Oconee 3
2Q/2005 Plant Inspection Findings

Initiating Events

Significance: G Sep 25, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Failure to Correct the Degraded Condition of the 525 kV Switchyard Load Center Cabinets
A self-revealing non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, was identified for a failure to correct water intrusion problems in the 525kV switchyard load centers, which resulted in the loss of the 525kV and 230kV switchyard auxiliary power supply during a period of heavy rain. The finding was considered to be more than minor because it affected the initiating events cornerstone objective by increasing the likelihood of events that upset plant stability, in that the loss of the auxiliary power to the switchyards would eventually lead to a loss of offsite power or a loss of the safety-related overhead power path from the Keowee hydroelectric units. In addition, the loss of offsite power could lead to a plant trip. In the SDP Phase 1 screening, the finding was determined to be of very low safety significance. Specifically, because the units were in the process of reducing power and would have been shut down before the switchyard batteries were actually depleted, the issue did not increase both the likelihood of a reactor trip and the likelihood that mitigation equipment (Keowee overhead path) would be lost. This finding has cross-cutting aspects related to PI&R (Section 1R12b.(2)).
Inspection Report# : 2004004*(pdf)*

Mitigating Systems

Significance: G Dec 31, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Incorrect Wiring of the SSF Submersible Pump Motor Leads
A self-revealing non-cited violation of 10 CFR 50, Appendix B, Criterion XI, Test Control, was identified for the failure to establish and perform adequate testing to ensure that the standby shutdown facility (SSF) submersible pump would operate correctly to provide SSF equipment with a makeup source of water to the Unit 2 condenser circulating water (CCW) header when called upon. Specifically, the licensee's test program had failed to reveal that the pump's power leads had been reversed since November 19, 1992, despite the performance of twelve surveillances between November 19, 1992, and February 3, 2004. Failure to maintain the SSF submersible pump in a ready to operate condition was considered to be more than minor, in that, its incorrectly wired motor leads directly affected the cornerstone objective to ensure equipment reliability of a mitigating system (i.e., the SSF). A Phase 3 risk analysis determined that this issue was of very low risk significance. This was based primarily on the availability of an alternate source of water inventory to fill the Unit 2 CCW header (i.e.,via reverse, gravity supplied CCW flow from Lake Keowee through the unit's condensate coolers). (Section 4OA5.8)
Inspection Report# : 2004005*(pdf)*

Significance: G Sep 25, 2004
Identified By: Self Disclosing
Item Type: FIN Finding
Inadequate Maintenance and Oversight of the 5C Lee Combustion Turbine
A self-revealing finding was identified for the inadequate maintenance and oversight of the 5C Lee Combustion Turbine (LCT), which resulted in a condition that caused the turbine to trip off-line while being relied upon as the standby source of emergency power during the Keowee dual unit outage. The finding was considered to be more than minor because it affected the mitigating systems cornerstone objectives for ensuring availability, reliability and capability of systems that are in place to respond to initiating events, in that the 5C LCT was being operated as the standby source of emergency power during the initial Keowee dual unit outage when it failed. The issue was determined to be of very low safety significance based on the Phase 1 SDP screening results that the finding "did not" represent a loss of safety function of a non-Technical Specification train of equipment designated as risk significant, in that the 6C LCT and dedicated power path from Lee Station to Oconee remained operable and in service (Section 1R12b.(1)).
Inspection Report# : 2004004*(pdf)*

Significance: G Sep 25, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation

Improperly Fabricated Connecting Rod in Keowee Output Breaker ACB-2
A self-revealing non-cited violation of 10 CFR 50 Appendix B, Criterion VIII, was identified for inadequate control of materials, parts, and components associated with an improperly fabricated connecting rod in Keowee hydroelectric unit (KHU) -2 output breaker ACB-2. This resulted in the connecting rod pulling apart and KHU-2 failing to load on July 29, 2004. The finding was considered to be more than minor because it affected the mitigating systems cornerstone objectives for ensuring availability, reliability and capability of systems that are in place to respond to events, in that following the rod failure in ACB-2, the Keowee overhead emergency power path became inoperable. Although the finding represented an actual loss of the safety function of a single train, it was determined to be of very low safety significance because it did not exceed the allowed Technical Specification outage time (Section 4OA2.2b.(2)).
Inspection Report# : 2004004*(pdf)*

Significance: N/A Aug 13, 2004
Identified By: NRC
Item Type: FIN Finding
95002 Supplemental Inspection: HPI Cable Connector and SSF Pressurizer Heaters
This supplemental inspection was performed by the NRC to assess the licensee's problem identification, root cause evaluation, extent of condition determination, and corrective actions associated with two White findings. The two findings, which were in the Mitigating Systems Cornerstone, placed the performance of Oconee Unit 3 in the Degraded Cornerstone Column of the NRC's Action Matrix for the third quarter 2003. The first White finding involved the inadequate installation of electrical connectors on the Unit 3 high pressure injection (HPI) pump emergency power supply cable from the auxiliary service water (ASW) switchgear. This finding was evaluated and closed in Supplemental Inspection Report 05000269,270,287/2003008. The second White finding involved pressurizer ambient heat losses in all three Oconee units exceeding the capacity of the pressurizer heaters powered from the standby shutdown facility (SSF). The performance issues associated with these two findings were previously characterized as having low to moderate risk significance (White) in NRC "Final Significance Determination" letters dated February 7, 2003, and December 30, 2003, respectively.

During the supplemental inspection, which was performed in accordance with Inspection Procedure 95002, the inspectors utilized the results from Supplemental Inspection Report 05000269,270,287/2003008 to address the White HPI pump cable connector finding. The combined assessment of the two White findings that resulted in the Degraded Mitigating Systems Cornerstone is summarized below.

As indicated in Supplemental Inspection Report 05000269,270,287/2003008, the licensee's formal root cause analysis for the White HPI pump cable connector finding was acceptable. However, the extent of condition review performed for the completed root cause evaluation was incomplete. Specifically, the licensee did not identify additional applications of the subject 151LR Elastimold connectors at the other (switchgear) end of Unit 3 HPI pump motor emergency power supply cable. Excluding this omission, the licensee implemented adequate corrective actions to prevent recurrence based upon their root cause analysis. The omitted connector issue was subsequently inspected and found to be acceptable. Based on these inspection results, the White HPI pump cable connector finding (including associated violation 05000287/ 2003007-01) was closed.

The licensee initially performed a Level II assessment of the SSF pressurizer heater issue as permitted via management discretion under Nuclear System Directive (NSD) 208, Problem Investigation Process. This Level II assessment was considered by the inspectors to be reasonably independent, thorough, and consistent with the prescribed charter. However, the inspectors noted that the licensee had not performed a root cause and extent of condition review of the potential broader implications of the Level II assessment finding relative to the inadequate design control measures evidenced through the events surrounding inadequate pressurizer heater calculation OSC-3144. Additionally, the licensee's commonality review to address the Degraded Mitigating Systems Cornerstone did not possess the attributes of an extent of condition and cause evaluation. These observations resulted in a postponement of the 95002 supplemental inspection at the licensee's request.

Subsequently, the licensee identified more comprehensive extent of condition related actions through the addition of: a design bases document (DBD) test matrix development and review plan; an in-process calculation assessment and review effort; and a completed assessment of long-term and/or unexplained conditions. During the 95002 supplemental inspection, the licensee acknowledged the inspectors' independent extent of condition assessment results and added another extent of condition related corrective action to perform a detailed DBD Test Acceptance Criteria drawing (TAC) review and development effort. These additional extent of condition and cause related corrective actions, along with those previously addressed in Supplemental Inspection Report 05000269,270,287/2003008, were considered to be appropriately focused based on the inspectors' independent extent of condition review.

Although corrective actions appeared to be appropriately prioritized and tracked, the inspectors questioned the scheduled completion end date of December 2006 for the licensee's detailed review of 46 QA-1 risk significant calculations. These calculations, like inadequate pressurizer heater calculation OSC-3144, were apparently screened out and not reviewed under the 1998 Enforcement related (EA 98-268) "Calculation Enhancement Project". Consequently, the scheduled calculation review end date did not seem reasonable. The licensee subsequently developed an additional corrective action to implement and complete an expert panel "input/methodology" screening review of the 46 calculations by November 30, 2004. Overall, corrective actions related to the White SSF pressurizer heater finding adequately addressed compliance restoration and the identified apparent cause and causal factors; this determination of adequacy was made in conjunction with the findings in Special Inspection Report 05000269,270,287/2002008 and those subsequently added "extent of condition" related corrective actions mentioned above. Accordingly, the White SSF pressurizer heater finding (including associated violation 05000269,270,287/2003012-01 and licensee event report 50-269/2002-001) is considered closed.

The following items were assessed as being indicative of a lack of thoroughness in the licensee's corrective action process for the White findings and the Degraded Mitigating Systems Cornerstone: (1) the initial inadequate extent of condition review for the White HPI pump cable connector finding; (2) the lack of an appropriate extent of condition and cause review for the White SSF pressurizer heater finding and the

Degraded Mitigating Systems Cornerstone; (3) the initial lack of a combined risk analysis for the two White findings; (4) the failure to properly evaluate and establish timely corrective actions to the 2002/03 Calculation Enhancement Project self-assessment; and (5) the failure to establish a means to determine corrective action effectiveness prior to the 95002 supplemental inspection.
Inspection Report# : 2004011*(pdf)*

Significance: W Jul 20, 2004
Identified By: NRC
Item Type: VIO Violation
Failure to Meet Licensing Basis for Staffing the SSF in the Event of a Confirmed Fire
A violation was identified for failure to comply with 10 CFR 50, Appendix R, Sections III.L.2.b and III.L.3, in that, for a severe fire in areas requiring the manning of the Standby Shutdown Facility (SSF) and activation of the SSF makeup pump, the licensees' method for implementing their alternative shutdown capability did not ensure that the reactor coolant makeup function would be capable of maintaining the reactor coolant level within the level indication of the pressurizer.
Inspection Report# : 2004013*(pdf)*
Inspection Report# : 2005006*(pdf)*

Significance: N/A Jan 23, 2004
Identified By: NRC
Item Type: VIO Violation
Failure to Obtain Prior NRC Approval to a Change to the Facility Involving Unreviewed Safety Questions on High Energy Line Break Analysis
The inspectors identified an apparent violation of 10 CFR 50.59 (a)(1) (1999 version of 10 CFR) which states, in part, that the licensee may make changes in the facility as described in the safety analysis report without prior Commission approval, provided the proposed change does not involve an unreviewed safety question (USQ). 10 CFR 50.59 (a)(2) states, in part, that a proposed change involves an USQ if the probability of occurrence or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased, or if it may create an accident different from any previously evaluated.

On May 17, 2001, the licensee made a change to the facility, as described in the Updated Final Safety Analysis Report, Section 3.6.1.3, associated with the High Energy Line Break (HELB) analysis, which involved unreviewed safety questions, and failed to obtain prior NRC approval. The UFSAR Section was changed to increase the maximum initiation time following HELB of Emergency Feedwater from 15 to 30 minutes and of High Pressure Injection from 1 hour to 8 hours (based on referenced reports and analysis). The analysis discussed an increased cycling of pressurizer Safety Relief Valves on steam and water, boiler condenser mode of decay heat removal, and an unapproved computer code for application to HELB, but failed to recognize that such changes may increase the probability of occurrence or the consequences of a malfunction of equipment important to safety or may create an accident different from any previously evaluated. In addition, the change resulted in more than a minimal increase in risk.

Based on the results of the inspection, a pre-decisional enforcement conference was held on March 2, 2004, in the NRC's Region II Office in Atlanta, Georgia, with the licensee staff to discuss the apparent violation, its significance, root causes, and corrective actions. Based on the information developed during the inspection, and the information presented at the conference, the NRC determined that a violation of NRC requirements occurred. On April 8, 2004, the NRC issued a Notice of Violation (NOV) and proposed imposition of a $60,000 Civil Penalty (ADAMS accession number ML040990355). The violation involves a failure to adhere to the requirements of 10 CFR 50.59, in that Duke Energy Corporation made changes to the Oconee facility as described in Section 3.6.1.3 of the UFSAR and referenced analyses that involved unreviewed safety questions (USQs) without obtaining prior NRC approval.
Inspection Report# : 2004005*(pdf)*
Inspection Report# : 2004007*(pdf)*
Inspection Report# : 2005002*(pdf)*

Barrier Integrity

Significance: G Mar 31, 2005
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Inadequate Corrective Actions Following 3B RBCU Fan Failure Results in 2A RBCU Fan Failure
A self-revealing, non-cited violation of 10 CFR 50 Appendix B, Criterion XVI, Corrective Action, was identified for inadequate corrective actions following the 3B reactor building cooling unit (RBCU) fan blade failure, which led to the failure of a 2A RBCU fan blade. The finding was considered to be more than minor because it affected the barrier integrity cornerstone attribute of maintaining containment functionality, in that the failure to fully identify and correct the causes of the 3B RBCU fan blade failure resulted in a 2A RBCU fan blade failure less than eight months later. However, during an event requiring control of the containment environment with one RBCU inoperable, the two remaining RBCUs and two trains of reactor building spray would have been available to mitigate the consequences of the event; consequently, the finding was determined to be of very low safety significance using the SDP Phase 1 analysis. This finding also involved the cross-cutting aspect of problem identification and resolution. (Section 4OA2.2)

Inspection Report# : 2005002*(pdf)*

Significance: G Dec 31, 2004
Identified By: Self Disclosing
Item Type: NCV NonCited Violation
Inadequate SFP Makeup Procedure Results in the Inadvertent Draining of Approximately 10,000 Gallons of Water from the Unit 3 SFP and the Declaration of a NOUE
A self-revealing non-cited violation of Technical Specification 5.4.1, Procedures, was identified for an inadequate Unit 3 spent fuel pool (SFP) makeup procedure, which resulted in the inadvertent draining of approximately 10,000 gallons of spent fuel pool inventory to the unit's borated water storage tank (BWST) and the declaration of a Notice of Unusual Event (NOUE). The finding was considered to be more than minor, because if left uncorrected, the inadvertent drain down of the SFP could have rendered the SFP cooling pumps inoperable. However, the inadvertent transfer of water from the SFP would have ceased when the suction of the SFP cooling pumps was uncovered, leaving approximately 20 feet of water over the top of the SFP racks to provide sufficient cooling to and shielding of the irradiated fuel assemblies in the Unit 3 SFP. Consequently, the finding was of very low safety significance. (Section 4OA3.1)
Inspection Report# : 2004005*(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Last modified : August 24, 2005