-04-8497, Units 1 and 2 LPSW pump motor inboard bearing oil is discolored
O-04-8496, LPSW flow transmitter is overranged
O-04-8963, LPSW-26 shear pin broken
O-05-0317, Defective performance related pressure gauge
O-05-0754, Flow indication over-ranged on 2LPSW-1054 and 2LPSW-1062 controllers
O-05-0865, RBAC supply and return flow transmitters operating outside of calibrated range

Standby Shutdown Facility PIPs
O-03-5237, Water Discovered in the SSF ASW Pump Bearing Housing
O-04-2523, SSF Cutler-Hammer Switches Maintenance Rule A1
O-04-6342, White Finding for the Appendix R Procedure Response Time
O-02-6304, Portion of SSF Cable Trench Not Tornado Missile Protected
O-03-5354, Fire on SSF Diesel Exhaust Line
O-03-7762, Problems During Performance of PT/1/A/0400/007
O-03-8010, SSF Diesel Excessive Oil from Air Box Drain
O-04-3538, 0-CCW-292 Could Not Be Operated
O-04-5413, SSF Pressurizer Low Level Alarm Change 50.59 Documentation
O-04-7101, Improper Packing Used in SSF RCMU Pump
O-04-7492, Foreign Material in Unit 3 SSF RCMU Pump Strainer
O-05-0122, Breaker PXSF-4A Found Out of Position
O-03-5188, 1CCW-268 Failed to Remain Closed While Stroke Testing
O-03-5360, Unexpected Alarm at SSF Equipment Room
O-03-5872, Unplanned Entry into TS Condition Due to Erratic SSF ASW Flow Gauge
O-03-6456, Air in SSF ASW Flow Gauge Impulse Lines
O-03-7328, Material Condition of SSF Pump Room Needs Improvement
O-03-8013, Unexpected SSF DG Service Water Flow Alarm
O-04-0012, Unit 1 SSF ASW Discharge Pressure High
O-04-0069, NRC White Finding on the SSF Pressurizer Heaters
O-04-1012, Unit 1 SSF ASW Discharge Pressure High
O-04-4108, 2CCW-268 Failed to Operate
O-04-5713, 3CCW-287 Has very Low Operating Margin
O-04-6355, SSF Pressurizer Heater Operability Based on Steam Space Leakage
O-05-1255, SSF Walkdown Housekeeping

Emergency Feedwater System PIPs
O-03-5058, 2A MDEFW motor cooling water flow indicates 0 gpm when pump is running
O-03-5531, 3A MDEFW required flow could not be obtained
O-03-6377, Wiring in 3TE-0 MDEFW 3B switchgear not correctly installed
O-03-6775, Possible brass contaminants found in outboard bearing oil of TDEFW
O-03-7758, Overspeed trip of Unit 1 TDEFW

O-04-0012, Unit 1 SSF ASW discharge pressure is high
O-04-0102, Valve 1FDW-316 periodically making a rattling noise
O-04-0518, NRC 50.59 violation for High Energy Line Break issue
O-04-1012, Unit 1 SSF ASW pump discharge pressure high
O-04-1588, Inadequate 50.59 evaluation results in NRC violation
O-04-3093, Valve 3FFDW-35 failed it stroke test
O-04-3697, Surveillance PT/2/A/0600/028, 2MS-93 Nitrogen Supply Leakage Test, problems
O-04-5904, EOP procedure unsuccessful in meeting time for realigning EFW during HELB
O-05-0968, Evaluate consequences of operation of TDEFW pumps during turbine building flood
O-05-1903, Turbine Driven Emergency Feedwater System exceeded unavailability limits
O-05-2156, PT/3/A/0600/001 surveillance requirement not met
O-05-2333, Unit 1 TDEFW pump tripped on startup
O-05-2338, Unit 1 TDEFW pump tripped too early on overspeed
O-05-2362, Unit 1 Turbine Driven Emergency Feedwater pump bearing oil pump failed to start
O-05-3224, Valve 1MS-93 failed to open while performing PT/1/A/0150/020
O-05-3066, Valve 1FDW-315 opened unexpectedly
O-05-3096, Valve 1C-391 would not operate properly in the manual mode

Component Cooling Water PIPs:
O-03-4341, Possible RCS in-leakage into the CC system
O-03-5067, 1A CC Pump near failure on outboard bearing
O-03-5171, Failure of ONS predictive maintenance program
O-03-5175, 1A CC Pump operation acceptable but not ideal
O-03-6405, Relief valve 1CC-28 failed as-found setpoint testing
O-03-6901, 2RIA-50 alarmed at ~800 cpm
O-03-6480, U-2 CC out-leakage increased
O-04-0080, 3RIA-50 spike
O-04-2896, 1A CC Pump abnormal noise
O-04-4046, Possible RCS leakage into the CC system
O-04-4486, RCS leak
O-04-5589, Letdown cooler heat exchanger leakage evaluation
O-04-5920, Unit 2 CRD filter high d/p
O-04-7326, Questions concerning ability of RIA-50 monitoring
O-04-7599, Unit 1A CRD filter d/p high
O-04-8087, PIP O-04-06843 problem identification not compete and accurate
O-05-0175, 3RIA-50 alarmed high
O-05-0724, Chemical control of CC difficulties from RCS leakage
O-05-1725, Unit 3 CRD filter d/p increasing
O-05-1747, 2RIA-50 spike
O-05-2494, 2RIA-32 alarmed
O-05-2938, LCS-1200 molybdate for CC addition crystallizing
O-05-3148, Unit 1 CC system chlorides are out of spec
O-05-3282, Inadequate flow to Unit 1 RCP's
O-05-3391, Units 1 and 2 CC system chlorides out of spec
O-05-3760, 1A CC Pump abnormal noise

Low Pressure Injection System PIPs
M-03-0690, 2M-110, 112, 114, 116 leaking by to 2NI-346 near ECCS sump
O-03-1686, Oil sample from the 2C LPI pump was discolored

O-03-5353, Received 1B LPI pump low diff press alarm during performance test
O-03-5564, Oil change sample, oil dark
O-03-5685, Statalarm 3SA-1/D-12, “LPI Pump B Diff Press Low” until LPI flow was decreased
O-03-5940, Discovered removal of the cap screws from the operator adapter plate on 1LP-178
O-03-5992, Several uncontrolled floatable items in the RB basement
O-03-6450, Water inleakage
O-03-6497, Valve 1LP-36 failed as found set pressure
O-03-6822, 1LP-21 and 22 and 2LP-21 and 22 need body-to-bonnet fasteners replaced
O-03-7012, Foreign material detected in pipe during RT examination
O-03-7314, GL 2004-02 issued by NRC n 9/13/04
O-03-7369, UT thickness inspection of Weld 1LP-0208-1 revealed areas below min wall thickness
O-03-7412, PIP M-03-690 CA#1 stated deborated water may reside in ECCS sump suction
O-03-7976, 2LP-28 Limit switch was inadvertently positioned (bumped)
O-03-8067, 1LP-26, 27 and 37 (LPI relief valves) were lifting during HPI high pressure mode
O-03-8102, 1LP-180 leak found during mini-hydro
O-03-8169, Level 1 assessment on LPI pump oil level configuration
O-03-8181, Apparent inadequate equipment used in LPI sump level controls
O-03-8268, Unexplained gradual increase in reactor water level
O-04-0004, Unanticipated reduction in LPI flow
O-04-0313, Two areas on the body of flow restrictor have rounded indications
O-04-0454, Inadvertent breaker actuation caused inoperability of 3B HPI, LPI, RBS trains
O-04-0357, BWST, LPI and HPI piping analysis had not considered temperatures below 70F
O-04-0768, 3B LPI discharge header pressure high
O-04-1050, Both 3LP-38, 39 were discovered to be closed. 3LP-39 should have been open
O-04-1201, Boron found in the seams of the insulation around Unit 1 decay heat drop line
O-04-1498, During PT/2/A/0600/001, Reactor Building pressure was outside the normal band
O-04-2161, 2LP-21 has a bent stem
O-04-2486, Operations cycled valves which caused water in line
O-04-2688, Oconee’s LPI system unavailability PI ranks in the fourth quartile of all U.S. plants
O-04-2756, RIA-49 is inoperable but functional, which impacts the LBB methodology
O-04-3129, 2LP-37 (2B lpi cooler inlet relief) failed seat leakage test
O-04-3150, Water coming from an open drain valve
O-04-3233, LPI System temperature increasing during LPI system crossover test
O-04-3604, RCS leakage caused by valves not aligned by procedure checklist
O-04-3883, EOP setpoints for U1 HPI minimum flow concerns
O-04-3987, 1LP-69 exceeded allowable stroke time by ~15 seconds
O-04-4823, 2LP-69 (LPI Switchover flow controller) failed to reach a full open indication
O-04-5859, ITS bases for core flood and LPI don’t agree on LPI injection times
O-04-7075, Level 2 assessment for Units 1,2,3 BS and Unit 1 LPI pump NPSH calculations
O-04-7141, S/R 53A-O-2478A-H3B has damage
O-04-8352, PIP O-04-06843 identified failure of 3KI-bkr.
O-04-8612, ES suction line insulation from Unit 2 to LPI/HPI is saturated with water
O-04-8725, 3A LPI pump and 3A RBS pump wrapped in plastic
O-04-9184, Attempted to manipulate control room switch
O-05-0538, 2LPILS009 level switch is not reliable
O-05-0467, Local LPI flow gauge used for 2A LPI pump test has suspect reading
O-05-0496, Procedure IP/0/A/0203/001C was not revised to reflect calibration data for orifices
O-05-1102, NSRB 10 CFR 50.59 Subcommittee review meeting

O-05-2164, Flexible cable connectors damaged during manway removal
O-05-2402, 1LP-29, 30 (BWST supply to LPI pump check valves) failed acceptance
O-05-3242, 1LP-188 active boron leak
O-05-3280, Boron accumulation from b/b of 1LP-4
O-05-3376, Evaluation performed on valve 1LP-105 boron accumulation to justify continued service
O-05-4318, PIP 03-08181 was incorrectly determined to have no Maint. Rule Functional Failure

Keowee Hydro System PIPs
O-04-8093, Maintenance Rule Function KUG Currently A1
O-05-0144, Keowee KHU-1, KHU-2 Maintenance Rule A1
O-03-4896, ACB-2 Failure Due to Broken Connecting Rod
O-03-5841, KHU-2 AC Sump Pump Discharge Valve Back-leakage
O-03-6087, Keowee Unexpected Equipment Interaction
O-03-6345, KHU-1 Failed to Transfer to Auto Control
O-04-7004, ACB-8 Would Not Close Upon Actuation of Control Switch
O-04-7067, Failure of KHU-1 Governor Actuator System
O-04-7143, Inadvertent Mulsifyre Spray Down of CT-4
O-05-1077, LVDT Feedback Drift Alarm and Distribution Valve Failure Range Overlap
O-05-1716, Keowee Sequence of Events Recorder Not Removed
O-05-2265, KHU-2 WL Tubing Solder Joint Leak
O-03-4579, Flashing Keowee Generator at T=0 Causing Extra Cycling
O-03-5528, Reoccurring Generator Guide Bearing Temp Hi Alarm
O-03-6344, KHU-1 Voltage Regulator Did Not Energize
O-04-4280, ACB-2 and 4 Were Found With Less Than Required Air Pressure
O-04-5294, KHU-1 DC Guide Bearing Oil Pump Exceeded Flow Criteria
O-04-5499, PT/0/A/0620/009 KHU Operations Did Not Meet Acceptance Criteria
O-04-6252, ACB-1 Takes Longer to Open After KHU-1 Shutdown
O-04-6978, Westinghouse IG-04-6 DB-50 Auto Shunt Trip Test Panel
O-05-1788, KHU-2 ACB-2 2AB-23 Exceeded Allowed Leakage
O-05-3428, Exciter Warning Statalarm Locked in for KHU-1

Operations Department Related PIPs
O-03-8268, Unplanned gradual increase in reactor vessel level
O-04-7007, NOUE due to uncontrolled water level decrease in Unit 3 spent fuel pool
O-05-0001, ICS increased power while changing rate set with hold selected
O-05-0199, Unit 3 spent fuel pool temperature increase due to improper cooling alignment
O-05-1128, 3B High Pressure Injection pump motor outboard bearing vibration exceeds limits
O-05-1571, Inappropriately NA'ed steps in procedure for SSW A header isolation for testing
O-05-1844, Valve 1FDW-362 discovered closed
O-05-2361, Unplanned Technical Specification entry due to "B" outside air booster pump trip
O-05-3224, Valve 1MS-93 failed to open while performing PT/1/A/0150/020
O-05-3287, "D" Chiller inadvertently tripped

Maintenance Department Related PIPs
O-03-2828, Invalid ISI inspection on closure head nuts
O-03-6885, 2HD-149 supply signal isolated while performing work on 2FDW-17
O-04-0593, Freeze seal removed before ready

O-04-2213, Valve not terminated per the drawing
O-04-5929, ES Analog channel A DC power system trip
O-04-7176, Coating problems on unit 3 inlet/outlet waterboxes
O-04-7999, Cable separation criteria not met
O-04-8651, Hanger discrepancies
O-05-1459, Separation problem with two different color cables
O-05-2534, Cable separation issues in cabinet TB2
O-05-3062, Pipe support discrepancies

Health Physics Department Related PIPs
O-04-8873, Clean Material Shipped to ANO-1 Found to be Contaminated
O-03-4707, 3EOC20 ALARA Planned Task Exceeded Dose Estimate > 25%
O-03-5873, Type B Container Arrived Offsite With “Radioactive Yellow II” Label Missing
O-03-6495, Vacuum Cleaners Improperly Stored in Unit 1 reactor Building
O-03-6887, Floor Drain Overflowing Creating a Contamination Control Problem
O-04-1800 and 1801, ED Dose Alarm Actuation
O-03-5186, Iodine 131 Detected in Sewage Treatment Effluent
O-04-2504, Inappropriate Issues/Actions in the Auxiliary Building Change Rooms
O-05-1409, Clean Area Found to be Contaminated
O-05-2900, Improper use of HEPA Vacuum

Chemistry Department Related PIPs
O-03-4455, E-Bar Procedure Reference Notes Do Not Exist in the Enclosure
O-03-5541, Unexpected RCW Chemistry Changes Required Chemical Addition
O-04-2593, Valve Alignment for Chemical Addition to RCW Mispositioned
O-04-6035, EC Supply Pump A Bearing Oiler Empty
O-04-9197, 3HP-171 Found Not in the Correct Position
O-05-2492, Unit 3 Boron Has Not Followed Expected Trend
O-03-4395, Chemistry Procedure Contains Human Error Trap
O-03-5576, Unit 1 lithium Outside Control Limits
O-03-7327, High Turbidity Values Noted On B Diesel Generator
O-04-1243, Poor Temperature Control in Primary Chemistry Lab
O-04-2155, High Turbidity Values Noted On A Diesel Generator

Security Department Related PIPs
O-04-8225, Uncontrolled security badge in the protected area
O-04-8394, Uncontrolled visitor badge in the protected area
O-04-8459, Engineering evaluation of security equipment
O-04-8661, Adverse trend in infrared IDS devices
O-05-0106, Adverse trend in IDS performance
O-05-0444, Security trending PIP for recurring loss of hand geometry units
O-05-0705, Material allowed into the Owner Controlled Area without proper search

Operating Experience Items:
PIP O-03-4685, Westinghouse Technical Bulletin for DB-50 Breakers
PIP O-04-3714, Rotork Controls Inc. Part 21 Notification
OEDB 03-34625, CCW Pump Deadhead Issues at Beaver Valley
OEDB 03-35085, Stress Corrosion Cracking in CCW System (Sequoyah)
OEDB 03-35402, SER 6-03, Cooling Water System Debris Intrusion

OEDB 05-38930, CCW Pump Motor Bearing Degradation (Beaver valley)
OEDB 05-39175, Fisher Butterfly Valve Missing Taper Pins (SONGS)
OEDB 05-39849, Incorrect Jumper Causes Pump Trip (Indian Point 3)
OEDB 03-34353, Detrimental Effects of FME in HPI Pumps (Davis-Besse)
OEDB 03-34489, SEN 242, Loss of Grid Event (PIP O-03-5639)
OEDB 03-34679, ANO-1 Trips Due to Lightning Strike
OEDB 03-35520, Main Feedwater MOV Block Valve Failed to Close (ANO-1)
OEDB 04-35580, Topical Report TR-4-33, Loss of Shutdown Cooling Events
OEDB 05-38514, Potential for Clogged SW/EFW Valves (V. C. Summer)
NRC Information Notice 2002-22, Degraded Bearing Surfaces in GM/EMD EDGs

System Health Reports:
Standby Shutdown Facility, 2004T3 and 2005T1
Keowee Hydro Station, 2004T3 and 2005 T1
Low Pressure Service Water System, third trimester, 2004
Low Pressure Service Water System, first trimester, 2005
Emergency Feedwater System, third trimester, 2004

Self Assessment/Audit Reports
Maintenance Department Assessment of the Effectiveness of PIP Corrective Actions 11/19/03
Maintenance Department Assessment of the Effectiveness of PIP Corrective Actions 11/26/04
Duke Power Assessment Report GO-03-036
Duke Power Assessment Report GO-05-012
Safety Review Group Monthly Reports
Corrective Action Trend Reports

Maintenance Work Orders
98602461-01, Change out upper bearing 1A CC pump motor
98602461-04, Perform F/V 1A CC Motor
98649866-01, 1B Letdown Cooler CC outlet temperature erroneous
98667371-01, Remove/replace 1A CC motor
98667371-03, Test/inspect 1A CC motor
98667371-04, Perform F/V 1A CC motor
98690297-01, Replace CRD coolant 2A filters
98690297-02, F/V on 2A CRD coolant filter replacement
98712402-01, Replace CRD coolant 2B filters
98712402-02, F/V on Unit 2B CRD filters
98725266-01, Change U2 CRD filter, reading 100 mR/hr
98693762-01, U3 replace CRD coolant 3A filter
98693762-02, U3 F/V 3a CRD coolant filters
98719096-01, U3 3B CRD filter d/p at max pressure (7#)
98719096-02, U3 F/V 3B CRD coolant filters

Other Documents
Component Cooling Water Health Report
OSS-0254.00-00-1022, Design Basis Specification for the Component Cooling Water System, Rev.12
CP/0/B/2002/009, Chemical Control in the Component Cooling System, Rev. 22
OFD-144A-3.1, Flow Diagram of Component Cooling System (Supply and Return), Rev. 7

0-2733, Connection Diagram, Component Cooling System
OSS-0254.00-00-1028, Design basis specification for the LPI and Core Flood System
WO 98679712, 2LP-69 I/R full open indication
WO 98289413, Statalarm 3SA-1/D-12, “LPI Pump”
WO 98287650, Received 1B LPI pump low diff press alarm during performance test
Control Room Logs for January - February, 2005