UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

March 9, 2004

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

SUBJECT: OCONEE NUCLEAR STATION - NRC TRIENNIAL FIRE PROTECTION INSPECTION (FOLLOW UP) REPORT 05000269/2004010, 05000270/2004010 AND 05000287/2004010

Dear Mr. Jones:

On February 18, 2004, 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 February 18, 2004, with Mr. Graham Davenport and other members of your staff. Following completion of additional review in the Region II office, a final exit was held by telephone with Mr. Graham Davenport and other members of your staff on March 1, 2004.

This inspection was an in-office and on-site examination of Unresolved Item 05000269, 270, 287/2002003-02, An Operator Action That Was Required by the Fire Safe Shutdown Analysis Was Not Included in the Operating Procedures. The issue involved a concern with procedures not addressing all the required operator actions for response to a fire. This issue was left unresolved pending further NRC review regarding the risk significance.

This report documents one NRC-identified finding of very low significance (Green). The finding was determined to be a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy. If you contest this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC, 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC, 20555-0001; and the NRC Resident Inspector at the Oconee Nuclear Station.

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/

Charles R. Ogle, Chief
Engineering Branch 1
Division of Reactor Safety

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

Enclosure: NRC Triennial Fire Protection Inspection (Follow Up) Report
05000269,270,287/2004010 w/Attachment: Supplemental Information

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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.:	05000269/2004010, 05000270/2004010, and 05000287/2004010
Licensee:	Duke Energy Corporation
Facility:	Oconee Nuclear Station
Location:	7800 Rochester Highway Seneca, SC 29672
Dates:	February 17 - 18, 2004
Inspectors:	K. O'Donohue, Fire Protection Team Leader W. Rogers, Senior Reactor Analyst
Approved by:	Charles R. Ogle, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000269/2004-010, 05000270/2004-010, and 05000287/2004-010; 02/17 - 18/2004; Oconee Nuclear Station, Units 1, 2, & 3; Triennial baseline fire protection inspection - Unresolved Item Significance Determination Review.

The inspection was an in-office and on-site follow up inspection of Unresolved Item 05000269, 270, 287/2002003-02, conducted by a regional inspector and a senior reactor analyst. The inspection identified one Green non-cited violation (NCV). The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspector and analyst identified an NCV of 10 CFR 50, Appendix R, Section III.L.3 and Technical Specification 5.4.1. During a severe fire in the control room, the procedures implemented for control room evacuation and Safe Shutdown Facility activation were inadequate, in that, operator action to close valve FDW-315, steam generator (S/G) emergency feedwater (EFDW) control valve, was not directed as required to prevent an overcooling event due to spurious actuation of an EFDW pump.

  The finding is greater than minor because it is associated with procedure quality and degraded the reactor safety mitigating system cornerstone objective. The finding is of very low significance because the fire ignition frequency of the affected cables is low, thereby reducing the likelihood of an EFDW pump start and the need to close valve FDW-315.

B. Licensee-Identified Violations

None

Report Details

4. OTHER ACTIVITIES

4OA5 Other

.01 (Closed) URI 05000269, 270, 287/2002003-02: An Operator Action That Was Required by the Fire Safe Shutdown Analysis Was Not Included in the Operating Procedures

Introduction: A non-cited violation (NCV) of 10 CFR 50, Appendix R, Section III.L.3 and Technical Specification 5.4.1 was identified, in that, during a severe fire in the control room, the procedures implemented for control room evacuation and Safe Shutdown Facility (SSF) activation were inadequate. This inspection finding was assessed using the SDP, Phase 3 evaluation which determined this finding to be of very low significance (Green).

Description: The Safe Shutdown Analysis stated that when activating the SSF to mitigate a fire, operators must manually close valve FDW-315, S/G EFDW control valve, in the east penetration room. This action was designed to prevent the spurious actuation of an EFDW pump from disabling the SSF by causing an overcooling event which would be beyond the capability of the SSF reactor coolant makeup pump (RCMUP). However, this operator action was not included in the SSF operating procedures. In some scenarios, this could result in a plant condition that was beyond the restoration capability of the equipment credited for the safe shutdown of the plant following a fire.

The inspectors confirmed that FDW-315 needed to be closed to prevent an overcooling event resulting from a spurious actuation of an EFDW pump. Direction to close FDW-315 was included in other procedures, normally available to the control room operators. However, in the event of a fire that required evacuation of the control room, the procedures that would be applicable (AP/0/A/1700/025, Standby Shutdown Facility Emergency Operating Procedure, and AP/1/A/1700/008, Loss of Control Room) did not include adequate direction to ensure FDW-315 was closed.

Review of procedure history documents indicated that the action was included in previous revisions of AP/0/A/1700/025. However, the step to close FDW-315 was removed during a procedure revision that took place in 1994. Following the NRC's identification of this issue, the licensee revised AP/0/1700/008 to include an operator action to close FDW-315.

Analysis:

The finding is greater than minor because it is associated with procedure quality and degraded the reactor safety mitigating system cornerstone objective. The performance deficiency was assumed to degrade the defense in depth for fire protection. Since the Phase 2 SDP worksheets did not clearly address this performance deficiency, a Phase 3 SDP analysis was performed. A regional Senior Reactor Analyst performed the Phase 3 evaluation using an exposure time of one year. The dominant accident sequence involving the performance deficiency was a fully developed fire in the main control room that does not affect the main feedwater system but causes two hot shorts in the EFDW

such that overcooling of the reactor coolant system (RCS) occurs. Operators evacuate the main control room and transfer command and control to the SSF. While using the SSF to maintain the facility in safe shutdown, operators perform an unspecified set of actions that lead to core damage. The assumptions used in the Phase 3 SDP were:

- After main feedwater increases once thru steam generator (OTSG) secondary side level and is secured by high level controls, hot shorts due to the fire, result in FDW-315 opening and an EFDW pump starting. This induces an overcooling of the RCS. This situation can result in a reactor criticality but is self-limiting and the SSF will continue to provide adequate decay heat removal, keeping the core covered unless an operator commits an error of commission.

- Two hot shorts in the EFDW system provide cooling flow to the OTSGs to induce the overcooling. For non-armored cable, a 0.3 hot short probability for the FDW-315 valve failing open and a 0.6 hot short probability for a pump to operate for an extended time will be used when the fire is in the main control room (non-armored cable).

- A partition of 0.1 will be used for fires that leave the main feedwater system unaffected and damage the EFDW system (this is very conservative since both systems reside side-by-side in the open main control boards).

- When operators in the SSF are faced with the overcooling event they commit an operator error by commission that causes core damage. For screening purposes a 0.5 will be used for this value. Also, based upon probabilistic risk analysis modeling, a success probability of 0.7 will be assigned to the SSF function.

Since this sequence of unlikely events (involving the performance deficiency) was necessary to cause core damage, this performance deficiency was characterized as very low safety significance (Green).

Enforcement: TS 5.4.1 requires that written procedures be established, implemented, and maintained covering activities recommended in Regulatory Guide 1.33, Rev 2, Appendix A, of February 1978. This regulatory guide requires that the events of a fire in the control room or a forced evacuation of the control room be covered by written procedures. Additionally, Oconee License Condition D, Fire Protection, requires a fire protection program in accordance with listed NRC SERs, which in turn require compliance with 10 CFR 50, Appendix R, Section III.L.3, Alternative and Dedicated Shutdown Capability. Section III.L.3 requires that procedures be in effect to implement the alternative and dedicated SSD capability (the SSF at Oconee). Contrary to the above, on March 20, 2002, the NRC identified that the licensee's procedures were inadequate to mitigate a fire that required control room evacuation and activation of the SSF. This condition was in place for approximately ten years. Because this example of failure to maintain adequate procedures is of very low safety significance, was documented in the corrective action program (PIP O-00-04076) (and adequately corrected), this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000269, 270, 287/2004010-01: Inadequate Maintenance of Fire Safe Shutdown Procedures.

4OA6 Meetings, Including Exit

The inspector presented the inspection results to Mr. Graham Davenport, and other members of licensee management and staff on February 18, 2004. The licensee acknowledged the findings presented.

Subsequent to the onsite inspection a follow-up exit by telephone was held with Mr. Graham Davenport and other members of licensee management on March 1, 2004, to update the licensee on changes to the preliminary inspection findings. The licensee acknowledged the findings. No proprietary information is included in this inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

G. Davenport, Compliance Manager (ONS)
D. Garland, Sr. Engineer
J. Smith, Regulatory Compliance
J. Weast, Regulatory Compliance
H. Barrett, Sr. Engineer (Design Basis Engineering)
N. Constance, Operations Training

NRC Personnel
M. Shannon, Senior Resident Inspector

LIST OF ITEMS OPENED AND CLOSED

Opened and Closed

05000269, 270, 287/2004010-01	NCV	Inadequate Maintenance of Fire Safe Shutdown Procedures (Section 4OA5.01)

Closed

05000269,270,287/2002003-02	URI	An Operator Action that was Required by the Fire Safe Shutdown Analysis was Not Included in the Operating Procedures (Section 4OA5.01)

LIST OF DOCUMENTS REVIEWED

PROCEDURES

Standby Shutdown Facility Emergency Operating Procedure, AP/0/A/1700/025, Rev 25

Standby Shutdown Facility Emergency Operating Procedure, AP/0/A/1700/025, Rev 25

Loss of Control Room, AP/1/A/1700/008, Rev 6

Loss of Control Room, AP/1/A/1700/008, Rev 9

OTHER DOCUMENTS

Calculation C-OSA-SA-85-006-0, Evaluation of Spurious Pump Actuation During an Appendix R Event

Calculation C-OSC-3770, EFW Isolation During 10CFR50 Appendix R Event

PIP-O-02-00609, Response To NRC Audit Questions During Inspection (IR-02-03)

PIP-O-02-0529, Calculation OSC - 2310 Does Not Determine the Bounding Cooldown Rate for SSF Operability

PIP-O-04-00857, Enhancement needed in Loss of Control Room AP When Fire Requires Evacuation of the Main Control Room and Evacuation of the SSF

PIP-O-00-04076, Valve FDW-315 Had Been Removed From SSF procedure

Design Basis Specification For the Auxiliary Shutdown Panel, Spec 055-0254.00-00-40094009

Appendix R EFW Overfeed Event Sequence of Events

Training Records for Topic AP/1/A/1700/025, Rev 26

OP-OC-AP/25 Rev 26 Training Package, Rev 00, AP/0/A/1700/025 Standby Shutdown Facility EOP, Rev 26