



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

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

January 14, 2008

Southern Nuclear Operating Company, Inc.  
ATTN: Mr. T. E. Tynan  
Vice President - Vogtle  
Vogtle Electric Generating Plant  
7821 River Road  
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT - NRC TRIENNIAL FIRE  
PROTECTION INSPECTION REPORT 05000424/2007007 AND  
05000425/2007007

Dear Mr. Tynan:

On October 19, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at your Vogtle Electric Generating Plant, Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on October 19, 2007, with you and other members of your staff during the exit meeting. Following completion of additional review in the Region II office, another exit meeting was held by telephone with Mr. J. Williams and other members of your staff on January 14, 2008, to provide an update on changes to the preliminary inspection findings.

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.

This report documents three NRC-identified findings of very low safety significance (Green) which were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV in this report, 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, D.C. 20555-0001; and the NRC Resident Inspector at the Vogtle facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) 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.: 50-424, 50-425  
License Nos.: NPF-68, NPF-81

Enclosure: Inspection Report 05000424/2007007 and 05000425/2007007  
w/Attachment; Supplemental Information

cc w/encl:  
J. T. Gasser  
Executive Vice President  
Southern Nuclear Operating Company, Inc.  
Electronic Mail Distribution

David H. Jones  
Vice President - Engineering  
Southern Nuclear Operating Company, Inc.  
P.O. Box 1295  
Birmingham, AL 35201-1295

L. M. Stinson, Vice President,  
Fleet Operations Support  
Southern Nuclear Operating Company, Inc.  
11028 Hatch Parkway North  
Baxley, GA 31513

N. J. Stringfellow  
Manager-Licensing  
Southern Nuclear Operating Company, Inc.  
Electronic Mail Distribution

(cc w/encl cont'd - See page 3)

(cc w/encl cont'd)  
Moanica Caston  
Southern Nuclear Operating Company, Inc.  
Bin B-022  
P. O. Box 1295  
Birmingham, AL 35201-1295

Director, Consumers' Utility Counsel Division  
Governor's Office of Consumer Affairs  
2 M. L. King, Jr. Drive  
Plaza Level East; Suite 356  
Atlanta, GA 30334-4600

Office of the County Commissioner  
Burke County Commission  
Waynesboro, GA 30830

Director, Department of Natural Resources  
205 Butler Street, SE, Suite 1252  
Atlanta, GA 30334

Manager, Radioactive Materials Program  
Department of Natural Resources  
Electronic Mail Distribution

Attorney General  
Law Department  
132 Judicial Building  
Atlanta, GA 30334

Laurence Bergen  
Oglethorpe Power Corporation  
Electronic Mail Distribution

Resident Manager  
Oglethorpe Power Corporation  
Alvin W. Vogtle Nuclear Plant  
Electronic Mail Distribution

Arthur H. Domby, Esq.  
Troutman Sanders  
Electronic Mail Distribution

Senior Engineer - Power Supply  
Municipal Electric Authority  
of Georgia  
Electronic Mail Distribution

(cc w/encl cont'd - See page 4)

SNC

4

(cc w/encl cont'd)  
Reece McAlister  
Executive Secretary  
Georgia Public Service Commission  
244 Washington Street, SW  
Atlanta, GA 30334

Distribution w/encl:

B. Singal, NRR  
RIDSNNRRDIRS  
PUBLIC

NRC Resident Inspector  
U.S. Nuclear Regulatory Commission  
7821 River Rd  
Waynesboro, GA 30830



**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos: 50-424, 50-425

License Nos: NPF-68, NPF-81

Report No: 05000424/2007007, 05000425/2007007

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Vogtle Electric Generating Plant, Units 1 and 2

Location: Waynesboro, Georgia

Dates: October 1-5, 2007 (Week 1)  
October 15-19, 2007 (Week 2)

Inspectors: P. Fillion, Senior Reactor Inspector  
R. Lewis, Reactor Inspector  
F. McCreesh, Fire Protection Inspector (Consultant)  
J. Quinones, Reactor Inspector  
M. Thomas, Senior Reactor Inspector (Lead Inspector)

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000424/2007-007, 05000425/2007-007; 10/1 - 5/2007 and 10/15 - 19/2007; Vogtle Electric Generating Plant, Units 1 and 2; Triennial Fire Protection.

This report covers an announced two-week triennial fire protection inspection by a team of four regional inspectors and one contract inspector. Three Green non-cited violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

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

#### Cornerstone: Initiating Events

- Green: The team identified a non-cited violation of Vogtle Unit 2 Operating License Condition 2.G, for the licensee's failure to properly implement fire protection program procedures for control of transient combustible materials. Transient combustible materials that were left unattended in Unit 2 Fire Zone 152 were not included in the permit for transient combustibles or the fire loading calculation to determine the impact on the cumulative fire load specified in the fire hazards analysis for Fire Zone 152. Once identified, the licensee removed the combustible materials and initiated a condition report to address this issue.

The finding is greater than minor because it is associated with the protection against external factors attribute, i.e., fire. The transient combustible materials presented a credible fire scenario involving equipment important to safety, which degraded the reactor safety Initiating Events cornerstone objective to limit the likelihood of those events that may upset plant stability and challenge critical safety functions during shutdown as well as power operations. Considering the nature of the unapproved transient combustible materials and the fixed contents of the room, the likelihood of fire ignition or severity of fire were not significantly increased by the transient combustibles being present. Therefore, the finding was determined to be low degradation against the combustible controls program. The finding was of very low safety significance based on the low degradation rating. This finding has a cross-cutting aspect in the Work Control component of the Human Performance area because the licensee failed to appropriately plan work activities by incorporating job site conditions which may impact plant structures, systems, and components (NRC Inspection Manual Chapter 0305, H.3(a)). (Section 1R05.02)

#### Cornerstone: Mitigating Systems

- Green: The team identified a non-cited violation of Technical Specification 5.4.1, Procedures, in that Unit 2 safe shutdown procedure 18038-2, was not consistent with the safe shutdown analysis for Fire Zone 105-2. Specifically, certain time critical operator manual actions stated in the analysis were not incorporated into

Procedure 18038-2 such that there was assurance that the actions would be completed within the times assumed in the analysis. The licensee initiated a condition report to address the issues associated with Procedure 18038-2 that were identified by the team.

This finding is more than minor because it is associated with the reactor safety Mitigating Systems cornerstone attributes of protection against external events, i.e., fire, and procedure quality. The finding was determined to be of very low safety significance due to the likelihood that the actions could be performed in sufficient time and the low likelihood of fires which could cause the type of cable damage that would challenge the procedure weaknesses. This finding has a cross-cutting aspect in the Resources component of the Human Performance area because the procedure was not complete and up to date in accordance with the safe shutdown analysis (NRC Inspection Manual Chapter 0305, H.2(c)). (Section 1R05.06)

- Green: The team identified a non-cited violation of Vogtle Unit 2 Operating License Condition 2.G, in that the licensee failed to install emergency lighting units (ELUs) in accordance with the approved fire protection program. Specifically, there were no ELUs installed in some areas where operator manual actions were required by Procedure 18038-2 to support post-fire safe shutdown for a fire in the main control room. The licensee initiated condition reports to address the ELU issues associated with Procedure 18038-2.

The finding is greater than minor because it is associated with the reactor safety Mitigating Systems cornerstone attribute of protection against external factors (i.e., fire) and it affects the objective of ensuring reliability and capability of systems that respond to initiating events. Specifically, the finding adversely affected the ability to perform local operator actions required to achieve and maintain SSD conditions following a main control room fire. The team determined that this finding was of very low safety significance because the operators had a high likelihood of completing the tasks using flashlights or portable lanterns. Consideration was given to the fact that operators normally carry flashlights and would have access to portable lanterns to provide the necessary lighting. (Section 1R05.09)

B. Licensee-Identified Violations

None.



## REPORT DETAILS

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R05 Fire Protection

The purpose of this inspection was to review the Vogtle Electric Generating Plant (VEGP) fire protection program (FPP) for selected risk-significant fire areas. Emphasis was placed on verification that the post-fire safe shutdown (SSD) capability and the fire protection features provided for ensuring that at least one redundant train of SSD systems was maintained free of fire damage. The team selected four fire areas (FAs)/fire zones (FZs) for detailed review to examine the licensee's implementation of the FPP. The team also reviewed an issue associated with one additional FA/FZ that is discussed in this report. The original four FAs/FZs chosen for review were selected based on risk insights from the licensee's Individual Plant Examination of External Events (IPEEE), information contained in FPP documents, results of prior NRC triennial fire protection inspections, and in-plant tours by the inspectors. The four FAs/FZs chosen for detailed review are listed below. Section 71111.05-05 of NRC Inspection Procedure (IP) 71111.05T specifies a minimum sample size of three FAs. Detailed inspection of these four FAs/FZs fulfills the procedure completion criteria.

- Fire Area 2-AB-LD-G/Fire Zone 22, Unit 2 480V MCC 2ABD Room. A fire in this area would involve shutdown from the main control room (MCR) utilizing Train B equipment.
- Fire Area 2-CB-LA-H/Fire Zone 92, Unit 2 4160V Switchgear Room. A fire in this area would involve shutdown from the MCR utilizing Train A equipment.
- Fire Area 1-CB-L1-A/Fire Zone 105-2, Unit 2 MCR. A fire in this area would involve evacuation of the MCR and shutdown of both units using the remote shutdown panels.
- Fire Area 2-CB-L2-A/Fire Zone 121, Unit 2 Train B Auxiliary Relay Room. A fire in this area would involve shutdown from the MCR utilizing Train A equipment.

One other FA/FZ examined for specific issues was:

- Fire Area 2-CB-LB-P/Fire Zone 152, Unit 2 Train B Electrical Room

The team evaluated the licensee's FPP against applicable requirements, including Operating License Condition 2.G; Title 10 of the Code of Federal Regulations, Part 50.48 (10 CFR 50.48); commitments to NRC Branch Technical Position (BTP) Chemical Engineering Branch (CMEB) 9.5-1; VEGP Updated Final Safety Analysis Report (UFSAR); related NRC safety evaluation reports (SERs) including all applicable supplements; and plant Technical Specifications. Specific documents reviewed by the inspectors are listed in the Attachment.

.01 Post-Fire Safe Shutdown From Main Control Room (Normal Shutdown)

a. Inspection Scope

Methodology

The team reviewed the licensee's FPP described in UFSAR Section 9.5.1; NRC SERs through Supplement 9; the licensee's Fire Event Safe Shutdown Evaluation (FESSE); plant procedures; piping and instrumentation drawings (P&IDs); electrical drawings; and other supporting documents. The review was performed to verify that hot and cold shutdown could be achieved and maintained from the MCR for postulated fires in FZs 22, 92, and 121. This review included verification that shutdown from the MCR could be performed both with and without the availability of offsite power. Plant walkdowns were performed to verify that the plant configuration was consistent with that described in the fire hazards analysis (FHA) and FESSE. For postulated fires that utilize shutdown from the MCR, the team performed reviews to verify that the shutdown methodology properly identified the components and systems necessary to achieve and maintain SSD conditions.

Operational Implementation

The team reviewed the adequacy of procedures utilized for post-fire SSD and performed a walk through of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team also reviewed selected operator actions to verify that the operators could reasonably be expected to perform the specific actions within the time required to maintain plant parameters within specified limits.

The team reviewed operator actions, including those for selected components to prevent fire-induced spurious operation for reactor coolant makeup, reactor heat removal, and support systems functions. The team reviewed and/or walked down applicable sections of the following procedures for Unit 2 FZs 22, 92, and 121.

- 92005-C, Fire Response Procedure
- 17103A-C, Annunciator Response Procedures for Fire Alarm Computer
- 17103B-C, Annunciator Response Procedures for Fire Alarm Computer

The team reviewed local operator manual actions to ensure that the actions could be implemented in accordance with plant procedures in the times necessary to support the SSD method for the applicable FA/FZ and to verify that those actions met the criteria in NRC IP 71111.05T. The team reviewed the licensee's manual action feasibility report for FZs 22, 92, and 121. The team also reviewed licensee condition reports (CRs) 2006105584, 2006108559, 2006109484, 2006109486, and Action Item 2006202612, which were initiated in response to the NRC's proposal to withdraw the operator manual action rule. These CRs and action item were reviewed to verify that the licensee had identified operator manual actions for post-fire SSD in 10 CFR 50, Appendix R, Section III.G.2 designated areas and had plans in place to assess and track resolution of the operator manual action issues.

b. Findings

No findings of significance were identified.

.02 Protection of Safe Shutdown Capabilities

a. Inspection Scope

For the selected FAs/FZs, the team evaluated the potential for fires, the combustible fire load characteristics, potential exposure fire severity, separation of systems necessary to achieve and maintain SSD, and the separation of electrical components and circuits to ensure that at least one SSD train of equipment was free of fire damage.

The team walked down the selected plant fire areas to observe: (1) the material condition of the protection systems and equipment, (2) the storage of permanent and transient combustible materials, (3) the fire barrier enclosures and fire protection features in the areas and, (4) the licensee's implementation of the procedures for limiting fire hazards, 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 in a manner consistent with the plant administrative controls and fire protection procedures.

The team reviewed the fire protection features in place to protect SSD capability as compared to the separation and design requirements of NUREG 0800 and 10 CFR 50, Appendix R, Section III.G. The team also reviewed the fire fighting preplans for the selected areas to determine if appropriate information was provided to the fire brigade members to identify equipment important to safe shutdown and to facilitate fire suppression of a fire that could impact safe shutdown capability. These reviews were performed to ensure that the defense-in-depth objectives established by the NRC-approved fire protection program were satisfied.

The team also reviewed the separation of systems necessary to achieve SSD to ensure that at least one train of SSD systems would remain free of fire damage.

b. Findings

Failure to Adequately Control Transient Combustibles

Introduction: The team identified a Green non-cited violation (NCV) of Unit 2 Operating License Condition 2.G, for the licensee's failure to properly implement fire protection program procedures for control of transient combustible materials. Specifically, transient combustible materials left unattended in Unit 2 FZ 152 were not included in the permit for transient combustibles (PTC) or the fire loading calculation to determine the impact on the cumulative fire load specified in the FHA for FZ 152.

Description: During a walkdown of Unit 2 FAs/FZs on September 19, 2007, the team observed unattended transient combustible materials in control building room R-B34 (Fire Area 2-CB-LB-P/Fire Zone 152). This room was the Train B electrical room which

contained cable trays with electrical cables. The unattended transient combustible material was three combustible chairs. A PTC was issued on August 27, 2007, for FZ 152. The permit did not include the three chairs. The team noted that one of the chairs was located beneath some of the cable trays in the room which contained Train B safety-related SSD cables. The team noted that there were no other sources of heat or electrical energy in the room which would cause the chairs to ignite. The transient combustible material, i.e., the chairs, was considered to be an ignition source also. Additionally, the room was equipped with automatic detection and suppression.

The team reviewed licensee procedure 92015-C, Use, Control and Storage of Flammable/Combustible Materials. Section 4.0 of the procedure stated that a PTC was required for flammable/combustible materials exceeding 30,000 Btu that were located in safety related or critical areas. The team estimated that the combustible material in the three chairs exceeded 30,000 Btu and noted that FZ 152 contained Train B safety-related SSD cables. Therefore, a PTC was required. The procedure also required operations shift personnel to perform a fire load calculation for the room or area where transient combustible materials were located to determine if compensatory measures were required (e.g., supplemental fire extinguishing equipment or an attendant) based on the cumulative fire load in the FZ. If procedures had been followed, special measures to place additional fire extinguishers in the room would have been required. The team noted that the three chairs were not listed on the PTC and were not included in the transient combustible fire load calculation for FZ 152. This was not consistent with the requirements of procedure 92015-C. Once identified, licensee personnel removed the chairs from FZ 152 and initiated CR 2007109832 for this issue.

Analysis: The team determined that failure to include the three chairs in the PTC and the fire loading calculation for FZ 152 was a performance deficiency. The finding is greater than minor because it is associated with the protection against external factors attribute, i.e., fire, and degraded the reactor safety Initiating Events cornerstone objective to limit the likelihood of those events that may upset plant stability and challenge critical safety functions during shutdown as well as power operations. This finding has a cross-cutting aspect in the Work Control component of the Human Performance area because the licensee failed to appropriately plan work activities by incorporating job site conditions which may impact plant structures, systems, and components (NRC Inspection Manual Chapter 0305, H.3(a)). In this instance, placement of the three combustible chairs in FZ 152, and specifically placing one of the chairs near the cable trays failed to consider job site conditions, in that, the unattended transient combustible materials presented a credible fire scenario involving equipment important to safety and was not in accordance with plant administrative procedures.

The team reviewed NRC Inspection Manual Chapter (IMC) 0609, Significance Determination Process, Appendix A, Determining the Significance of Reactor Inspection Findings for At-Power Situations, dated March 23, 2007. The team determined that the finding affected the administrative controls for fire protection, and a significance determination evaluation using IMC 0609, Appendix F, Fire Protection Significance Determination Process, was required. The team completed a significance determination for this issue using IMC 0609, Appendix F, and its Attachments. Considering the nature of the unapproved transient combustible materials and the fixed contents of the room, the likelihood of fire ignition or severity of fire were not significantly increased by the

transient combustibles being present. Therefore, the finding was assigned a low degradation against the combustible controls program. IMC 0609, Appendix F, Attachment 1, Task 1.3.1, Qualitative Screening for All Finding Categories, showed that the finding was of very low safety significance (Green) due to the low degradation rating.

Enforcement: VEGP Unit 2 Operating License Condition 2.G requires the licensee to implement and maintain in effect all provisions of the approved FPP, as described in the UFSAR and as approved in the NRC SER (NUREG-1137) through Supplement 9 for the facility. The approved FPP is documented in UFSAR Section 9.5.1 and associated Appendices 9A and 9B. UFSAR Appendix 9B, Section C.2., "Administrative Controls," states that the requirements governing transient combustibles in safety-related areas during all phases of operation are provided in the administrative fire protection procedures. Licensee procedure 92015-C, "Use, Control and Storage of Flammable/Combustible Materials," provides instructions and guidelines for the use and handling of transient combustible materials at VEGP inside the protected area. Procedure 92015-C stated that a PTC is required for flammable/combustible materials exceeding 30,000 Btu which are located in safety-related areas. The procedure further stated that operations shift personnel are required to perform fire load calculations for the room or area where transient combustible materials are located to determine if compensatory measures are required (e.g., supplemental fire extinguishing equipment or an attendant) based on the cumulative fire load in the FZ.

Contrary to the above, on September 19, 2007, the team found three combustible chairs located in FZ 152 which were not listed on the existing PTC No. 20070191 and were not included in the transient combustible fire load calculation for FZ 152. A PTC was required because the combustible fire load for the three chairs exceeded 30,000 Btu and FZ 152 contained safety-related SSD cables. This condition existed between August 27, 2007, and September 19, 2007. Licensee personnel removed the chairs and initiated CR 2007109832 to address this issue. Because this finding is of very low safety significance and was entered into the licensee's corrective action program, this finding is being treated as a NCV, consistent with Section VI.A.1 of the NRC's Enforcement Policy. This finding is identified as NCV 05000425/2007007-01, Failure to Adequately Control Transient Combustibles.

### .03 Passive Fire Protection

#### a. Inspection Scope

The team inspected the material condition of accessible passive fire barriers surrounding and within the fire areas selected for review. Barriers in use included walls, ceilings, floors, mechanical and electrical penetration seals, doors, and dampers. Construction details and fire endurance test data which established the ratings of fire barriers were reviewed by the team. Engineering evaluations and relevant deviations described in the licensee's UFSAR and the NRC's SERs related to fire barriers were reviewed. Electrical fire barrier raceway systems were reviewed to confirm that the appropriate materials and test data were used to assure that the respective fire barriers met their intended design function.

b. Findings

No findings of significance were identified.

.04 Active Fire Protection

a. Inspection Scope

The team performed in-plant observations of systems and reviewed design documents, design change packages (DCPs), and applicable National Fire Protection Association (NFPA) codes and standards to assess the material condition and operational lineup of fire detection and suppression systems. The appropriateness of detection and suppression methods for the category of fire hazards in the various areas was evaluated.

The team reviewed the fire brigade staging and dress-out areas to assess the operational readiness of fire fighting and smoke control equipment. The fire brigade personal protective equipment and the self-contained breathing apparatuses were reviewed for adequacy and functionality. The team also reviewed operator and fire brigade staffing, fire brigade response, fire fighting pre-plans, fire brigade qualification training, and the fire brigade drill program procedures. Three fire brigade response-to-drill scenarios that transpired over the last 2 years were reviewed.

The team reviewed selected fire protection water delivery and supply system components required for manual fire fighting and/or water-based fixed automatic fire suppression systems to verify that the components would not be damaged or inhibited from fire-induced failures of electrical power supplies or control circuits. The team reviewed the FESSE to verify that the availability of the fire pumps was evaluated for the selected FAs. The team reviewed control wiring diagrams, elementary diagrams, cable routing information, and perform field walkdowns to verify that protection of control and power cables was consistent with the FPP documents for the selected fire areas.

b. Findings

Main Control Room Fire Alarm Computer Replacement Design Change

Introduction: The team identified an unresolved item (URI) related to implementation of DCP C052267801, Version 3.0, for the fire alarm computer in the MCR. This design change introduced a potential time delay of up to one minute and 59 seconds for a fire alarm signal notification to the MCR. The team noted that this potential time delay was not evaluated in the DCP to determine if the delay would adversely affect the ability to achieve and maintain SSD conditions.

Description: DCP C052267801 was implemented in December 2006 and replaced the existing Excel Building Supervisor (XBS) fire alarm computer system with an Enterprise Building Integrator (EBI) fire alarm computer system. The main reason stated for replacing the existing XBS system was that operations personnel had to take multiple actions to acknowledge and silence the fire alarm signals. In the pre-modified configuration, a plant fire alarm notification signal was received and annunciated by the

fire alarm computer in the MCR which is continuously manned. With the change implemented by the DCP, a work station was added in the Clearance and Tagging (C&T) office and that work station became the primary fire alarm computer station which received and annunciated all plant fire alarm signals. The C&T office was manned by a licensed senior reactor operator (SRO) who was normally assigned as the fire brigade chief. Licensee personnel stated that, unlike the MCR, the C&T office was not manned continuously because the duties and responsibilities of the C&T SRO or other personnel assigned to C&T included activities that could temporarily take them away from the C&T office. Per the DCP, the new EBI fire alarm system was set up to page the assigned personnel if a fire alarm condition was not acknowledged in 60 seconds at the C&T work station. In addition, the server was designed to poll the EBI system every 60 seconds to determine if a condition was not acknowledged at the C&T work station. If the condition was not acknowledged by the second polling of the EBI system, the system would then automatically notify the MCR server of the un-acknowledged condition. This had the potential to cause a delay of up to one minute and 59 seconds from the time a fire alarm signal was actuated until the time the MCR was notified.

The team noted that the licensee's FPP (Section C.6.a(4) of UFSAR Appendix 9B) stated that fire detection systems should give audible and visible alarm and annunciation in the control room. Appendix 9B further stated that the Vogtle FPP was in conformance with Section C.6.a(4). Implementation of this DCP introduced a potential one minute and 59 second delay to the annunciation of a fire alarm signal in the MCR and resulted in the licensee's FPP not being in conformance with Section C.6.a(4) of Appendix 9B.

The team noted that DCP C052267801 included a 10 CFR 50.59 screening evaluation which assessed the impact of this design change on the FPP and SSD. The 10 CFR 50.59 screening evaluation concluded that this design change did not adversely affect the ability to achieve and maintain SSD in the event of a fire. The team questioned this conclusion because the potential time delay was not addressed in the 10 CFR 50.59 screening evaluation. Additionally, there was no evaluation of the impact this design change had on the conformance to Section C.6.a(4) in Appendix 9B regarding audible and visible alarms in the MCR. Specifically, the team questioned if implementation of this DCP complied with the licensee's commitment to NFPA Code 72D - 1979 Edition, as described in UFSAR Table 9.5.1-9 of the FPP.

As a result of questions raised by the team during the inspection, the licensee initiated CR 2007110797 and changed the fire alarm computer system configuration such that any fire alarm signal generated in the plant would alarm and annunciate in the MCR without any time delay. Subsequent to the onsite inspection, the licensee provided additional information to the team to support the conclusion that the design change did not adversely affect the ability to achieve and maintain SSD in the event of a fire. This information is still under review. Pending further inspector review of the additional information provided by the licensee, this issue will be identified as URI 05000424,425/2007007-02, Fire Alarm Computer Replacement Design Change.

.05 Protection From Damage From Fire Suppression Activities

a. Inspection Scope

The team walked down the selected fire areas to verify that redundant trains of systems required for hot shutdown, where located in the same fire area, were not subject to damage from fire suppression activities or from the rupture, or inadvertent operation of, fire suppression systems. The team considered the effects of water, drainage, heat, hot gasses, and smoke that could potentially damage all redundant trains. The team also reviewed engineering evaluations that addressed the inadvertent operation of fire protection systems and their effect on safety-related systems or components.

b. Findings

No findings of significance were identified.

.06 Post-Fire Safe Shutdown From Outside the Main Control Room (Alternative Shutdown)

a. Inspection Scope

Methodology

The team reviewed the licensee's FPP described in UFSAR Section 9.5.1, NRC SERs through Supplement 9 the licensee's FESSE plant procedures, P&IDs, electrical drawings and other supporting documents for postulated fires in FZ 105-2. The reviews focused on ensuring that the required functions for post-fire SSD and the corresponding equipment necessary to perform those functions were included in the procedures. The review included assessing whether hot and cold shutdown from outside the MCR could be implemented, and that transfer of control from the MCR to the remote shutdown panels (RSPs) could be accomplished. This review also included verification that shutdown from outside the MCR could be performed both with and without the availability of offsite power.

Plant walkdowns were performed to verify that the plant configuration was consistent with that described in the FESSE. These inspection activities focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring instrumentation and support systems functions. The team reviewed the systems and components credited for use during this shutdown method to verify that they would remain free from fire damage.

The team inspected a sample of instrumentation loops and control circuits for the attribute that they incorporated isolation and transfer devices as necessary to make them independent of the control room fire area and available to the operators at the RSPs or other locations outside the MCR. The electrical schematics were evaluated to check that circuits with interconnected devices in both the MCR and the RSPs contained isolation/transfer switches. These isolation/transfer switches were examined at the panels in the plant to check that they matched the design drawings and that escutcheons and nameplates were correct. The instrumentation loops and control circuits inspected for this attribute were:



- 2-HV-5154, auxiliary feed water pump minimum flow valve
- Circuit breaker 152-2BA0319, emergency diesel generator 2B output
- Circuit breaker 152-2BA0301, incoming from transformer 2NXRB
- 2LT0460, reactor coolant system pressurizer level
- 2LT0502, steam generator level
- 2PT0403, reactor coolant system wide range pressure
- 2TE0423B, reactor coolant system wide range cold leg temperature
- 2NI13135B, upper range neutron flux
- 2NI13135D, lower range neutron flux
- 2FV-442B, reactor head vent valve
- 2PV-3010 & 2PV-3020, main steam power operated relief valves

### Operational Implementation

The team reviewed the training lesson plans for licensed and non-licensed operators to verify that the training reinforced the shutdown methodology in the FESSE and the procedures for the selected FAs/FZs. The team also reviewed shift turnover logs and shift manning to verify that personnel required for SSD using the alternative shutdown systems and procedures were available onsite, exclusive of those assigned as fire brigade members.

The team reviewed procedures utilized for post-fire SSD and performed a walk through of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team also reviewed selected operator actions to verify that the operators could reasonably be expected to perform the specific actions within the time required to maintain plant parameters within specified limits.

Time critical actions reviewed included establishing control at the remote shutdown panels, electrical power distribution alignment, establishing reactor coolant makeup, and establishing decay heat removal. The team reviewed and/or walked down applicable sections of the following fire response procedures:

- 92005-C, Fire Response Procedure
- 18038-2, Operation from Remote Shutdown Panels

The team also reviewed the periodic test procedures and test records of the alternative shutdown transfer capability and instrumentation and control functions to ensure that the tests were adequate to verify the functionality of the alternative shutdown capability.

### b. Findings

Introduction: The team identified a Green NCV of Technical Specification (TS) 5.4.1, Procedures, in that Unit 2 post-fire safe shutdown procedure 18038-2, Operation From Remote Shutdown Panels, Revision 22, was not consistent with the FESSE for FZ 105-2. Specifically, certain time critical operator manual actions stated in the FESSE were not incorporated into Procedure 18038-2 such that there was assurance that the actions would be completed within the times assumed in the FESSE.

Description: The team reviewed applicable sections of fire response procedure 18038-2 to assess the procedural guidance for operation from the RSPs in the event of a MCR fire. During review and walk down of Procedure 18038-2, the team noted examples where time critical operator manual actions specified in the FESSE were not incorporated into the procedure.

The first example involved operator manual actions to transfer control of the pressurizer auxiliary spray valve from the MCR to the Train A RSP and to ensure the auxiliary spray valve was closed. The FESSE recommended transferring control for the pressurizer auxiliary spray valve from the MCR to the RSP to address the potential for spurious opening of the valve. This was a time critical operator action in the sense that spurious opening of the valve could lead to safety injection (SI) in a fairly short period of time (3.5 minutes). The procedure included steps to transfer controls, however, the time goals were not specified. The team determined that lack of time guidance could lead to SI which would complicate the shutdown evolution.

In another example, during a MCR fire the feeder breaker to the 2BB07 480V switchgear may open due to fire-induced damage. Local operator actions were required to re-energize the bus and ensure local breakers were closed to support the Train B emergency diesel generator (EDG) building heating, ventilation, and air conditioning (HVAC) fan operation after EDG start/loading in the event of a loss of offsite power. The FESSE specified this operator action, which had a 15 minute time constraint, to ensure proper operation of EDG controls. The team noted that Procedure 18038-2 included steps for the electrical power alignment as part of establishing control at the RSPs. The procedure did not include time guidance from the FESSE and there were no steps to ensure the breaker for the EDG room HVAC fan was closed. The team noted that the potential for spurious opening of the breaker for the EDG room HVAC fan only affected the Train B EDG. Train A EDG room cooling would not be affected by a fire in FZ 105-2. The licensee initiated CR 2007110849 to address the procedural issues identified by the team associated with Procedure 18038-2. Subsequent to the onsite inspection, the licensee provided the team with calculation X4C1566V01, VEGP Diesel Generator Building Temperature Rise Calculation. This calculation showed that the operators would have more time than the 15 minutes assumed in the FESSE. The licensee demonstrated that the Train B EDG controls were designed to operate in higher EDG room temperatures than the 135°F achieved in that time period as assumed in the FESSE.

Analysis: This finding is more than minor because it is associated with the reactor safety mitigating systems cornerstone attributes of protection against external events, i.e., fire, and procedure quality. The team determined that although Procedure 18038-2 did not incorporate the operator action time guidance specified in the FESSE, it was likely that the actions could be performed in sufficient time. Additionally, there was a low likelihood of fires which could cause the type of cable damage that would challenge the procedure weaknesses. In consideration of the above, the finding was found to be of very low safety significance (Green) consistent with the guidance in IMC 0609F, Fire Protection Significance Determination Process, and its attachments. This finding has a cross-cutting aspect in the Resources component of the Human Performance area because the procedure was not complete and up to date in accordance with the FESSE (IMC 0305, H.2(c)).

Enforcement: Technical Specification 5.4.1 states that written procedures shall be established, implemented, and maintained covering the activities in Appendix A of Regulatory Guide 1.33, Revision 2, dated February 1978. Regulatory Guide 1.33, Appendix A, Section 6.v., requires procedures for combating emergencies such as plant fires. Procedure 18038-2, Operation From Remote Shutdown Panel, Rev. 22, provided instructions necessary to achieve and maintain post-fire SSD of Vogtle Unit 2 in the event SSD could not be performed from the MCR due to a fire in the MCR.

Contrary to the above, Procedure 18038-2 did not include the operator manual action time constraints for fires in the Unit 2 MCR (FZ 105-2) as stated in the FESSE. This condition has existed since at least December 18, 2006, when Procedure 18038-2, Rev. 22, was issued. Because this finding is of very low safety significance and was entered into the licensee's corrective action program (CR 2007110849), this finding is being treated as a NCV, consistent with Section VI.A.1 of the NRC's Enforcement Policy. This finding is identified as NCV 05000425/2007007-03, Safe Shutdown Procedure 18038-2 Not Consistent With Analysis.

.07 Circuit Analyses

a. Inspection Scope

The team inspected the licensee's analysis of systems and components important to SSD and compliance with 10 CFR 50.48. This was done through review of Fire Event Safe Shutdown Analysis Report (Per Branch Technical Position CMEB 9.5-1), Rev. 2, dated October 3, 1988, as well as the detailed evaluations which analyzed the routing of individual cables on a fire area by fire area basis.

Process and instrumentation diagrams for the chemical and volume control, reactor coolant, auxiliary feedwater and auxiliary component cooling water systems were reviewed to ascertain whether all the components important to SSD had been identified in the analysis and the correct SSD function had been assigned to these components.

The team reviewed a sample of control circuits and instrumentation loop diagrams to identify combinations of individual circuit conductors which, if shorted together due to fire damage, could cause spurious operation or non-operation. If the potential problem combination of conductors were contained in the same cable, the routing of that cable was evaluated in relation to the five selected fire areas. In cases where the circuit analysis indicated resolution of a potential problem was needed, the team inspected the implementation of that resolution.

The issue of common power supply was addressed by the team through a review of overcurrent protective device coordination. The criterion for this review was that fire-induced faults on non-SSD circuits would not result in tripping of any SSD power source. This review focused on the power flow path from the 230 kV side of the reserve auxiliary transformers to 4.16 kV loads. Phase and ground fault protective relays were reviewed. Information on coordination study time-current plots was confirmed by checking the official set point sheets, manufacturer's instruction books and examination of the relays mounted on the switchgear or relay panels. In a similar manner, coordination at one

480 V load center was reviewed. The coordination of fuses in selected 125 VDC control circuits was checked.

b. Findings

No findings of significance were identified.

.08 Communications

a. Inspection Scope

The team reviewed plant communications capabilities to evaluate the availability of the communication systems to support plant personnel in the performance of operator manual actions to achieve and maintain SSD conditions. During this review, the team considered the effects of ambient noise levels, clarity of reception, and reliability. The team also reviewed the communications available at different locations. Both fixed (telephone, plant page, sound powered phones) and portable (handheld radios) communication systems were reviewed for the impact of fire damage in the selected FAs/FZs. A review was performed to verify the availability of the portable radios for use during the SSD procedures in the event of a loss of offsite power.

The team reviewed the plant communications systems that would be relied upon to support fire event notification and fire brigade fire fighting activities to verify their availability. The team also reviewed selected fire brigade drill evaluation/critique reports to assess proper operation and effectiveness of the fire brigade command post portable radio communications during fire drills and identify any history of operational or performance problems with radio communications during fire drills.

b. Findings

No findings of significance were identified.

.09 Emergency Lighting

a. Inspection Scope

The team reviewed the design, placement, operation, and periodic testing procedures for the fixed eight-hour self-contained battery powered emergency lighting units (ELUs) and dedicated, battery powered portable ELUs. The team evaluated the capability of the ELUs to support plant personnel in the performance of SSD functions, including local manual operator actions, and for illuminating access and egress routes to the areas where those manual actions would be performed. The team checked the rating of the battery power supplies to verify that they were rated with at least an 8-hour capacity, as required by BTP CMEB 9.5-1, Section C.5.g (1). In plant areas where operators perform local manual actions, the team inspected area ELUs for proper operation and checked the aiming of lamp heads to determine if sufficient illumination would be available to adequately illuminate the SSD equipment, the equipment identification tags, and the access and egress routes thereto. The team also reviewed completed

surveillance and maintenance procedures and test records to ensure that the licensee properly maintained the lighting equipment.

The team observed whether emergency exit lighting was provided for personnel evacuation pathways to the outside exits as identified in NFPA 101, Life Safety Code, and the Occupational Safety and Health Administration (OSHA) Part 1910, Occupational Safety and Health Standards. This review also included 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 should power fail during a fire emergency.

b. Findings

Introduction: The team identified a Green NCV of the FPP for the licensee's failure to install ELUs in all areas where local operator actions were being performed to support post-fire safe shutdown.

Description: The team reviewed and walked down applicable sections of fire response procedures 92005-C and 18038-2 to review the procedural guidance and assess the local operator actions in support of safe shutdown operation from the RSPs in the event of a MCR fire. During review of Procedure 18038-2, the team noted examples where ELUs were not installed in all areas where local operator actions were being performed to support post-fire safe shutdown conditions. Examples included the following:

- There was no ELU installed in the vicinity to support performance of Procedure 18038-2 local operator action to transfer the neutron flux monitoring system amplifier to remote in the Train B isolator assembly by placing the switch in the "App. R" position in room CB-B19. The team also questioned whether labeling of the component was sufficient, given the lack of an ELU in the vicinity.
- Procedure 18038-2 required manipulation of manual valve 2-1208-U4-505 to establish a boration path. There was no ELU in the vicinity of this valve to support this action.

The team determined that these actions would not be feasible if normal lighting were lost and no ELUs were available. The team noted that the licensee's FPP (Section C.5.g of UFSAR Appendix 9B) stated that fixed self-contained lighting consisting of sealed beam units with individual 8-hour minimum battery power supplies were provided for areas that must be manned for safe shutdown, except in the MCR. Safe shutdown areas included those required to be manned if the MCR must be evacuated. The team determined that not having ELUs installed to support the operator actions required by Procedure 18038-2 did not comply with the FPP. The licensee initiated CRs 2007110369, 2007110370, and 2007110796 to address the ELU issues associated with Procedure 18038-2.

Analysis: The finding is greater than minor because it is associated with the reactor safety Mitigating Systems cornerstone attribute of protection against external factors (i.e., fire) and it affects the objective of ensuring reliability and capability of systems that respond to initiating events. Specifically, the finding adversely affected the ability to

perform local operator actions required to achieve and maintain SSD conditions following a MCR fire. The team determined that this finding was of very low safety significance (Green) because the operators had a high likelihood of completing the task using flashlights or portable lanterns. Consideration was also given to the fact that operators normally carry flashlights and would have access to portable lanterns to provide the necessary lighting.

Enforcement: VEGP Unit 2 Operating License Condition 2.G requires the licensee to implement and maintain in effect all provisions of the approved FPP, as described in the UFSAR and as approved in the NRC SER (NUREG-1137) and its Supplements for the facility. The approved FPP is documented in UFSAR Section 9.5.1 and associated Appendices 9A and 9B. UFSAR Appendix 9B, Section C.5.g., "Lighting and Communications," states that fixed self-contained lighting consisting of sealed beam units with individual 8-hour minimum battery power supplies are provided for areas that must be manned for safe shutdown, except in the MCR. Safe shutdown areas include those required to be manned if the MCR must be evacuated.

Contrary to the above, fixed ELUs were not installed in all areas where post-fire SSD components were being operated. The condition has existed since March 1989, when Vogtle Unit 2 received an operating license. Because this finding is of very low safety significance and was entered into the licensee's corrective action program (CRs 2007110369, 2007110370, and 2007110796), this finding is being treated as a NCV, consistent with Section VI.A.1 of the NRC's Enforcement Policy. This finding is identified as NCV 05000425/2007007-04, Emergency Lighting Units Not Installed as Required by the Fire Protection Program.

.10 Cold Shutdown Repairs

a. Inspection Scope

The need and provisions for post-fire repairs to transition from hot shutdown to a cold shutdown condition were evaluated by the team in relation to the selected fire areas.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

The team reviewed the administrative controls for out-of-service, degraded, and/or inoperable fire protection features. The team reviewed selected active items on the fire protection "LCO tracking log" and compared them with the fire areas selected for inspection. The compensatory measures that had been established in these areas were compared to those specified in administrative procedures and annunciator alarm response procedure 17103A-C to verify that the risk associated with removing fire protection features from service was properly assessed and adequate compensatory measures were implemented in accordance with the approved FPP. Additionally, the

team reviewed the adequacy of the licensee's short term compensatory measures for a degraded function or feature until appropriate corrective actions were taken.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed selected licensee audits, self assessments, and CRs to verify that items related to fire protection and SSD were appropriately entered into the licensee's corrective action program (CAP) in accordance with the licensee's quality assurance program and procedural requirements. CRs related to the Vogtle FPP, selected fire brigade responses, and fire safety inspection reports were reviewed. These reviews were conducted to assess the frequency of fire incidents and effectiveness of the fire prevention program and any maintenance-related or material condition problems related to fire incidents.

The team also reviewed other CAP documents, including operating experience program (OEP) documents, to verify that industry-identified fire protection issues were entered in the CAP and evaluated for applicability to Vogtle. The team requested and reviewed a summary report of all operating experience documents received since March 2007. Items included in the OEP review were NRC Regulatory Issue Summaries, Information Notices, Generic Letters, industry or vendor-generated reports of defects and noncompliance under 10 CFR Part 21, and vendor information letters. The team also reviewed CR 2007108715 and CR 2007108716, which were both on the subject of potential hot shorts involving the containment spray valves. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

On October 19, 2007, the lead inspector presented the inspection results to Mr. T. Tynan and other members of his staff. The licensee acknowledged the findings. The licensee confirmed that proprietary information was not provided or examined during the inspection. Following completion of additional review in the Region II office, another exit meeting was held by telephone with J. Williams and other members of the licensee's staff on January 14, 2008, to provide an update on changes to the preliminary inspection findings. The licensee acknowledged the findings.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee Personnel

C. Buck, Chemistry Manager  
P. Conley, Engineering Programs Supervisor  
W. Copeland, Performance Improvement Supervisor  
R. Dedrickson, Plant Manager  
K. Dyar, Security Manager  
J. Ealick, Quality Assurance Supervisor  
D. Hines, Senior Design Engineer, Plant Support - Vogtle  
L. Hughes, Fire Protection Engineer, ESD - Programs  
D. Javorka, Administrative Assistant, Nuclear Licensing  
M. Kurtzman, Training Supervisor  
J. Lattner, Corporate Fire Protection Supervisor, Engineering Programs  
L. Mansfield, Nuclear Operations Training Supervisor  
D. Midlik, Senior Engineer, Nuclear Licensing  
S. Prewitt, Operations Procedure Supervisor  
R. Reddy, Senior Design Engineer, Plant Support - Vogtle  
J. Robinson, Outage & Scheduling Manager  
M. Sharma, Nuclear Specialist, Performance Analysis  
S. Swanson, Engineering Support Manager  
T. Tynan, Site Vice-President  
R. Vaught, Maintenance Superintendent  
S. Waldrup, Operations Support Superintendent  
J. Williams, Site Support Manager

#### NRC Personnel

G. McCoy, Senior Resident Inspector, Vogtle Electric Generating Plant  
C. Payne, Chief, Engineering Branch 2, Division of Reactor Safety, Region II

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

#### Opened

05000424,425/2007007-02	URI	Fire Alarm Computer Replacement Design Change (Section 1R05.04)
-------------------------	-----	---

#### Opened and Closed

05000425/2007007-01	NCV	Failure to Adequately Control Transient Combustibles (Section 1R05.02)
05000425/2007007-03	NCV	Safe Shutdown Procedure 18038-2 Not Consistent With Analysis (Section 1R05.06)



05000425/2007007-04

NCV

Emergency Lighting Units Not Installed as  
Required by the Fire Protection Program  
(Section 1R05.09)

Discussed

None.

## LIST OF DOCUMENTS REVIEWED

### Procedures

00705-C, Fire Protection Training Program, Rev. 14.2  
 14710-2, Remote Shutdown Panel Xfer Switch & Control Circuit 18 Mo. Surv Test, Rev. 28.1  
 14956-C, Fire Protection System 5-Year Flow Verification, Rev. 6  
 14961-C, Emergency Lighting [Quarterly] Surveillance, Rev. 39.1  
 14999-C, Quarterly Perf. Chk for Communications Eqpmt Required in Shutdown Loc., Rev 6.1  
 17103A-C, Annunciator Response Procedures for Fire Alarm Computer, Rev. 27  
 17103B-C, Annunciator Response Procedures for Fire Alarm Computer, Rev. 10  
 18038-2, Operation from Remote Shutdown Panels, Rev. 22  
 29101-C, Emergency Lighting [18 mo] Surveillance, Rev. 34.1  
 29144-C, Fire Boundaries and Fire Rated Penetration Seals 18 Mo. Visual Inspection, Rev. 22  
 29145-C, Cable & Raceway FB & Radiant Energy Shield Assemblies 18 Mo. Vis. Insp, Rev. 17  
 29204-201-2060735701 (Zone 22), Annual Automatic Fire Det. Test, completed 12-04-2006  
 92000-C, Fire Protection Program, Rev. 22  
 92005-C, Fire Response Procedure, Rev. 25  
 92010-C, Monthly Fire Inspection, Rev. 23  
 92015-C, Use, Control and Storage of Flammable/Combustible Materials, Rev. 29  
 92020-C, Control of Ignition Sources, Rev. 22  
 92025-C, Fire Protection Surveillance Program, Rev. 19  
 92026-C, Fire Protection Work Evaluation, Rev. 14  
 92027-C, Fire Watch Program, Rev. 17  
 92040-C, Fire Protection Operability and LCO Requirements, Rev. 30  
 92722-2, Zone 22 - Aux Building - Level C, MCC 2ABD Room Fire Fighting Preplan, Rev. 2  
 92792-2, Zone 92 - Control Building - Level A, Fire Fighting Preplan, Rev. 3  
 92805-2, Zone 105 - Control Building - Level 1, Fire Fighting Preplan, Rev. 4  
 92821-2, Zone 121 - Control Building - Level 2, Fire Fighting Preplan, Rev. 4  
 NMP-TR-425, Fire Drill Program, Version 2.0

### Test Records

14961-201-2061675101, Quarterly Emergency Lighting Surveillance Checklist 6, 10/28/2006  
 14961-201-2062254601, Quarterly Emergency Lighting Surveillance Checklist 6, 1/20/2007  
 14961-201-2070164201, Quarterly Emergency Lighting Surveillance Checklist 6, 5/13/2007  
 14961-201-2070830001, Quarterly Emergency Lighting Surveillance Checklist 6, 7/7/2007  
 14961-201-2071185101, Quarterly Emergency Lighting Surveillance Checklist 6, 9/29/2007  
 14961-202-2061259501, Quarterly Emergency Lighting Surveillance Checklist 8, 9/15/2006  
 14961-202-2061690501, Quarterly Emergency Lighting Surveillance Checklist 8, 12/8/2006  
 14961-202-2062244201, Retest Associated with 2061690501 Checklist 8, 12/17/2006  
 14961-202-2062266701, Quarterly Emergency Lighting Surveillance Checklist 8, 3/1/2007  
 14961-202-2070385801, Retest Associated with 2062266701 Checklist 8, 5/25/2007  
 14961-202-2070491701, Quarterly Emergency Lighting Surveillance Checklist 8, 5/25/2007  
 14961-202-2070892601, Retest Associated with 2070491701 Checklist 8, 8/6/2007  
 14961-202-2070977101, Quarterly Emergency Lighting Surveillance Checklist 8, 8/16/2007  
 14961-204-2061591401, Quarterly Emergency Lighting Surveillance Checklist 9, 10/31/2006

14961-204-2062055301, Retest Associated with 2061591401 Checklist 9, 8/30/2007  
 14961-204-2062121901, Quarterly Emergency Lighting Surveillance Checklist 9, 1/25/2007  
 14961-204-2070146001, Retest Associated with 2062121901 Checklist 9, 3/3/2007  
 14961-204-2070146101, Retest Associated with 2062121901 Checklist 9, 3/3/2007  
 14961-204-2070164301, Quarterly Emergency Lighting Surveillance Checklist 9, 4/20/2007  
 14961-204-2070729901, Quarterly Emergency Lighting Surveillance Checklist 9, 7/13/2007  
 14961-204-2071211201, Retest Associated with 2070729901 Checklist 9, 7/20/2007  
 14961-205-2061614301, Quarterly Emergency Lighting Surveillance Checklist 10, 10/12/2006  
 14961-205-2062146701, Quarterly Emergency Lighting Surveillance Checklist 10, 1/5/2007  
 14961-205-2070164401, Quarterly Emergency Lighting Surveillance Checklist 10, 4/23/2007  
 14961-205-2070713701, Quarterly Emergency Lighting Surveillance Checklist 10, 8/21/2007  
 14961-205-2071672501, Quarterly Emergency Lighting Surveillance Checklist 10, 9/21/2007  
 14961-206-2061374601, Quarterly Emergency Lighting Surveillance Checklist 7, 10/8/2006  
 14961-206-2061833101, Retest Associated With 2061374601 Checklist 7, 11/17/2006  
 14961-206-2062070701, Quarterly Emergency Lighting Surveillance Checklist 7, 1/4/2007  
 14961-206-2070142301, Quarterly Emergency Lighting Surveillance Checklist 7, 4/2/2007  
 14961-206-2070706101, Quarterly Emergency Lighting Surveillance Checklist 7, 6/21/2007  
 14961-206-2071092401, Quarterly Emergency Lighting Surveillance Checklist 7, 9/17/2007  
 14961-206-2071638701, Retest Associated with 2071092401 Checklist 7, 9/27/2007  
 29101-201-2040598101, 18 Month Emergency Lighting Surveillance Checklist 6, 5/13/2005  
 29101-201-2051871301, Retest Associated with 2040598101 Checklist 6, 8/2/2005  
 29101-201-2060734001, 18 Month Emergency Lighting Surveillance Checklist 6, 7/20/2007  
 29101-202-147627, 18 Month Emergency Lighting Surveillance Checklist 7, 4/6/2005  
 29101-202-2040547701, 18 Month Emergency Lighting Surveillance Checklist 7, 12/25/2006  
 29101-204-140014, 18 Month Emergency Lighting Surveillance Checklist 9, 7/22/2004  
 29101-204-2050459401, 18 Month Emergency Lighting Surveillance Checklist 9, 12/2/2005  
 29101-206-2050202601, 18 Month Emergency Lighting Surveillance Checklist 11, 9/1/2005  
 29101-206-2061342501, 18 Month Emergency Lighting Surveillance Checklist 11, 2/15/2007

#### Technical Manuals and Vendor Information

ABB Automation Inc. IL 41-116.1C, Type COV Volt Controlled Overcurrent Relay, March 2000  
 ABB Automation Inc. IL 41-102E, Type COM Voltage Overcurrent Relay, dated April 1979  
 Westinghouse IL 41-100E, Type CO (Hi Lo) Overcurrent Relay, dated April 1980  
 Westinghouse IL 41-101Q, Type CO Overcurrent Relay, dated March 1978  
 Westinghouse IL 41-102E, Type COM Overcurrent Relay, dated June 1979  
 GE GEK-34054H, Time Overcurrent Relays, dated June 1997  
 AX3AN03-00016, Holophane M-19, 12VDC Power Pack Installation & Maint. Manual, Rev. 0  
 AX3AN03-00021, Instruction Manual for Birns Emergency Light Fixture, Rev. 1

#### Drawings

AX4DJ8011, Fire Areas Auxiliary Building Floor Plan EL. 143'- 6" Level C, Rev. 6  
 AX4DJ8025, Fire Areas Control Building Floor Plan EL. 200'- 0" Level A, Rev. 10  
 AX4DJ8026, Fire Areas Control Building Floor Plan EL. 220' - 0" Level 1, Rev. 12  
 AX4DJ8027, Fire Areas Control Building Floor Plan EL. 240' - 0" Level 2, Rev. 12  
 2X3D-AA-M01A, Simplified One Line Diagram Fire Event SSD Loads Train A, Unit 2, Rev. 9

2X3D-AA-M01B, Simplified One Line Diagram Fire Event SSD Loads Train B, Unit 2, Rev. 9  
 2X3D-AA-D03A, One Line Diagram 4160V Switchgear 2BA03 (2-1804-S3-A03), Rev. 8  
 2X3D-AA-D03B, One Line Diagram 4160V Switchgear 2BA03 (2-1804-S3-A03), Rev. 7  
 2X3D-AA-F11A, One Line Diagram 480V MCC 2ABD (2-1805-S3-ABD), Rev. 18  
 2X3D-AA-F11B, One Line Diagram 480V MCC 2ABD (2-1805-S3-ABD), Rev. 8  
 2X3D-AA-F04A, One Line Diagram 480V MCC 2BBC (2-1805-S3-BBC), Rev. 18  
 2X3D-AA-E01A, One Line Diagram 480V Switchgear 2NB01 (2-1805-S3-B01), Rev. 8  
 2X3D-AA-B02A, One Line Relays & Meters Reserve Aux. Transformers, Rev. 6  
 2X3D-AA-K01A, One Line Diagram Diesel Generators 2A & 2B Relays & Meters, Rev. 9  
 2X3D-AA-M08A-15, Unit 2 Relaying Data, Rev. 1  
 2X3D-AA-M08A-16, Unit 2 Relaying Data, Rev. 1  
 2X3D-AA-M08A-32, Unit 2 Relaying Data, Rev. 1  
 2X3D-AA-M08A-33, Unit 2 Relaying Data, Rev. 2  
 2X3D-AA-M08A-34, Unit 2 Relaying Data, Rev. 2  
 2X3D-AA-M08A-35, Unit 2 Relaying Data, Rev. 1  
 2X3D-AA-M08A-39, Unit 2 Relaying Data, Rev. 1  
 2X3D-AA-M08A-40, Unit 2 Relaying Data, Rev. 1  
 2X3D-AA-M08A-43, Unit 2 Relaying Data, Rev. 2  
 2X3D-CD-C02J, Wiring Diagram Reactor Process Control Cabling Block Diagram, Rev. 4  
 2X3DF452, Conduit & Tray Plan Area 5 EL. 143' - 6" Level C, Auxiliary Building Unit 2, Rev. 20  
 2X6AU01-167-11, Pressurizer Levels Prot. Sets I, II, III Process Control Block Diagram, Rev. 7  
 2X6AU01-002-00, RCS WR Press Prot. Sets I & II Process Control Block Diagram, Rev. 6  
 2X6AU01-162-14, WR Reactor Coolant Temp Prot. Set II Process Control Block Diag., Rev. 10  
 2X6AU01-001-90, SG Level WR Prot. Sets I, II, III Process Control Block Diagram, Rev. 10  
 2X3D-CE-D20A, Wiring Diag. Alt. Shutdown Indication System Cabling Block Diagram, Rev. 1  
 2X6AU01-00910-7, Interconnecting Wiring Diag. Cabinet 02, RCS WR Press Prot. II, Rev. 10  
 2X6AU01-00317, Interconnecting Wiring Diagram Cabinet 02, Pzr Level Protection II, Rev. 10  
 2X6AU01-00324-10, Interconnecting Wiring Diag Cabinet 02, Rx Coolant Temp Prot II, Rev. 13  
 2X6AU01-00308-10, Interconnecting Wiring Diag Cabinet 02, SG Level Loop 2 Prot II, Rev. 10  
 2X6AZ03-00017-0, Block Diagram NFMS Vogtle, Rev. C  
 2X3D-CE-D16B, Cabling Block Diagram PSMS-DPU B Data Links, Rev. 1  
 2X3D-CE-D07C, Wiring Diagram Rx Nuclear Instrumentation Cable Block Diagram, Rev. 0  
 2X3D-BD-D05K, Elem Diagram SIS 2-HV-0943B & RCS 2-HV-0442B, Rev. 3  
 2X3D-AA-G02C, 120V AC Class 1E Vital Instr Distribution Panels 2-1807-Q3-VI5/VI6, Rev. 11  
 2X3D-BD-C05F, Elementary Diagram CVCS 2HV-8095B & 8096B, Rev. 4  
 2X3D-BC-F05B, Elementary Diagram Auxiliary Feedwater System 2FV-5154, Rev. 6  
 2X3D-BD-J02K, Elementary Diagram Containment Spray System 2HV-9003B, Rev. 5  
 2X3D-BD-J02J, Elementary Diagram Containment Spray System 2HV-9003A, Rev. 4  
 2X3D-BD-J02F, Elementary Diagram Containment Spray System 2HV-9002B, Rev. 5  
 2X3D-BD-J02E, Elementary Diagram Containment Spray System 2HV-9002A, Rev. 6  
 2X3D-BC-Q03R, Elementary Diagram Main Steam System (2PV-3010 & 2PV-3020), Rev. 9  
 2X3D-BA-D03D, Elem Diag Elect Sys 4160V INCM. BKR 152-2BA0319 from EDG 2B, Rev. 9  
 2X3D-BA-D03B, Elementary Diag Elect Sys 4160V Swgr 2BA03 INCM. BKR 2NXRB, Rev. 7  
 2X4DB131, P&ID Containment Spray System, Rev. 32  
 2X4DB112, P&ID Reactor Coolant System NO. 1201, Rev. 40  
 2X4DB111, P&ID Reactor Coolant System NO. 1201, Rev. 27  
 2X4DB114, P&ID Chemical & Volume Control System NO. 1208, Rev. 37

1X4DB131, P&ID Containment Spray System, Rev. 33  
 1X3D-AA-M01B, Simplified One Line Diagram Fire Event SSD Loads Train B Unit 1, Rev. 8  
 2X3DG045, Sound-Powered Phone Sys. Riser Diag. - Refuel and Shutdown Sys. Unit 2, Rev. 5  
 AX3D-AA-F12A, One Line Diagram 480V MCC ANBM A-1805-S3-NBM, Rev. 12  
 AX3D-AA-H05A, One Line Diagram CAS 125VDC Non-Class 1E Dist. A-1806-S3-CAS, Rev. 9  
 AX3D-AA-H05B, One Line Diagram CAS 120VAC Non-Class 1E Ess. Dist. Panels, Rev. 12  
 AX4DJ8011, Fire Areas Auxiliary Building El. 143 Ft 6 In Level C, Rev. 6  
 AX4DJ8025, Fire Areas Control Building El. 200'-0" Level A, Rev. 10  
 AX4DJ8026, Fire Areas Control Building El. 220'-0" Level 1, Rev. 12  
 AX4DJ8027, Fire Areas Control Building El. 240'-0" Level 2, Rev. 12  
 CX4DB173-1, "P&ID Fire Protection Pump House No. 1 & 2 System 2301," Ver. 34.0  
 CX4DB173-2, "P&ID - Fire Protection - Yard Piping - System No. 2301," Ver. 26.0  
 2X4DB174-2, "P&ID Fire Protection Water Systems System No. 2301," Ver. 25.0  
 2X4DB174-3, "P&ID Fire Protection Water Systems System No. 2301," Ver. 24.0  
 AX4DJ8010, "Fire Areas - Auxiliary Building - Floor Plan El. 143 Ft. 6 In. - Level C," Rev. 7  
 AX4DJ8011, "Fire Areas - Auxiliary Building - Floor Plan El. 143 Ft. 6 In. - Level C," Rev. 6  
 AX4DJ8013, "Fire Areas - Auxiliary Building - Floor Plan El. 170 Ft. 6 In. - Level B," Rev. 5  
 AX4DJ8023, "Fire Areas - Control Building - Floor Plan El. 180'-0" - Level B," Rev. 10  
 AX4DJ8025, "Fire Areas - Control Building - Floor Plan El. 200'-0" - Level A," Rev. 10  
 AX4DJ8026, "Fire Areas - Control Building - Floor Plan El. 220'-0" - Level 1," Rev. 12  
 AX4DJ8027, "Fire Areas - Control Building - Floor Plan El. 240'-0" - Level 2," Ver. 12.0  
 AX4DJ8028, "Fire Areas - Control Building - Floor Plan El. 260'-0" - Level 3," Rev. 6  
 V-E-04-21, Fire, Air & Water Seal, Elect. Pen - Blockout Only, Elastomer Floor/Wall, Rev. 1  
 V-E-04-22, Fire, Air & Water Seal, Elect. Pen - Tray Only, Elastomer Floor/Wall, Rev. 1

#### Completed Surveillance Test Procedures and Test Records

14710-201-2050046101, Remote Shutdown Transfer Switch 18 Month Surveillance, 8/4/2005  
 14710-201-2061303501, Remote Shutdown Transfer Switch 18 Month Surveillance, 4/16/2007  
 14999-201-2062147001, Unit 2 Quarterly Communications Surveillance, 1/5/2007  
 14999-201-2070025301, Unit 2 Quarterly Communications Surveillance Retest, 1/20/2007  
 14999-201-2070165001, Unit 2 Quarterly Communications Surveillance, 3/30/2007  
 14999-201-2070730501, Unit 2 Quarterly Communications Surveillance, 6/20/2007  
 14999-201-2071093101, Unit 2 Quarterly Communications Surveillance, 9/13/2007

#### Calculations, Evaluations, and Specifications

X3CA26, Unit 1 & Unit 2 Relaying Calculation, Rev. 6  
 X3CT08, Unit 1 & Unit 2 Fire Event Safe Shutdown Circuit Analysis, Rev. 18  
 X4BJ01, Unit 2 Fire Safe Shutdown Eval. Results by Bechtel Western Power Co., June 1988  
 X4C1566V01, VEGP Diesel Generator Building Temperature Rise Calculation, Rev. 0  
 X4C2301S030, Fire Protection Safe Shutdown Component Locations, Unit 2, Ver. 6  
 X4C2301S032, Fire Event Safe Shutdown Evaluation (FESSE) Aux Bldg, Ver. 11  
 X4C2301S032, FESSE - Aux Bldg, Attachment D, Rev. 0, 4  
 X4C2301S033, FESSE - Control Building, Rev. 0, 1  
 X4C2301S033, Fire Event Safe Shutdown Evaluation (FESSE) Control Bldg, Ver. 11  
 X4C2301S035, Control Room Fire Alternate Shutdown Evaluation (CRFASE), Ver. 9

AX4DR802, Combustible Load Calculations for Fire Hazards Analysis, Ver. 5.0  
 X4C2301S049, Safety Related Cable Tray Suppression Coverage Verification, Rev. 2  
 DC-1010, Project Classification List - Interdiscipline, Ver. 23

### Design Changes

97-VAN0044-0-1, Essential Chilled Water Electro-Hydraulic Control Valves Borg-Warner  
 Actuator Replacement, Thru Field Change F021 and DCPT 008  
 DCP C052267801, Fire Alarm Computer Replacement, Ver. 3.0  
 DCP-90-V1N0133, Apply SI DG Trip Bypasses for LOSP to Preclude Unwanted Trips, Rev. 0

### List of Components Inspected

2-HV-5154, auxiliary feed water pump minimum flow valve  
 Circuit breaker 152-2BA0319, emergency diesel generator 2B output  
 Circuit breaker 152-2BA0301, incoming from transformer 2NXRB  
 2LT0460, reactor coolant system pressurizer level  
 2LT0502, steam generator level  
 2PT0403, reactor coolant system wide range pressure  
 2TE0423B, reactor coolant system wide range cold leg temperature  
 2NI13135B, upper range neutron flux  
 2NI13135D, lower range neutron flux  
 2HV-8095B, reactor head vent valve  
 2HV-8096B, reactor head vent valve  
 2FV-442B, reactor head vent valve  
 2PV-3010 & 2PV-3020, main steam power operated relief valves.

### Work Orders

2060114201  
 2030113600

### Other Documents

V-RQ-JP-18038-001, Perform Control Room Actions Prior to Evacuation, Rev. 14  
 V-RQ-JP-18038-002, Establish Local Control of the Plant at the Shutdown Panel, Rev. 2  
 V-RQ-JP-18038-006, Locally Energize Train B Switchgear Following Local Diesel Start, Rev. 15  
 V-RQ-JP-18038-007, Control ARV Position Using Temporary Current Source, Rev. 14  
 V-RQ-JP-18038-011, De-energize Secondary Sys. Valves Following MCR Evacuation, Rev. 15  
 V-RQ-JP-18038-012, Locally Control Charging Flow Following MCR Evacuation, Rev. 12  
 Letter dated February 22, 1985 (File: X6BB06, Log: GN-530) regarding Unit 1 and Unit 2 draft  
 SER open items 73 thru 85 and 96 fire protection.  
 Letter dated July 7, 1987 (File: X4BJ01, Log: GN-1380) regarding Unit 2 fire suppression  
 system changes.  
 Letter dated January 13, 1989 (File: X7BC35, Log: GN-1550) regarding fire protection RAI for  
 cable tray suppression and proposed FSAR changes.

Fire Drills

Fire Drill 2007-Q4-05, dated October 1, 2007  
 Fire Drill 2007-Q3-03, dated August 20, 2007  
 Fire Drill 2006-Q3-03, dated July 5, 2006  
 Fire Drill 2005-Q4-04, dated December 12, 2005  
 Fire Drill 2005-Q3-01, dated July 20, 2005

Condition Reports Reviewed During This Inspection

Action Item 2006202612, Complete feasibility study for Operator Manual Actions  
 CR 2006105584, Documentation of VEGP position regarding OMAs  
 CR 2006108559, Emergency lighting issues identified during 17103A-C OMA feasibility study  
 CR 2006109484, Enhancements recommended to fire pre-plans  
 CR 2006109486, Enhancements recommended to 17103A-C due to OMA feasibility study  
 CR 2006112230, Calc X4C2301S026 does not evaluate diversion flow paths from RWST/CST  
 CR 2006112513, South MSVR telephone page failed Unit 2 Surveillance 14999-C, 11/02/2006  
 CR 2007100170, South MSVR telephone page failed Unit 2 Surveillance 14999-C, 01/05/2007  
 CR 2007104016, PABX ext 4911 failed Unit 2 Surveillance 14999-C, 03/30/2007  
 CR 2007108715, Potential hot short issue involving Unit 1 Containment Spray valves  
 CR 2007108716, Potential hot short issue involving Unit 2 Containment Spray valves  
 CR 2007109602, Recommend 17103A-C revision to provide sequencing information for OMA

Condition Reports (CR) Generated During This Inspection

CR 2007109832, Permit for transient combustibles did not include three rolling chairs  
 CR 2007110221, Apparent discrepancy in the identification for Unit 2 Fire Zone 105  
 CR 2007110222, A documentation discrepancy in the FESSE calculation  
 CR 2007110223, Discrepancy of UFSAR description of fire area boundaries  
 CR 2007110224, Could allow for rooms within a fire zone to not have any operable detectors  
 CR 2007110243, On one-line drawing, wrong breaker is labeled and needs to be revised  
 CR 2007110309, UFSAR states sidewall sprinklers not used at VEGP, but are located in plant  
 CR 2007110312, Various observations in 18038-2, operation from remote shutdown panels  
 CR 2007110313, Issues identified could impact timely performance of referenced manual action  
 CR 2007110356, System health report issues identified not being corrected in timely manner  
 CR 2007110357, Calc analyzes safety-related cable tray suppression coverage verification  
 CR 2007110369, Potential feasibility of performing RSP actions concurrent with LOSP  
 CR 2007110370, Procedural guidance, lighting, and communications to perform manual actions  
 CR 2007110445, No emergency lights on Level 1 of the Unit 2 north main steam valve room  
 CR 2007110563, Drawing correctness and use of this information to locate other documents  
 CR 2007110583, Drawing correctness and the use of this information  
 CR 2007110652, Calculation configuration not revised due to a change  
 CR 2007110765, Recommend pre-plan revision to reflect security barrier configuration change  
 CR 2007110796, Incorporate enhancements to improve response to a fire event SSD  
 CR 2007110797, Evaluate the functional delay in DCP C052267801  
 CR 2007110800, Accuracy of the UFSAR  
 CR 2007110801, Procedure does not specify if sound powered phone headsets are operable

CR 2007110812, Discrepancy between UFSAR 9A.2.29 and Procedure 29145-C  
CR 2007110821, Discrepancy between FHA and calculation  
CR 2007110829, Historical justification for current configuration can not be readily located  
CR 2007110845, Emergency lighting programmatic deficiencies  
CR 2007110849, Some SSA actions not incorporated into Procedure 18038-2



**LIST OF ACRONYMS**

BTP	Branch Technical Position
Btu	British Thermal Unit
C&T	Clearance and Tagging
CAP	Corrective Action Program
CMEB	Chemical Engineering Branch
CR	Condition Report
DCP	Design Change Package
EBI	Enterprise Building Integrator
EDG	Emergency Diesel Generator
ELU	Emergency Lighting Unit
FA	Fire Area
FESSE	Fire Event Safe Shutdown Evaluation
FHA	Fire Hazards Analysis
FPP	Fire Protection Program
FZ	Fire Zone
HVAC	Heating, Ventilation and Air Conditioning
IP	Inspection Procedure
IPEEE	Individual Plant Examination of External Events
kV	Kilovolts
MCR	Main Control Room
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
OEP	Operating Experience Program
OSHA	Occupational Safety and Health Administration
P&ID	Piping and Instrumentation Drawing
PTC	Permit for Transient Combustibles
RSP	Remote Shutdown Panel
SER	Safety Evaluation Report
SRO	Senior Reactor Operator
SSA	Safe Shutdown Analysis
SSD	Safe Shutdown
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
V	Volts
Vdc	Volts Direct Current
VEGP	Vogtle Electric Generating Plant
XBS	Excel Building Supervisor