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

August 5, 2005

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

SUBJECT: OCONEE NUCLEAR STATION - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000269/2005007, 05000270/2005007, 05000287/2005007

Dear Mr. Jones:

On June 23, 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 that date, with Mr. L. Nicholson and other members of your staff.

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

Based on the results of this inspection, no findings of significance were identified.

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/

D. Charles Payne, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure: NRC Inspection Report 05000269/2005007, 05000270/2005007, 05000287/2005007 w/Attachment: Supplemental Information

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Previous concurrence applies.

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U. S. NUCLEAR REGULATORY COMMISSION

Enclosure

REGION II

Docket Nos.:	50-269, 50-270 and 50-287
License Nos.:	DPR-38, DPR-47 and DPR-55
Report Nos.:	50-269/2005007, 50-270/2005007, 50-287/2005007
Licensee:	Duke Energy Corporation.
Facility:	Oconee Nuclear Station, Units 1, 2 and 3
Location:	7800 Rochester Highway Seneca, SC 29672
Dates:	June 6 - 10, 2005 (Week 1) June 20 - 23, 2005 (Week 2)
Inspectors:	P. Fillion, Senior Reactor Inspector (Lead Inspector) E. Lea, Senior Operations Engineer G. Wiseman, Senior Reactor Inspector
Accompanying Personnel:	C. Payne, Chief, Engineering Branch 2 (Week 2) R. Dipert, Fire Protection Engineer, NRC Headquarters (Week 1) G. Cameron, Co-op Student (Week 1)
Approved by:	D. Charles Payne, Chief Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000269/2005007, 05000270/2005007, 05000287/2005007; 06/6-10/2005 and 06/20-23/2005; Oconee Nuclear Station Units 1, 2 & 3; Fire Protection.

This report covers an announced two-week period of inspection by three regional inspectors. 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.

A. NRC-Identified and Self-Revealing Findings

None

B. Licensee-Identified Violations

None

Enclosure

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection

The purpose of this inspection was to review the Oconee Nuclear Station fire protection program (FPP) for selected risk-significant fire areas. Emphasis was placed on verification that procedures, including local manual operator actions, for post-fire safe shutdown (SSD) and the fire protection features provided for the selected areas met the requirements.

The inspection was performed in accordance with Inspection Procedure (IP) 71111.05T, Fire Protection (Triennial), dated 02/18/05, as modified for a plant in transition to National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition. The inspection was also performed in accordance with the U. S. Nuclear Regulatory Commission's (NRC) Reactor Oversight Process, using a risk-informed approach for selecting the fire areas and attributes to be inspected. The selection of risk-significant fire areas to be evaluated during this inspection considered the licensee's Individual Plant Examination for External Events, information contained in FPP documents, results of prior NRC triennial inspections, and observations noted during in-plant tours. The fire areas chosen for review during this inspection were:

- Unit 2 turbine building / Fire Zones 10 through 18 (including 17A), 30 through 33, 33A, 37, 40 and 41. This was designated as an area where fires could result in shutdown from the standby shutdown facility (SSF).

- Unit 2 equipment room / Fire Zone 92. This was designated as an area where fires could result in shutdown from the SSF.

- Unit 2 west penetration room / Fire Zone 102. This was designated as an area where post-fire shutdown would be from the main control room.

For each of the selected fire areas, the team evaluated the licensee's FPP against applicable requirements including 10 CFR 50.48 and 10 CFR 50, Appendix R; commitments to Appendix A of Branch Technical Position Auxiliary and Power Conversion Systems Branch (APCSB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants;" NFPA codes and related NRC Safety Evaluation Reports (SERs). The team also reviewed the licensee's Engineering Support Program for Fire Protection and their Design Basis Specification for Fire Protection. The specific documents reviewed are listed in the Attachment.

.01 Fire Protection of Safe Shutdown Capability

a. Inspection Scope

For the selected fire areas/zones, the team evaluated the potential for fires, the combustible fire load characteristics, and the potential exposure fire severity. The team reviewed combustible/chemical inventory reports, plant smoking policy, and selected portions of the FPP documents that establish and implement controls and practices to prevent fires and to control the storage of permanent and transient combustible materials and ignition sources. These reviews were conducted to assess the effectiveness of the fire prevention program and to identify any maintenance or material condition problems related to fire incidents. The documents reviewed are listed in the Attachment.

The team walked down the selected plant fire areas/zones to observe: (1) the material condition of fire protection systems and equipment; (2) the storage of permanent and transient combustible materials; and (3) the licensee's implementation of the programmatic procedures for limiting fire hazards, combustible waste collection, housekeeping practices, and cleanliness conditions. These reviews were accomplished to ensure that the licensee was maintaining the fire protection systems, had properly evaluated in-situ combustible fire loads, controlled hot-work activities, and limited transient fire hazards consistent with the updated final safety analysis report (UFSAR), administrative procedures, and other FPP procedures.

The team reviewed operations rounds procedures, ventilation drawings, selected licensee commitments (SLCs) and hydrogen concentration build-up calculations for the Units 1 & 2 power battery room (Fire Zone 33A). This review was conducted to verify whether sufficient actions were specified that would ensure that hydrogen gas concentrations generated by the batteries would be maintained below explosive limits following a loss of battery room ventilation and if the licensee's commitments, as established in the fire protection licensing basis documents, were satisfied.

The team reviewed criteria in the licensee's engineering department standards and design control procedures to verify that plant changes were adequately reviewed for the potential impact on the FPP. The team performed an independent technical review of the licensee's plant change documentation completed to support a modification project to shut high pressure service water (HPSW) valves HPSW-20 and HPSW-21 to mitigate auxiliary building flooding concerns. The team assessed whether the modification was performed consistent with plant design control procedures and the FPP.

b. Findings

No findings of significance were identified.

.02 Passive Fire Protection - Fire Barriers and Fire Area/Zone/Room Penetration Seals

a. Inspection Scope

The team reviewed the selected fire areas/zones to evaluate the adequacy of the fire resistance of fire barrier enclosure walls, ceilings, floors, fire barrier mechanical and electrical penetration seals, fire doors, and fire dampers in accordance with the requirements of 10 CFR 50 Appendix R, Section III.G.2, and Appendix A of BTP APCSB 9.5-1. The review was performed to ensure that at least one train of safe shutdown equipment was free of fire damage. This was accomplished by observing the material condition and configuration of the installed fire barrier features, as well as reviewing construction detail drawings, engineering evaluations and fire endurance tests for the installed fire barrier features. The team evaluated whether the as-built configurations met design requirements, license commitments, standard industry practices and were either properly evaluated or qualified by appropriate fire endurance tests. In addition, the team reviewed a summary of surveillance and maintenance procedures for the selected passive fire barrier features to verify these were properly inspected, maintained, and met the licensing and design bases as described in the licensee submittals, NRC SERs, and the UFSAR. The fire protection features included in the review are listed in the Attachment.

b. Findings

No findings of significance were identified.

.03 Active Fire Protection

a. Inspection Scope

For the selected fire areas/zones, the team reviewed the adequacy of the design, installation, and operation of the automatic detection and alarm system to actuate in the early stage of a fire. This included walkdowns of the systems and examination of the types of installed detectors, as shown per location drawings, to assess whether the areas were protected by fire detectors in accordance with the design requirements of Appendix A of BTP APCSB 9.5-1 and the NFPA Code of Record (COR). The team also reviewed the licensee's fire protection program submittals and associated NRC SERs for the selected fire areas/zones to ensure that the fire detection systems for the selected zones were installed in accordance with the design and licensing bases of the plant. Additionally, the team reviewed completed fire detection surveillance procedures to verify that the system detectors were properly inspected, maintained, and met the licensing and design bases as described in the licensee submittals, NRC SERs and the UFSAR, and to ensure that the detection systems would function as required.

The team reviewed the adequacy of the design and installation of the fixed manually activated sprinkler fire suppression system for the Unit 2 equipment room (fire zone 92). The team reviewed the design and installation specifications, installation drawings,

hydraulic calculations, surveillance procedures and NFPA 13, “Standard for the Installation of Sprinkler Systems” (1978 Edition), to ensure the fire suppression system met the design and licensing basis as described in the licensee submittals, NRC SERs and the UFSAR, and that the system could perform its intended function in the event of a fire within the room enclosure.

The team reviewed the manual portable extinguishers and suppression standpipe and fire hose systems to verify adequate design, and installation in the selected fire areas/zones. During plant tours, team members observed interior fire hose nozzle types and the placement of the fire hose stations and extinguishers to verify they were not blocked and were consistent with the fire fighting plans and FPP documents. The team also examined design calculations, fire hose nozzle tests, engineering evaluations, and flow measurement/pressure test data to verify that sufficient pressure and flow volume was available to produce electrically safe and effective fire hose operation within the nozzle manufacturer’s specified flow range. Additionally, the team checked a sample of fire hose lengths to confirm they could reach potential fire affected equipment and components within the selected fire areas/zones in support of manual fire brigade fire fighting efforts.

The team reviewed flow diagrams, design basis specifications, cable routing information, system operating instructions, operational valve lineup procedures, and the fire vulnerability study for the HPSW fire service pumps and fire protection water supply system. Using operating and valve alignment procedures, the team members toured selected HPSW fire pumps and portions of the fire main piping system to evaluate material condition, consistency of as-built configurations with engineering drawings, and to verify correct system valve lineups. The team evaluated the common HPSW fire protection water delivery and supply components [including HPSW motor operated valves (MOVs)] to assess if they could be damaged or inhibited by fire-induced failures of electrical power supplies or control circuits. In addition, the team reviewed completed periodic surveillance and operability flow test data for the HPSW fire pumps and fire mains to assess whether the test program was sufficient to validate proper operation of the fire protection water supply system in accordance with those design requirements and acceptance criteria specified in SLC 16.9.1, “Fire Suppression Water Supply Systems.”

The team reviewed flow diagrams, hydraulic calculations, and plant modification documentation to assess the adequacy of the HPSW system to meet fire protection water demand for the selected fire areas. The team evaluated the capability of the HPSW pumps to fulfill their fire protection function by providing adequate flow and pressure to hose stations and manual and automatic suppression systems while maintaining seal cooling required by the dual functionality of the system. The team also assessed the operability of an elevated water storage tank associated with the system.

The team reviewed operator and fire brigade staffing, fire brigade standard operating guides (SOGs), continuing qualification course training materials, and fire drill program procedures to verify appropriate training was being conducted for the station firefighting

personnel. Additionally, the team reviewed post-drill records of fire drills performed in the previous two-year period to evaluate the effectiveness of fire brigade response to simulated fire emergencies and to ensure that drills were being conducted in risk significant areas. The team inspected the fire emergency equipment storage locker locations and dress-out areas containing fire brigade protective ensembles, self-contained breathing apparatuses (SCBAs), smoke control equipment, and other fire brigade equipment to determine operational readiness for fire fighting. This review also included examination of whether electrical fire brigade equipment utilized in support of fire brigade operations, such as smoke ejectors and SCBA breathing air bottle refill equipment, would not be adversely affected by a fire.

The team reviewed the fire plan strategies for the selected fire areas/zones and fire response procedures to determine if appropriate information was provided to fire brigade members to identify potential effects to plant and personnel safety, and to facilitate suppression of an exposure fire that could impact SSD capability. The team walked down the selected fire areas/zones to compare the associated fire plan drawings with as-built plant conditions and fire response procedures. This was done to verify that fire fighting plans and drawings were consistent with the fire protection features and potential fire conditions described in OSS-0254.00-00-4008," Design Basis Specification for Fire Protection." The team evaluated whether the fire response procedures and fire plans for the selected fire areas/zones could be implemented as intended. In addition, the team assessed the adequacy of the off-site fire fighting assistance including entry into the plant area, communications, dosimetry and fire equipment usage.

b. Findings

No findings of significance were identified.

.04 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and in-plant walkdowns to evaluate the potential for damage to safe shutdown equipment from fire suppression activities. In this effort, the team observed material condition of concrete floors, floor drain systems, and the physical configuration of equipment and components in the selected fire areas/zones. Fire suppression system rupture, fire fighting activities, manual fire suppression system leakage were considered.

b. Findings

No findings of significance were identified.

.05 Alternative Shutdown Capability

a. Inspection Scope

The team reviewed documentation and interviewed licensee personnel to determine if the licensee's alternative shutdown methodology adequately identified the components and systems necessary to achieve and maintain safe shutdown conditions for fires in the areas/zones selected for review. The team reviewed the licensee's SSA and shutdown procedures. The team performed walkdowns of the selected fire areas/zones, using the procedures identified, to determine if a unit shutdown could be achieved.

The team assessed the licensee's ability to safely shut down the plant following a fire in using the SSF. The surveillance testing program associated with SSF equipment was inspected. The team verified that the licensee provided training to licensed and non-licensed personnel on the methods used to shut down the plant from the SSF. In addition, the team assessed the overall effectiveness of the licensee's training program. The team interviewed training and operations personnel, reviewed lesson plans, job performance measures (JPMs), plant procedures, and training records for licensed and non-licensed operators. The team verified that: (1) procedures were available for immediate use; (2) operators could reasonably be expected to perform the procedures including local manual operator actions within applicable shutdown time requirements; and (3) the training program for operators included local manual operator actions relied on for safe shut down.

b. Findings

No findings of significance were identified.

.06 Communications for Performance of Fire Fighting Capability and Safe Shutdown

a. Inspection Scope

The team reviewed plant communication capabilities to evaluate the availability of the communication systems required to implement fire event notification and fire brigade fire fighting activities. The team verified the radio battery usage ratings for the fire brigade radios stored and maintained on charging stations. The team reviewed selected fire brigade drill critique reports to assess proper operation and effectiveness of the fire brigade command post portable radio communications during fire drills and to identify any history of operational or performance problems with radio communications during fire drills.

The team reviewed documentation, interviewed licensee personnel and walked down plant areas as appropriate to determine if the licensee's communication system was adequate to support plant personnel during the performance of shutdown duties following a fire in the selected areas. The team checked whether portable radios, sound powered phones, plant telephones, and Gaitronics phones, which are used as a means of communication during post-fire events, were being properly maintained.

During walk downs of post-fire response procedures, the team members checked the availability of communication equipment at the SSF and at locations where operators performing local manual operator actions would need to communicate with the SSF operator. The team reviewed work orders and equipment surveillance records to assess whether the surveillance test program for the communication equipment was sufficient to ensure proper operation during a fire.

b. Findings

No findings of significance were identified.

.07 Emergency Lighting for Performance of Fire Fighting Capability and Safe Shutdown

a. Inspection Scope

The team walked down selected plant areas to observe if emergency exit lighting was provided for personnel evacuation pathways to the outside exits as identified in the NFPA 101, "Life Safety Code", and the Occupational Safety and Health Administration (OSHA) Part 1910, "Occupational Safety and Health Standards." This effort included an examination of whether backup emergency lighting was provided for the primary and secondary fire emergency equipment storage locker locations and dress-out areas in support of fire brigade operations in the event power should fail during a fire emergency.

The team reviewed plant drawings to verify that the licensee had identified the location of emergency lighting that would be available in the event of a fire in the selected areas. The team performed walkdowns of the selected fire areas to verify that lighting was provided as specified on plant drawings and that the lighting would provide sufficient illumination to permit personnel access to components required for monitoring of safe shutdown indications and/or operation of equipment needed to achieve a unit shutdown following a fire. The team reviewed surveillance procedures, maintenance procedures and records to determine if the emergency lighting is properly tested and maintained.

b. Findings

No findings of significance were identified.

.08 Cold Shutdown Repairs

a. Inspection Scope

The team inspected the equipment that was set aside in a warehouse for cold shutdown repairs to verify that the material was available, clearly marked and in good condition. This equipment included switchgear on a trailer, cable and motors. Selected plant areas and equipment where important repairs would be carried out were inspected to determine whether the planned repairs were feasible. This included the high-voltage power transformer in the underground flow path for power from the Keowee hydro unit.

The team reviewed documentation and interviewed licensee personnel to determine if the licensee had identified procedures needed to ensure potentially damaged plant equipment would be repaired within 72 hours, as required by 10 CFR 50, Appendix R, Section III.G. The team checked that materials and equipment required to complete cold shutdown repairs were appropriately labeled, maintained in good condition, and in sufficient quantity to successfully accomplish all required repairs. The team also evaluated the estimated manpower and the time required to perform post fire repairs for reasonableness.

b. Findings

No findings of significance were identified.

.09 Compensatory Measures

a. Inspection Scope

The team reviewed the administrative controls for out-of-service, degraded and inoperable fire protection features. The team reviewed a sample of active items on the fire protection status reports and compared them with the fire areas/zones selected for inspection. The compensatory measures that had been established in these areas were compared to those specified in the applicable fire protection SLC to verify that the risk associated with removing fire protection from service was properly assessed and adequate compensatory measures were implemented in accordance with the approved fire protection program. Additionally, the team reviewed the adequacy of the licensee's short term compensatory measures to compensate for a degraded function or feature until appropriate corrective actions were taken.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

a. Inspection Scope

Corrective action program (CAP) problem investigation process (PIP) documents resulting from fire, smoke, sparks, arcing, and equipment overheating incidents for the previous two-year period were reviewed, as well as selected fire brigade response, emergency/incident, and fire safety inspection reports. This review was conducted to assess the frequency of fire incidents, the effectiveness of the fire prevention program and to identify any maintenance or material condition problems related to fire incidents.

The team also reviewed other CAP documents, including completed corrective actions documented in selected PIPs and operating experience program (OEP) documents, to ascertain whether industry-identified fire protection problems actually or potentially affecting Oconee were appropriately entered into, and resolved by, the corrective action program process. Items included in the OEP effectiveness review were NRC Information Notices, industry or vendor-generated reports of defects and noncompliances under 10 CFR Part 21, and vendor information letters. In addition, the team reviewed the issues and corrective actions for an LER and associated PIP which reported problems in the fire protection area. The team evaluated the effectiveness of the corrective actions for the identified issues. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA3 Event Followup

(Discussed) LER 05000269/2003-001-00: Design Oversight Results in Appendix R Control Cable Separation Issue

An NRC identified violation of 10 CFR 50, Appendix R, Section III.G.3, was identified for failure to protect a cable important to achieving safe shutdown conditions from the SSF during a fire in the turbine building. For severe fires in the turbine building, plant operators rely on the capabilities of the SSF to achieve and maintain safe shutdown. As such, the systems and cabling for SSF operation should be independent of the turbine building.

While performing an engineering evaluation on June 4, 2003, the licensee identified a cable important to safe shutdown capability was routed in the turbine building for several hundred feet along the turbine building/auxiliary building wall. The subject cable was a 37-conductor control cable, and among the circuits in this cable were controls for valves which could have an impact on safe shutdown capability. These valves could be controlled from either the main control room or the SSF depending on the position of an isolation/transfer switch. The isolation/transfer switch effects a change that makes the SSF independent of plant areas which rely on the SSF for safe shutdown. During a fire, the switch must be operated in a timely manner in order to prevent spurious valve operations from occurring. The licensee also identified that the subject cable was routed in an area which does not have fire detection. Based on these determinations, the licensee could not ensure that the switch would be operated in a timely manner.

Two scenarios of interest were identified from the licensee's analysis of the valves that could spuriously operate. In one, the pressurizer power operated relief valve (PORV) block valve spuriously opens, the PORV opens due to an assumed loss of feedwater, the PORV then sticks open and the high pressure injection (HPI) pumps fail.

In the second scenario, a letdown isolation valve spuriously opens, the backup isolation valve fails to close either automatically or manually (not related to fire damage) and the HPI pumps fail. The HPI pumps could fail due to a large fire in the turbine building but not as a result of failure of the 37-conductor cable mentioned above. Either of these two scenarios would result in inadequate RCS makeup during the shutdown evolution.

Once a system analysis confirmed the noncompliance existed, the licensee took prompt compensatory action by posting fire watches and documented the issue in the CAP as PIP O-03-3708. Implementation of these fire watches was confirmed by the inspection team.

This cable routing problem is a performance deficiency because a proper safe shutdown analysis should have identified the circuit vulnerability, the lack of independence of the SSF and the failure to meet 10 CFR 50, Appendix R, Section III.G.3 requirements. Operating License Condition 3.E, "Fire Protection," states that Duke Power Company shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility and as approved in the listed SERs. The SER dated April 1983 states, in part, that Oconee committed to comply with 10 CFR 50, Appendix R, Section III.G.3, which allows for alternative shutdown capability independent of the area under consideration.

The performance deficiency is more than minor because it is associated with the mitigating systems attribute of protection against external events (fire) and affects the mitigating systems objective of ensuring the capability of systems that respond to external events to prevent undesirable consequences. In this case, the undesirable consequence would be loss of the pressurizer level control function. The team performed sufficient analysis to determine the finding was less than high safety significance (Red).

Pursuant to the Commission's Enforcement Policy and NRC Manual Chapter 0305, under certain conditions fire protection findings at nuclear power plants that transition their licensing bases to 10 CFR 50.48(c) are eligible for enforcement and reactor oversight process discretion. On February 28, 2005, the licensee submitted a letter stating its intent to transition to 10 CFR 50.48(c). The final resolution for this noncompliance will be developed and implemented as part of the licensee's transition program. This LER will be reevaluated for closure as part of the transition process.

4OA6 Meetings, Including Exit

On June 23, 2005, the lead inspector presented the inspection results to Mr. L Nicholson and other members of his staff. Proprietary information is not included in this report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel:

H. Barrett, Senior Engineer, Design Basis Group
D. Baxter, Engineering Manager
P. Boulden, Engineer, Design Basis Group
S. Capps, Manager Mechanical/Civil Engineering
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D. Coyle, Manager, Operations Support
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D. Henneke, Nuclear Systems Risk Analyst
A. Hollingsworth, Operations Engineer
H. Lefkowitz, Engineer - Appendix R /Fire Protection Engineer
L. Nicholson, Manager, Nuclear Safety Assurance
J. Oldham, Fire Protection Engineer, Duke Corporate Office
J. Weast, Engineer, Regulatory Compliance
A. Wells, Supervisor Civil Engineering

NRC Personnel:

A. Hutto, Resident Inspector
E. Riggs, Resident Inspector
M. Shannon, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

NONE

Closed

NONE

Discussed

05000269/2003-001-00	LER	Design Oversight Results in Appendix R Control Cable Separation Issue (4OA3)

Attachment

SECTION 1R05.02 LIST OF FIRE BARRIER FEATURES INSPECTED IN RELATION TO SAFE SHUTDOWN SEPARATION REQUIREMENTS

Floors/Walls/Ceilings	Description
Concrete Block Wall	Fire Zone 33 to Fire Zone 92

Fire Dampers	Description
VS-DA-FD03	Fire Zone 92 to Fire Zone 95
VS-DA-FD04	Fire Zone 92 to Fire Zone 95
VS-DA-FD14	Fire Zone 92 to Fire Zone 105

Fire Doors	Description
310	Fire Zone 33 to Fire Zone 92
311	Fire Zone 33 to Fire Zone 92
312A	Fire Zone 92 to Fire Zone 90
312B	Fire Zone 92 to Fire Zone 90

Fire Barrier Penetration Seals	Description
2-K-E-1	Fire Zone 33 to Fire Zone 92
2-K-F-4	Fire Zone 92 to Fire Zone 84
2-M-F-41	Fire Zone 33 to Fire Zone 92
2-T-G-6	Fire Zone 92 to Fire Zone 105
2-P-E-2	Fire Zone 102 to Fire Zone 103
2-P-E-7	Fire Zone 102 to Fire Zone 103

LIST OF DOCUMENTS REVIEWED

Procedures

Fire Brigade SOG #1, General Response Procedure, dated February 27, 1997
Fire Brigade SOG #2, Staffing Guidelines, dated February 27, 1997
Fire Brigade SOG #3, Electrical Fires, dated February 27, 1997
Fire Brigade SOG #9, Hose Selection and Use, dated November 16, 1998
Fire Brigade SOG #10, Fire Brigade Equipment Locations, dated April 24, 2003
Fire Brigade SOG #12, Purging Electrical Generator, dated December 20, 2001
MP/0/A/1705/032, Fire Protection Equipment Inspection, Revision 25
NSD 112, Fire Brigade Organization, Training, and Responsibilities, Revision 6
NSD 313, Control of Combustible and Flammable Material, Revision 4
NSD 314, Hot Work Authorization, Revision 4
NSD 316, Fire Protection Impairment and Surveillance, Revision 6
AP/0/A/1700/025 Standby Shutdown Facility Emergency Operating Procedure, Revision 31
AP/1/A/1700/008 Loss of Control Room, Revision 11
EP/1/A/1800/001 EOP IMAs and Sas, Revision 33
OP/0/A/1102/025, Cooldown Following Major Site Damage, Revision 18

OP/0/A/1107/011 G, Removal and Restoration of 6900V Switchgear When RCPs Are Required Revision 2
IP/0/B/3000/020, PM of Self-Contained Battery Packs On Emergency Lights, Revision 031

Completed Surveillance Procedures and Test Records

IP/O/B/250/005F, Fire Detection System Detector Visual Inspection and Sensitivity Test, Revision 24, completed May 4, 2005
PT/O/A/0250/005, High Pressure Service Water Pump Functional Test, Revision 31, completed June 3, 2005
PT/O/A/0250/025, HPSW Pump and Fire Protection Flow Test, Revision 43, completed March 2, 2005
PT/1/A/0600/024, Revision 010, SSF Valve Control Transfer Verification, Date Performed, May 3 & 4, 2005
RP/0/B/1000/022, Revision 9, Procedure For Major Site Damage Assessment And Repair, Revision 9
OP/0/A/1102/024, Revision 027, Plant Assessment and Alignment Following Major Site Damage

Calculations, Evaluations, and Specifications

Combustible/Chemical Inventory Database Reports for Turbine and Auxiliary Building, dated June 7, 2005
DPC 1435.00-00-0006, Calculation for Fire Protection Penetration Seals, E-2, E-3, and E-14, Revision 2
Evaluation of Fire Hose Nozzles, dated September 16, 1998
Evaluation of Fire Barrier Doors Without Underwriters Laboratories Labels - Equipment Room/Auxiliary Building Corridor, File OS-72, dated March 11,1987
Evaluation of Fire Barrier Penetration Seals in the Double Walls Between the Turbine Building and Equipment Room/Auxiliary Building, dated May 27,1999
Oconee Nuclear Site, HPSW Pump Fire Vulnerability Evaluation, provided 6/23/2005
OSC-7435, Calculation for Hydrogen Gas Generation in the Station Battery Rooms, dated 8/15/02
OSC-7860, Hydraulic Calculation for the Unit 2 Equipment Room Fire Suppression System, dated 1/19/04
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OSS-0254.00-00-1002, Design Basis Specification for the High Pressure Service Water System, Revision 15
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Drawings

OFD-124C-Series, Flow Diagram of High Pressure Service Water System, Revision 28

O-310-K-08, Auxiliary Building, Unit 2, Fire Protection Plan & Fire, Flood, & Pressure Boundaries, Revision 9
O-310-L-05, Turbine Building, Unit 2, Fire Protection Plan & Fire, Flood, & Pressure Boundaries, Revision 5
O-503B, Heating, Ventilation and Air Conditioning (HVAC), Auxiliary Building, El. 796'-6", Revision 23
O-504B, Heating, Ventilation and Air Conditioning (HVAC), Auxiliary Building, El. 809'-3", Revision 9
O-518, Turbine Building Battery Rooms, Heating, Ventilation and Air Conditioning (HVAC), Duct Layout, Revision 3
O-1029-03, Architectural Door Schedule, Auxiliary Building, Revision 14
Oconee Nuclear Site, Station Fire Plan, Auxiliary Building, Fire Zone 92, Revision ½4/05
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ONOE 18169, Corrective Modification to Isolate HPSW-20 and HPSW-21 for Auxiliary Building Flooding, dated December 11, 2003

Applicable Codes and Standards

NFPA 13, Standard for the Installation of Sprinkler Systems, 1978 Edition
NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 1976 Edition
NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection, 1969 Edition
NFPA 72D, Standard for the Installation, Maintenance, and Use of Proprietary Protection Signaling Systems, 1975 Edition
NFPA 72E, Standard on Automatic Fire Detectors, 1974 Edition
NFPA 80, Standard on Fire Doors and Windows, 1983 Edition
NFPA 101, Life Safety Code, 1996 Edition
NUREG-1552, Supplement 1, Fire Barrier Penetration Seals in Nuclear Power Plants, dated January 1999
National Fire Protection Association NFPA Standard 805, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition

Technical Manuals and Vendor Information

Data Sheet for Honeywell Ionization Smoke Detector, Model TC807A, 77-4552, dated September 1990
Data Sheet Ruskin Manufacturing, FSD60-3, Fire and Leakage Rated Multiple Blade Damper, dated 7/9/1998
Tyco Fire Products, Specification for Gem Model F916 Upright Sprinkler, dated August 17, 2001

Ventilator Users Guide for SuperVac Smoke Ventilators, dated August 28, 1998
SuperVac Smoke Ventilation Training Manual for Smoke Ventilators, dated August 28, 1998
Mill Power Supply Company, Order C-79661, Specification of 3 Hour Fire Rated Hollow Metal Doors and Frames

Audits and Self Assessments

Fire Protection Program Health Report, 1st Trimester 2004/Fire Detection System Health Report, 3rd Trimester 2004

Licensing Basis Documents

Letter dated November 22, 1977 from W. Parker (Duke) to E. Case (NRC); Subject: Response to November 10, 1977 staff request for additional information regarding Oconee Fire Protection Program
Letter dated June 18, 1978 from W. Parker (Duke) to E. Case (NRC); Subject: Response to May 18, 1978, staff request for additional information regarding Conceptual Design of the Oconee Standby Shutdown Facility
Letter dated August 11, 1978 , R. Reid (NRC) to W. Parker Jr., Duke Power Company, Amendments 64 and 61 to Operating License and Fire Protection SER
Letter dated April 28, 1983, from J. Stolz (NRC) to H. Tucker (Duke) Subject: Safety Evaluation of SSF
UFSAR Chapter 7, Section 7.7.4, Communications
UFSAR Chapter 9, Section 9.5.1, Fire Protection System
UFSAR Chapter 16, Fire Protection Selected Licensee Commitments

Other Documents

American Flow Control Company, Product Alert for Certain Fire Hydrant Operating Rods with Casting Dates 1999 through 2003, dated May 2005
Everett Denning, Research and Testing Laboratory, Report V-2-760429, Cable Tray Fire Demonstration Tests, dated April 21, 1976
NSD 316, Impairment and Compensatory Measure (ICM) Log - 2005, dated June 7, 2005
NRC Information Notice 2003-08, Potential Flooding through Unsealed Concrete Floor Cracks, dated June 25, 2003
Memo to File, No. OS-100.30, Oconee Nuclear Site Fire Brigade Safety and Training, dated November 15, 1976
Oconee Nuclear Site Fire Protection Engineering Support Program Document, Revision 4
SLC 16.9.1, Fire Suppression Water Supply Systems
U. S. Consumer Product Safety Commission, Release #03-003, Recall of Siebe Actuators in Building Fire/Smoke Dampers, dated October 2, 2002
U. S. Consumer Product Safety Commission, Release #04-131, Recall of Fluke Corporation of Electrical Testing Components, dated May 3, 2004

Problem Investigation Process Reports Reviewed During This Inspection

PIP O-02-00582, Backup Battery-Powered Emergency Lighting Not Provided to Illuminate Exit Paths From Control Room to Fire Brigade Dress-Out Staging Areas
PIP O-02-00609, Questions of Procedural Guidance for Spurious Actuation of EFW and Acceptability of the Start of the 10 minute Time for Spurious Actuations
PIP O-02-00621, NFPA 101, Life Safety Code Emergency Exit Lighting Not Provided for Personnel Evacuation Pathways as Required by OSHA
PIP O-02-06047, No Water Flow Alarm Devices are Installed in the Unit 2 Equipment Room Sprinkler System

Problem Investigation Process Reports Generated as a Result of This Inspection

PIP O-05-03962, Evaluate Consequences of Spurious Closure of HPSW MOVs Due to Fire Induced Electric Failures to Support NFPA-805 Transition
PIP O-05-03987, Operations Procedure May Need Enhancement to Address Inability to Perform Steps as Written Following Control Room Evacuation
PIP O-05-04029, Fire Hose Station Configuration Control of Nozzles
PIP O-05-04125, Perform a Fire Vulnerability Analysis to Support NFPA-805 Transition on HPSW Pumps
PIP O-05-04134, Timing of Starting of HPSW pump
PIP O-05-04152, Latest Information on Smoke Ejectors Not Taught to Fire Brigade
PIP O-05-04173, Evaluate Enhancement to Fire Pre-plan Strategies for Consideration of Water Runoff and Standing Water Near Electrical Components
PIP O-05-04212, SLC 16.8.3 Does Not Define Time Limit for Hydrogen Concentration Buildup If Exhaust Fan is Out Of Service

LIST OF ACRONYMS

APCSB	Auxiliary and Power Conversion Systems Branch
BTP	Branch Technical Position
CAP	Corrective Action Program
COR	Code of Record
CFR	Code of Federal Regulations
HPSW	High Pressure Service Water
HVAC	Heating, Ventilation, and Air Conditioning
FPP	Fire Protection Program
HPI	High Pressure Injection
IPEEE	Individual Plant Examination for External Events
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
NSD	Nuclear Site Directive
OEP	Operating Experience Program
OSHA	Occupational Safety and Health Administration
PIP	Problem Investigation Process
PRA	Probabilistic Risk Assessment
SCBA	Self-Contained Breathing Apparatus
SER	Safety Evaluation Report
SLC	Selected Licensee Commitment
SOG	Standard Operating Guide
SSA	Safe Shutdown Analysis
SSD	Safe Shutdown
SSF	Standby Shutdown Facility

End