**UNITED STATES**
**NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

August 14, 2017

Mr. Darin J. Myers
VP Nuclear Plant Site
Southern Nuclear Operating Co., Inc.
Vogtle Electric Generating Plant
7821 River Road
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000424/2017008 AND 05000425/2017008

Dear Mr. Myers:

On June 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vogtle Electric Generating Plant, Units 1 and 2 and discussed the results of this inspection with Mr. T. Krienke and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented one finding of very low safety significance (Green) in this report. This finding involved a violation of NRC requirements; this violation was determined to be a Severity Level IV under the traditional enforcement process.

If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement,; and the NRC Resident Inspector at the Vogtle Electric Generating Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with 10 CFR 2.390, “Public Inspections, Exemptions, Requests for Withholding.”

Sincerely,

***/RA/***

Scott M. Shaeffer, Chief
Engineering Branch 2
Division of Reactor Safety

Docket Nos.: 50-424 and 50-425
License Nos.: NPF-68 and NPF-81

Enclosure:
Inspection Report 05000424/2017008
and 05000425/2017008 w/Attachment:
Supplementary Information

cc: Distribution via ListServ

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000424/2017008 AND 05000425/2017008

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

| | |
|---|---|
| Docket Nos.: | 50-424, 50-425 |
| License Nos.: | NPF-68, NPF-81 |
| Report Nos.: | 05000424/2017008 and 05000425/2017008 |
| Licensee: | Southern Nuclear Operating Company, Inc. (SNC) |
| Facility: | Vogtle Electric Generating Plant, Units 1 and 2 |
| Location: | Waynesboro, GA 30830 |
| Dates: | June 12-16, 2017 (Week 1)<br>June 26-30, 2017 (Week 2) |
| Inspectors: | L. Jones, Security Risk Analyst<br>J. Montgomery, Senior Reactor Inspector (Lead Inspector)<br>J. Patel, Senior Reactor Inspector<br>M. Singletary, Reactor Inspector<br>D. Strickland, Reactor Inspector (Training) |
| Approved by: | Scott M. Shaeffer, Chief<br>Engineering Branch 2<br>Division of Reactor Safety |

Enclosure

## SUMMARY

Inspection Report (IR) 05000424/2017008, 05000425/2017008; 07/12/2017 – 07/16/2017 and 07/26/2017 - 07/30/2017; Vogtle Electric Generating Plant, Units 1 and 2; Fire Protection (Triennial)

The report covers an announced two-week triennial fire protection inspection by a team of five regional inspectors. One SL IV non-cited violation and associated Green finding was identified. The significance of inspection findings are indicated by their color (i.e., Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, Significance Determination Process, dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG- 1649, "Reactor Oversight Process," Revision 6.

Cornerstone: Mitigating Systems

Green/SL IV. The inspectors identified a Severity Level IV (SL IV) non-cited violation (NCV) and associated Green finding of Vogtle Units 1 and 2 Operating License Conditions 2.G, for the licensee's failure to perform an evaluation of the impact of a change to the approved fire protection program (FPP). The failure to adequately evaluate the impact of the change resulted in the implementation of a change to the FPP that could have adversely affected the ability to achieve and maintain safe shutdown. The licensee initiated condition report (CR) 10382461 to evaluate the issue and make necessary correction to the program.

The inspectors determined that the licensee's failure to adequately evaluate the impact of the change to the FPP was a performance deficiency (PD). The PD was determined to be more than minor because if left uncorrected, the PD could have the potential to lead to a more significant safety concern. Specifically, if degraded fire doors are not evaluated for functionality, the doors could potentially be left in a condition where it would not perform its design function in the case of a fire. The licensee's failure to submit the FPP change to the NRC was determined to impede the regulatory process because the FPP change required NRC review and approval prior to implementation. The finding was screened as Green because, based upon inspection of the affected barriers, the inspectors determined that, either, the combustible loading on both sides of the barrier represented a fire duration of less than 1.5 hours, there was a fully functional automatic suppression system on either side of the barrier, or the barrier separated rooms that utilized the same SSD strategy. This violation was determined to be a Severity Level IV violation because the associated finding was evaluated by the SDP as having very low safety significance (i.e., Green finding). No cross cutting aspect was assigned because the finding was not indicative of current licensee performance. (Section 1R05.11)

## REPORT DETAILS

## 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R05 Fire Protection

This report documents the results of a triennial fire protection inspection (TFPI) at the Vogtle Electric Generating Plant (VEGP), Units 1 and 2. The inspection was conducted in accordance with NRC Inspection Procedure (IP) 71111.05T, "Fire Protection (Triennial)," issued January 31, 2013. The objective of the inspection was to evaluate the design, operational status, and material condition of the licensee's FPP. An additional objective was to review site specific implementation of one mitigating strategy from Section B.5.b of NRC Order EA-02-026, "Order for Interim Safeguards and Security Compensatory Measures" (commonly referred to as B.5.b); as well as the storage, maintenance, and testing of B.5.b mitigating equipment. Section 71111.05-05 of the IP specifies a minimum sample size of three fire areas (FAs) and one B.5.b mitigating strategy for addressing large fires and explosions. The team selected three FAs based on available risk information as analyzed onsite by a senior reactor analyst from Region II, data obtained from in-plant walkdowns regarding potential ignition sources, location and characteristics of combustibles, and location of equipment needed to achieve and maintain the reactor in a safe and stable condition. Other considerations for selecting the FAs were the relative complexity of the post-fire safe shutdown (SSD) procedures, information contained in FPP documents, and results of prior NRC TFPIs. In selecting the B.5.b mitigating strategy sample, the team reviewed licensee submittal letters, safety evaluation reports (SERs), licensee commitments, B.5.b implementing procedures, and previous NRC inspection reports. This inspection fulfilled the requirements of the procedure by selecting a sample of three FAs and one B.5.b mitigating strategy.

- FA 2-CB-L2-B – Unit 2 Control Building Level 2 – Train B Cable Spreading Room
- FA 2-CB-LA-L – Unit 2 Control Building Level A – Train B Shutdown Room
- FA 2-CB-LB-B – Unit 2 Control Building Level B – Train A Switchgear Room

For each of the selected FAs, the team evaluated the licensee's FPP against applicable NRC requirements and licensee design basis documents (DBDs). Documents reviewed by the team are listed in the Attachment.

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The inspectors reviewed the licensee's Fire Event Safe Shutdown Evaluation (FESSE) referenced in the updated Final Safety Analysis Report (UFSAR) Chapter 9; the licensee's fire hazards analysis (FHA); plant procedures; piping and instrumentation drawings (P&IDs); electrical drawings; and other supporting documents. The inspectors selected a sample of SSD systems to evaluate the licensee's ability to safely shut down the plant in the event of a fire. The inspectors performed in-plant inspections to verify

that the plant configuration was consistent with that described in the FESSE. The inspectors reviewed the licensee's shutdown methodology to verify that it properly identified the components and systems necessary to achieve and maintain SSD conditions for postulated fires resulting in shutdown from the main control room (MCR). The inspectors reviewed conduit and cable tray drawings, as well as field walk-downs of the cable routing to confirm that at least one train of redundant cables routed in the selected FAs was adequately protected from fire damage. The inspectors focused their inspection activities on systems specified in the FESSE for reactivity control, reactor coolant makeup, and decay heat removal; as well as process monitoring instrumentation and necessary support systems, such as the electrical power distribution system, service water and heating ventilation and air conditioning (HVAC) systems.

The inspectors reviewed and performed a walkthrough of procedure steps used for post-fire SSD to ensure the technical and human factors adequacy of the procedures. The inspectors verified the licensee personnel credited for performance of procedures were available in the event a fire occurred. The inspectors also verified that the credited licensee personnel had procedures available, and were trained on implementation. The inspectors reviewed and walked down applicable sections of procedure 17103A-C, "Annunciator Response Procedures for Fire Alarm Computer". The inspectors reviewed operator actions to ensure these actions could be implemented in accordance with plant procedures in a manner necessary to support the SSD method for the applicable FA.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

For the selected FAs, the inspectors verified the adequacy of fire walls, ceilings, floors, fire doors, and fire dampers. The inspectors walked down accessible portions of the selected FAs to observe material condition of the passive barriers and to identify degradation or non-conformances. The inspectors compared the installed configurations to the approved construction details and supporting fire endurance test data to assure that the respective fire barriers met the requirements of Branch Technical Position CMEB 9.5.1, Fire Protection for Nuclear Power Plants. In addition, the inspectors reviewed licensing bases documentation to verify that passive fire protection features met license commitments. A sample of completed surveillance and maintenance procedures for selected fire doors, fire dampers, and penetration seals were reviewed to ensure that these passive fire barriers were being properly inspected and maintained.

b. Findings

No findings were identified.

.03 Active Fire Protection

a. Inspection Scope

For the selected FAs, the inspectors performed in-plant observations to verify the material condition and operational lineup of the fire protection water supply; automatic water and Halon fire suppression systems, manual fire hose and standpipe systems and installed fire extinguishers. The inspectors reviewed engineering drawings and specifications to verify that the as-built configuration of fire suppression equipment was adequately maintained. Internal standpipe and hose stations, and heat and smoke detection systems were reviewed against specifications and drawings to verify that the fire detection and suppression methods were appropriate for the types of fire hazards that existed in the FAs. The inspectors also verified that the suppression equipment met applicable NFPA standards. The inspectors reviewed completed surveillance testing and maintenance procedures to verify that the equipment was adequately maintained. The inspectors reviewed firefighting pre-plans to verify that the strategies were adequate. The inspectors observed the fire brigade staging and dress out areas to assess the condition of firefighting and smoke control equipment.

b. Findings

No findings were identified.

.04 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The inspectors evaluated whether manual water-based firefighting activities or heat and smoke migration from fires within the selected FAs could adversely affect equipment credited for SSD, inhibit access to alternate shutdown equipment, or adversely affect local operator actions required for SSD. Fire Strategies (pre-fire plans); fire brigade training procedures; HVAC drawings; and abnormal procedures for fires were also reviewed to verify that inter-area migration of water or the ventilation of heat and smoke were addressed and would not adversely affect SSD equipment or the performance of operator manual actions (OMAs). Calculations and analysis addressing the inadvertent operation or postulated failure of water based suppression systems, including water hammer from rapid system depressurization were also reviewed to determine impact on SSD equipment.

b. Findings

No findings were identified.

.05 Alternative Shutdown Capability

a. Inspection Scope

Control room evacuation is not credited for fire in the selected fire areas. Therefore, the inspection team did not investigate alternative shutdown capability. However, the inspectors reviewed procedures, work orders, and completed surveillances to verify that the alternative shutdown transfer capability was periodically tested.

Additionally, the inspectors reviewed electrical schematics and one line diagrams to ensure that a fire in FA 2-CB-LA-L would not impact operators' ability to perform SSD from the MCR.

b. Findings

No findings were identified.

.06 Circuit Analysis

a. Inspection Scope

The inspectors reviewed the licensee's FPP referenced in the UFSAR Chapter 9, which included the FHA, FESSE, plant procedures, and system P&IDs to verify that the licensee had identified required and associated circuits that may impact post-fire SSD for the selected FAs. This review included assessing the potential for flow diversion paths, loss of function, or other scenarios that would adversely impact the plant's ability to achieve and maintain SSD conditions. The inspectors reviewed the licensee's post-fire SSD procedures and compared them with the post-fire SSD analysis and component separation analysis for the selected FAs.

The inspectors reviewed a representative sample of the credited SSD components in the selected FAs to verify that the components specified in the post-fire SSD procedures were available for a postulated fire, and met their SSD function. The inspectors also reviewed cable routing information and electrical control wiring diagrams for these selected SSD components to determine if these cables had either been adequately protected from the potentially adverse effects of fire damage or analyzed to show that fire induced faults would not prevent post-fire SSD. Specifically, this review analyzed whether identified combinations of individual circuit conductors which, if shorted together due to fire damage, could cause spurious operation or non-operation. The inspectors conducted walkdowns in the selected FAs to determine if the credited components relied upon for SSD would still be available given a fire in the FAs. For instances where cables traversed through the selected FAs, the inspectors performed more detailed circuit analysis to verify fire induced damage would not adversely impact the credited SSD methodology.

The inspectors reviewed the licensee's evaluations for spurious circuit failure scenarios (single and/or multiple) specified in the circuit analysis to determine if the sample list of components challenged the assumptions made in the FESSE. The inspectors reviewed the licensee's electrical coordination study calculations to determine if power supplies were susceptible to fire damage, which would potentially affect the credited components for the FAs selected for review. The specific components and references reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.07 Communications

a. Inspection Scope

The inspectors reviewed the communication capabilities (telephone/page, PABX, sound power phone, and portable radio systems) required to support plant personnel in the performance of OMAs to achieve and maintain safe shutdown as credited in UFSAR Section 9.5.2. The inspectors verified the availability and adequacy of communication systems required for alternate safe shutdown through the inspection of designated emergency storage lockers. The inspectors verified that communication systems used for firefighting activities would adequately support communication between and amongst the fire brigade team members and operators in the MCR. The inspectors verified that cables for communication equipment would not be affected by a fire in the selected FAs. The inspectors reviewed surveillance and preventative maintenance records to verify that the communication equipment was being properly tested and maintained. The team also verified that the design and location of communication equipment, such as repeaters and transmitters, could not cause a loss of communication during a fire.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The inspectors reviewed maintenance and design documentation of the fixed 8-hour battery pack emergency lighting units (ELUs) required by the licensee's FPP. The inspectors evaluated the capability of the ELUs to support plant personnel in the performance of SSD functions, including local OMAs, and for illuminating access and egress routes to the areas for the performance of local OMAs. The inspectors verified that these battery power supplies were rated with at least an 8-hour capacity, as required by BTP CMEB 9.5-1, Section C.5.g(1). The inspectors performed plant walkdowns of the post-fire SSD procedures for the selected FAs and observed placement and coverage area of the ELUs required for local OMAs. The inspectors also evaluated the adequacy of the ELUs to illuminate access and egress pathways, and any equipment requiring local operation and/or instrumentation monitoring for post-fire SSD. The inspectors reviewed vendor manuals to ensure that the ELUs were being maintained consistent with manufacturer's recommendations.

b. Findings

No findings were identified.

.09 Cold Shutdown Repairs

a. Inspection Scope

The inspectors reviewed the FHA, UFSAR and plant procedures for responding to fires and implementing SSD activities in order to determine if any repairs were required to achieve cold shutdown. One system and two rooms were identified has having potential repairs required to achieve cold shutdown.

The licensee had designated the Train "B" Emergency Diesel Generator Fuel Oil Transfer Pumps for potentially requiring repair, in the form of a control circuit emergency jumper, in order to reach cold shutdown based on the SSD methodology implemented. The inspectors verified that the jumper was readily available and that the procedure to install it was adequate. The licensee had also designated the CB-313 Chiller Room and CB-226 Auxiliary Relay Room for potentially requiring repair, in the form of setting up temporary ventilation, in order to reach cold shutdown based on the SSD methodology was implemented. Specific documents reviewed by the inspectors are listed in the Attachment.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

Compensatory Measures for Degraded Fire Protection Components

The inspectors reviewed the administrative controls for out-of-service, degraded and/or inoperable fire protection features (e.g. detection and suppression systems, and passive fire barriers) to verify that short-term compensatory measures were adequate for the degraded function or feature until appropriate corrective actions could be taken. The inspectors reviewed impairment and compensatory measures forms for fire watch tours to confirm they were being performed within the allowable time frames.

Operator Manual Actions as Compensatory Measures for Safe Shutdown

The inspectors reviewed applicable sections of Calculation X4C2301S026, "Fire Event Safe Shutdown Evaluation (FESSE) Control Building," Calculation X4C2301S311, "VEGP Multiple Spurious Operations Analysis," and Procedure 17103A-C, "Annunciator Response Procedures for Fire Alarm Computer," to identify OMAs credited for SSD. In cases where local OMAs were credited in lieu of cable protection or separation of SSD equipment, the inspectors performed walk downs of those applicable OMAs to verify that the OMAs were feasible, utilizing the guidance of NRC IP 71111.05T, paragraph 02.02.j.2.

b. Findings

No findings were identified.

.11 Review and Documentation of Fire Protection Program Changes

a. Inspection Scope

The inspectors reviewed modifications associated with the FPP to verify that changes were in accordance with the fire protection license condition and had no adverse effect on the ability to achieve SSD. Modifications reviewed are listed in the Attachment.

b. Findings

Introduction: The inspectors identified a SL IV NCV and associated Green finding of Vogtle Units 1 and 2 Operating License Conditions 2.G, for the licensee's failure to perform an evaluation of the impact of a change to the FPP. The failure to adequately evaluate the impact of the change resulted in the implementation of a change to the FPP that could have adversely affected the ability to achieve and maintain safe shutdown.

Description: On June 30, 2017, the inspectors identified the site had a sign posted on multiple fire doors indicating manual closure may be necessary. The inspectors noted the site's FPP included a commitment to meet NFPA 80-1983, which requires fire doors to be self-closing. The licensee provided Licensing Document Change Request (LDCR) FS99-049, and an associated 10 CFR 50.59 evaluation, to show where the site self-approved a deviation from NFPA 80-1983 for fire doors that were unable to self-close due to high differential pressure caused by certain building ventilation conditions. The licensee provided procedures 29124-C, "Fire Doors Inspection (FSAR Fire Protection Surveillance)," 29123-C, "Semi-Annual Fire Doors Inspection" and 11887-2, "Control Building Rounds Sheets" to demonstrate the administrative controls being used to implement the site requirements for fire doors. These administrative controls included operators checking fire doors during daily rounds, as well as a site-wide expectation that all personnel close fire doors behind them.

In reviewing the document, the inspectors questioned the population of fire doors that were susceptible to high differential pressure conditions. The inspectors requested a number of CRs written over the past few months documenting fire doors being found not latched. The inspectors reviewed 37 CRs and determined that 17 CRs were closed without a functionality evaluation having been performed for the fire door in question. The doors in question were located throughout the control building and auxiliary building. Inspectors determined that site personnel used the results of the LDCR as a basis for not performing functionality evaluations for fire doors that were found ajar.

The inspectors concluded, and the licensee agreed, that the intended scope of LDCR FS99-049 was to provide deviation to NFPA 80-1983 for a limited number of fire doors that experience high differential pressure conditions. The licensee also agreed that they had inappropriately extended the scope of LDCR FS99-049 to doors that were not affected by differential pressure. The licensee initiated CR 10382461 to evaluate the issue and make necessary correction to the program.

Analysis: The inspectors determined that the licensee's failure to adequately evaluate the impact of the change to the FPP was a PD. The PD was determined to be more than minor because if left uncorrected, the PD could have the potential to lead to a more significant safety concern. Specifically, if degraded fire doors are not evaluated for

functionality, the doors could potentially be left in a condition where it would not perform its design function in the case of a fire.

The finding was screened in accordance with NRC IMC 0609, "Significance Determination Process," dated April 29, 2015, Attachment 4, "Initial Characterization of Finding," dated October 7, 2016, which determined that an IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated September 20, 2013, was required as the finding involved the ability to confine fires. For the 17 noted examples of improperly evaluated fire doors, the finding was screened as Green based on one of Questions 1.4.3-A, 1.4.3-C, and 1.4.3-D being answered Yes. Specifically, for the barriers identified, either the combustible loading on both sides of the barrier represented a fire duration of less than 1.5 hours, there was a fully functional automatic suppression system on either side of the barrier, or the barrier separated rooms that utilized the same SSD strategy.

The licensee's failure to submit the FPP change to the NRC was determined to impede the regulatory process because a FPP change of this nature required NRC review and approval prior to implementation. The severity level of the traditional enforcement violation was assigned based upon the significance determination of the associated finding. This violation was determined to be a Severity Level IV violation per Section 6.1.d.2 of the NRC Enforcement Policy, dated November 1, 2016, because the associated finding was evaluated by the SDP as having very low safety significance (i.e., Green finding). The finding is not an immediate safety concern based upon the remaining FPP defense-in-depth features of existing administrative controls, installed fire detection, manual suppression and an analyzed means of achieving safe shutdown. The cause of the finding was determined to not have a cross-cutting aspect because the program change, made in 2000, was not indicative of current licensee performance.

Enforcement: Vogtle Units 1 & 2 Operating License condition 2.G states that Southern Nuclear shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility, as approved in the SER (NUREG-1137) through Supplement 9 subject to the following provision:

> Southern Nuclear may make changes to the approved fire protection program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

Contrary to the above on June 9, 2000, the licensee made a change to the approved Fire Protection Program without prior approval of the Commission that adversely affected the ability to achieve and maintain safe shutdown in the event of a fire. Specifically, the licensee incorporated LDCR FS99-049 which evaluated deviation from the NFPA 80-1983 requirement of a fire door to self-close and latch. The evaluation was intended to be scoped specifically for fire doors that were unable to self-close due to high differential pressure caused by certain building ventilation conditions. However the licensee implemented the change site-wide, and did not limit the scope of doors to just those experiencing high differential pressure. Because the finding is of very low safety significance, the associated traditional enforcement violation was screened as Severity Level IV, and the violation has been entered into the licensee's corrective action program as CR 10382461, this violation is being treated as an NCV consistent with

Section 2.3.2 of the NRC Enforcement Policy. NCV 05000424, 425/2017008-01 Fire Protection Program Change did not meet VEGP License Condition Requirement 2.G for Units 1 and 2.

.12 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The inspectors conducted walkdowns of numerous plant areas that were important to reactor safety, including the selected FAs, to verify the licensee's implementation of fire protection requirements as described in procedures 92015-C, Use, Control and Storage of Flammable/Combustible Materials, NMP-ES-035-007, Fleet Hot Work Instructions and NMP-ES-035-012, Fire Protection Work Reviews. The inspectors verified that the licensee had properly evaluated transient fire hazards, controlled hot-work activities, and maintained general housekeeping consistent with administrative control procedures and the fire hazards analysis. For the selected FAs, the inspectors evaluated the potential for fires and explosions, and potential fire severity. Fire watch and craft personnel were interviewed for familiarity with job requirements. No hot work was observed as part of the inspection activities within the selected fire areas.

b. Findings

No findings were identified.

.13 B.5.b Inspection Activities

a. Inspection Scope

The inspectors reviewed, on a sample basis, the licensee's mitigation measures for manually depressurizing steam generators and using the portable pump to verify that the measures were feasible, personnel were trained to implement the strategies, and equipment was properly staged and maintained. The inspectors reviewed the licensee's established program, applicable SERs and submittals which supported the elements outlined by the license condition. The inspectors reviewed inventory, surveillance testing, and maintenance records of required equipment to verify that the licensee continued to meet the requirements of their B.5.b license condition and 10 CFR 50.54 (hh)(2). Through discussions with plant staff, documentation review, and plant walkdowns, the inspectors verified the engineering basis to establish reasonable assurance that the makeup capacity could be provided using the specified equipment and water sources. The inspectors reviewed the licensee's capability to provide a reliable and available water source and the ability to provide the minimum fuel supply. The inspectors performed a walk-down of the storage and staging areas for the B.5.b equipment to verify that equipment identified for use in the current procedures was available and maintained. The inspectors reviewed training records of the licensee's staff to verify that operations and security personnel training/familiarity with the strategy objectives and implementing guidelines were accomplished according to the established training procedures.

b. Findings

No findings were identified.

## 4. OTHER ACTIVITIES

### 4OA2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed a sample of recent licensee independent audits, CRs, self-assessments, and system/program health reports for thoroughness, completeness and conformance to FPP requirements described in the VEGP UFSAR and FPP. The inspectors also reviewed Corrective Action Program (CAP) documents, including completed corrective actions documented in selected CRs, to verify that fire protection deficiencies were adequately identified, evaluated, and that appropriate corrective actions were implemented. The CRs were reviewed with regard to the attributes of timeliness and apparent cause determination to ensure that proposed corrective actions addressed the apparent cause, reportability and operability determinations. In addition, operating experience program documents were also reviewed to verify that industry-identified fire protection problems, potentially or actually affecting VEGP were appropriately entered into and resolved by the CAP process and the inspectors evaluated the effectiveness of the corrective actions for the identified issues. Specific documents reviewed by the inspectors are listed in the Attachment.

b. Findings

No findings were identified.

### 4OA6 Meetings, Including Exit

On June 30, 2017, the lead inspector presented the preliminary inspection results and findings to Mr. T. Krienke, Operations Director, and other members of the licensee's staff. The licensee acknowledged the findings. Proprietary information is not included in this inspection report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

## SUPPLEMENTARY INFORMATION

## KEY POINTS OF CONTACT

Licensee Personnel
L. Casella, Corporate Fire Protection
J. Christensen, FP Engineer
R. Daniel, Fire Marshall
J. Lattner, Principal Fire Protection Engineer
R. Linebarger, Fire Protection (Units 3 and 4)
T. McCarthy, Lead Fire Protection Engineer
D. Parker, Senior Engineer
M. Sykes, Safe Shutdown Engineer
K. Walden, Licensing Engineer
B. White, Licensing Supervisor

NRC Personnel
A. Alen, Resident Inspector
M. Endress, Senior Resident Inspector
S. Shaeffer, Chief, Engineering Branch 2, Division of Reactor Safety, Region II

## LIST OF REPORT ITEMS

Opened and Closed

| | | |
|---|---|---|
| 05000424, 425/2017008-01 | NCV | Fire Protection Program Change did not meet VEGP License Condition Requirement 2.G for Units 1 and 2 (Section 1R05.11) |

## LIST OF DOCUMENTS REVIEWED

## LIST OF COMPONENTS REVIEWED
**(Refer to Report Section 1R05.01 / 1R05.06 – Circuit Analyses)**

| Component Identification | Description |
|---|---|
| 2HV-8508A | Train 'A' Miniflow Valve |
| 2-1208-P6-002 | Charging Pump 'A' |
| 2-1205-P6-001 | RHR Pump 'A' |
| 2-1202-P4-001 | NSCW Pump 001 |
| 2-1202-P4-003 | NSCW Pump 003 |
| 2-1202-P4-005 | NSCW Pump 005 |
| 2-1302-P4-003 | AFW Pump 'A' |
| 2-1302-P4-002 | AFW Pump 'B' |
| 2HV-1668A | 'A' NSCW Tower Valve |
| 2FV-5155 | AFW Pump 'A' Miniflow Valve |
| 2HV–8809A | LP Injection MOV |
| 2H2-8112 | RCP Seal Water Isolation Valve |
| 2HV-8105 | Train 'A' Charging Path Valve |
| 2HV-1668A | 'A' NSCW Tower Valve |
| 2-1805-Q3-PB2 | PRZ HTR B/U Group B |
| 2-1566-B7001M01 | Diesel Generator Vent Fan |
| 2PV-456A | Pressurizer PORV |
| 2PV-3010 | MS ADV |
| 2-1805-S3-ABE | Feeder to MCC 2ABE |
| 2-1805-S3-ABF | Feeder to MCC 2ABF |

## LIST OF DOCUMENTS REVIEWED

**Procedures**

17103A-C, “Annunciator Response Procedures For Fire Alarm Computer”, Version 41
18038-1, “Operation From Remote Shutdown Panels”, Version 33.7
14710A-1, Train A Remote Shutdown Panel Transfer Switch and Control Circuit 18 Month Surveillance Test, Version 6.2
14710A-2, Train A Remote Shutdown Panel Transfer Switch and Control Circuit 18 Month Surveillance Test, Version 8.2
14710B-1, Train B Remote Shutdown Panel Transfer Switch and Control Circuit 18 Month Surveillance Test, Version 8.2
14710B-2, Train B Remote Shutdown Panel Transfer Switch and Control Circuit 18 Month Surveillance Test, Version 7.2
00310-C, Standard Use of Doors, Rev. 11
NMP-MA-050-F07, Fire Protection Screening, Rev. 1
NMP-OS-007-007, Rounds and Logkeeping, Rev. 2.1
92040-C, Fire Protection Operability and LCO Requirements, Rev. 44
29124-C, Fire Doors Inspection (FSAR Fire Protection Surveillance), Rev. 26
29123-C, Semi-Annual Fire Doors Inspection, Rev. 11.1
11887-2, Control Building Rounds Sheets, Rev. 54, Dated 12/23/2016
92820-2, Zone 120 – Control Building – Level 2 Fire Fighting Preplan, Version 6
92798-2, Zone 98 – Control Building – Level A Fire Fighting Preplan, Version 3
92775-2, Zone 75 – Control Building –Level B Fire Fighting Preplan, Version 2
14961-C, Emergency Lighting Surveillance, Version 42.2
29101-C, Emergency Lighting Surveillance, Version 48.1
19231-2, FR – H 1 Response to Loss of Secondary Heat Sink, Version 2
13601-2, Steam Generator and Main Steam System Operation, Version 57.1
NMP-ES-035, “Fire Protection Program”, Version 6.0
NMP-OS-014-003, “VNP Time Critical Operator Action Program”, Version 3
17103B-C, “Annunciator Response Procedures for Fire Alarm Computer”, Version 16.1
18038-2, “Operation from Remote Shutdown Panels”, Version 27.3
27579-C, Emergency Diesel Generator Fuel Oil Pump Control Circuit Emergency Jumper Installation, Rev. 3.3
NMP-EP-404, Plant Vogtle Emergency Management Guideline (EMG), Version 16
13006-2, Chemical and Volume Control System, Version 97.1
13302-2, Control Building ESF Ventilation Systems, Version 10.1
13304-C, Control Building Normal HVAC System, Version 18
NMP-OS-019-383, Vogtle Unit 2 SIG-3 Core Cooling, Version 3.1
19231-2, FR – H 1 Response to Loss of Secondary Heat Sink, Version 2
92005-C, Fire Response Procedure, Version 32.2
19001-C, “ES-0.1 Reactor Trip Response”, Version 35.1
19000-C, “E-0 Reactor Trip or Safety Injection”, Version 37.3

**Completed Surveillance Procedures, Test Records**

WO # SNC592782, 18 Month Emergency Lighting Surveillance, 9/18/15
WO # SNC523023, 18 Month Emergency Lighting Surveillance, 4/5/16
WO # SNC789613, Quarterly Emergency Lighting Surveillance Unit 2 CB, 12/5/16
WO # SNC789340, AB5BPUMP002 HL4M DRI-PRINE Pump Maintenance (B.5.B) Perform 6 Month Maintenance, 1/5/2017
WO # SNC786922, Perform Functional Test & Inspection of SG FLEX Pump, 2/20/2017
WO # SNC786921, Perform Functional Test & Inspection of SG FLEX Pump, 2/23/2017
WO # SNC132600, Emergency Light Labeled as 2NLP30-12-1, 5/27/2009
WO # SNC133031, The Following Emergency Light Did Not Work When, 10/30/2009
WO # SNC764999, Emergency Light INOP, 2/18/2016
WO # SNC786907, Perform Flex Inventory (Protected Area), 2/16/2017
WO # SNC786906, Perform Flex Inventory (FSB), 2/13/2017
WO # SNC786896, Perform Functional Test & Inspection of SG FLEX Pump, 2/21/2017
WO # SNC760961, Perform 14958-C, 9/23/2016

**Work Orders**

WO SNC538457, Cart Hose Hydro Inspection, 6/17/2016
WO SNC394963, Shutdown Panel Train B SURV, 3/27/2016
WO SNC394961, Shutdown Panel Train A SURV, 3/27/2016
WO SNC394968, Shutdown Panel Train C SURV, 10/15/2015

**Plant Modifications and Engineering Changes**

LDCR FS99-049, Provide clarification to VEGP's commitment to NFPA 80-1983, "Fire Doors and Windows"

**Technical Manuals, Vendor Information**

Godwin Pump Manual, HL4M Installation Operation and Maintenance Manual, 2013
AX4DT200, Steam Generator Flex Pump Vendor Manual, Version 1.0

**Calculations Evaluations & Specifications**

X4C2301S033, "Fire Event Safe Shutdown Evaluation (FESSE) - Control Building," Version 12
X4C2301S311, "VEGP Multiple Spurious Operations Analysis", Version 3.0
X4C2301S307, Fire Event Safe Shutdown Emergency Lighting and Communications, 1/5/2009
X4C2301S033, FESSE – Control Building for Fire Area 2-CB-L2-B, Rev. 10
X4C2301S033, FESSE – Control Building for Fire Area 2-CB-LA-L, Rev. 6
X4C2301S033, FESSE – Control Building for Fire Area 2-CB-LB-B, Rev. 12
X4C2301S033, FESSE – Evaluate VEGP Unit 2 Conformance with BTP CMEB 9.5.1, Rev. 11
X4C2301S007, Fire Protection Safe Shutdown Component Locations, Version 12
X4C2301S317, Post Fire Safe Shutdown Manual Action Feasibility Study, Version 2

**Drawings**

2X3D-BD-K05U, "Elementary Diagram, Nuclear Service Cooling Water System, 2HV-1668A", Ver. 11.0
2X3D-BD-D02V, "Elementary Diagram, Safety Injection System, 2HV-8809A," Ver. 6.0
2X3D-BD-B01L, "Elementary Diagram, Reactor Coolant System, 2-1805-Q3-PB2" Ver. 7.0
2X3D-BD-C03G, "Elementary Diagram, Chemical and Volume Control System, 2HV-8105" Rev. 5.0
2X3D-BC-F04B, "Elementary Diagram, Aux Feedwater System, 2 FV-5155" Rev. 7.0

2X3D-BC-C05B, “Elementary Diagram, Chemical and Volume Control System, 2 HV-8485B” Rev. 5.0
2X3D-BC-C05P, “Elementary Diagram, Chemical and Volume Control System, 2 HV-8438” Rev. 5.0
2X3D-BC-L03N, “Elementary Diagram, Aux Component Cooling Water Auxiliaries, 2 HV-2041” Rev. 4
2X3D-BC-L03H, “Elementary Diagram, Aux Component Cooling Water System, 2 HV-1978” Rev. 4
2X3D-BC-C05A, “Elementary Diagram, Chemical and Volume Control System, 2 HV-8485A” Rev. 6
2X3D-BC-C03M, “Elementary Diagram, Chemical and Volume Control System, 2 HY-8141A, B, C, & D” Rev. 5.0
2X4SDB138-2, Auxiliary Component Cooling Water System No. 1217, Version 20.0
2X4DB138-1, Auxiliary Component Cooling Water System No. 1217, Version 29.0
AX1D45A01, Site Plot Plan, Version 16
2X4DB111, Reactor Coolant System No. 1201, Version 29.0
2X4DB114, Chemical & Volume Control System No 1208, Version 38
2X4DB116-1, Chemical & Volume Control System No 1208, Version 49
2X4DB116-2, Chemical & Volume Control System No 1208, Version 32
2X4DB118, Chemical & Volume Control System No 1208, Version 24
2X4DB161-2, Auxiliary Feedwater System No 1302, Version 26
2X4DB136, Component Cooling Water System No 1203, Version 24
2X4DB122, Residual Heat Removal System No 1205, Version 54

**Licensing Basis Documents**

VEGP UFSAR, Section 9.5.1, Fire Protection Program, Rev. 21
VEGP UFSAR, Section 9.5.2, Communication Systems, Rev. 21
VEGP-FSAR Table 9.5.1-2, Fire Protection System Component Data, Rev. 13
VEGP-FSAR Table 9.5.1-9, Exception to NFPA Codes, Rev. 16
VEGP-FSAR Table 9.5.1-10, Fire Protection Functional Responsibilities, Rev. 19
VEGP UFSAR, Appendix 9A, Fire Hazards Analysis, Fire Area 2-CB-L2-B, Rev. 14
VEGP UFSAR, Appendix 9A, Fire Hazards Analysis, Fire Area 2-CB-LA-L, Rev. 14
VEGP UFSAR, Appendix 9A, Fire Hazards Analysis, Fire Area 2-CB-LB-B, Rev. 15
VEGP UFSAR, Appendix 9B, Comparison of VEGP U1 & U2 with Requirements of the BTP CMEB 9.5-1, Rev. 20
VEGP Renewed Facility Operating License Unit 1, NPF-68
VEGP Renewed Facility Operating License Unit 2, NPF-81
VEGP Units 1 & 2 SERs Related to Operation of Vogtle Electric Generating Plant, Units 1 & 2, Docket Nos. 50-424 and 50-425, dated June 1985 and Supplements 1 through 9

**Applicable Codes and Standards**

NFPA 13-1983, Sprinkler Systems
NFPA 14-1983, Standpipes and Hose Systems
NFPA 20-1983, Fire Pumps
NFPA 24-1984, Private Fire Service Mains and Their Appurtenances
NFPA 80-1983 Fire Doors and Windows

**Miscellaneous Documents**

VEGP Design Manual DC-1813, Fire Detection System, Version 5
VEGP Design Manual DC-1706, Sound-Powered System, Version 6
NEI 96-07, "Guidelines for 10 CFR 50.59 Evaluations," Rev. 1
Westinghouse White Paper LTR-RAM-I-10-053, "White Paper Westinghouse Reactor Coolant Pump Seal Behavior for Fire Scenarios," Rev. 2
NMP-OS-007-005, Site Specific Expectations and Fleet Operations Policies, Version 1.0
DC-1808, Lighting System, Version 8
NMP-EP-404, Plant Vogtle Emergency Management Guideline, Version 16

**Fire Protection Pre-Plans**

92794-1, Zone 94- Control Building-Level A Fire Fighting Preplan, Version 3
92798-1, Zone 98- Control Building-Level A Fire Fighting Preplan, Version 3
92803-1, Zone 103-Control Building-Level A Fire Fighting Preplan, Revision 2.1
92805-1, Zone 105- Control Building-Level A Fire Fighting Preplan, Version 5
92820-1, Zone 120- Control Building-Level 2 Fire Fighting Preplan, Version 7

**Audits and Self-Assessments**

NMP-GM-003-F19, Focused Area Self-Assessment-Triennial Fire Protection Inspection Focused Area Self-Assessment report, dated 5/23/2017

**CRs Reviewed**

10101858, Inspection Tasks not retained as QA records
10101952, Procedure Change Request
10101957, Procedure Change Request
10102275, B.5.b diesel fuel sampling
10102298, Review procedure 17103A-C for enhancements
10102315, Procedure Revision required for 17103A-C
10103001, Revise Calculation X4C23011S311
10380486, Latch not working correctly
10367285, Unit 1 Aux. Building fire door not latching correctly
10356411, Defective Control room Fire Door TAG#V12111L1155
10367387, Fire door leading to Rm 410 will not close on its own
10367497, Fire Door Not Latching
10367498, Fire Door Not Latching Correctly
10376355, Fire Door Requires Manual Closure
10369343, East Main Control Room Fire Door Not Closing
10369074, V22111L1A23 cannot be opened in one direction
10369344, West Fire Door to the Control Building Room 125 Not Closing
10368888, Fire Door V22111L1A76 (RM A72 CB) not closing
10372924, Door V12108L1D53 latch is remaining in door
10372919, Door V12108L1B15 latch will not retract into door
10372914, V12108L1212 will not self close
10372913, Door will not self close
10367613, Fire door unable to self close
10305214, Emergency Lighting Issues
10329598, TFPI FASA Issue with Emergency Lighting Fixture in Aux BLDG
10184871, Emergency Lighting INOP
10337271, Revise Calculation X4C2301S317
CR 10337275, Revise Calculation X4C2301S317
CR 10337822, Revise Calculation X4C2301S317

CR 10338357, Revise Calculation X4C2301S317
CR 10338361, Revise Calculation X4C2301S317

**CRs Generated During This Inspection**

10095869, 27579-C EDG Fuel Oil Pump Jumper Install Enhancement
10096004, Tape on Door Latch
10096008, Halon Door Seal
10096023, Control Room Kitchen Ceiling Tile out of Position
10096277, Fire Extinguisher Bracket in Control Room
10096923, Degraded Penetration Seals in Diesel Fire Pump House
10096948, Update 29144-C to include Diesel Fire Pump Fire Barrier Wall
10097172, Loose Damming Board
10097511, Fire Protection Tag is Incorrect
10099719, ELU Correction to Equipment Reliability Checklist
10101194, Equipment tag Faded on B.5.b Hose Connection
10101295, E-Light Drawing is Incorrect
10101770, Procedure Revision Required for 14961-C
10101858, Inspection Tasks Not Retained as QA Record of SSD Storage Inventory
10101952, 29124-C Procedure Change Request
10101957, 29123-C Procedure Change Request
10101996, Potential Life Safety Hazard from Improper Door Configuration
10102010, Broken Penetration Seal Damming Board
10102011, Pen Seal 933A A SSDP Room Found Not to Meet Seal Detail
10102012, Pen Seal 938A A SSDP Room Does Not Meet Seal Detail
10102275, B.5.b Diesel Fuel Sampling
10102289, Full Trash Can Located Under Train A Safety Related Cable Tray
10102298, Review procedure 17103A-C for enhancements
10102315, Procedure revision required for 17103A-C
10103001, Revise Calculation X4C23011S311
10103018, Scaffolding in U1 Control Building Room 227 needs to be removed
10381520, Incorrect version of NMP-EP-404 in FLEX Dome
10382296, S/G #3 Connection point tag location
10382039, Procedure revision for NMP-EP-404
10382053, Review MSO Calculation X4C2301S311 operator actions for AFW control
10361368, NMP-OS-014 Procedure Revision

## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| B.5.b | Refers to a section of Interim Compensatory Measures Order, EA-02-026 |
| BTP | Branch Technical Position |
| CAP | Corrective Action Program |
| CFR | *Code of Federal Regulations* |
| CMEB | Chemical Engineering Branch |
| CR | Condition Report |
| 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 |
| IMC | Inspection Manual Chapter |
| IP | Inspection Procedure |
| MCR | Main Control Room |
| MSO | Multiple Spurious Operation |
| NCV | Non-cited Violation |
| NFPA | National Fire Protection Association |
| NRC | Nuclear Regulatory Commission |
| OMA | Operator Manual Action |
| P&ID | Piping and Instrumentation Drawing |
| SDP | Significance Determination Process |
| SER | Safety Evaluation Report |
| SNC | Southern Nuclear Operating Company |
| SPP | Sound Powered Phone |
| SSD | Safe Shutdown |
| UFSAR | Updated Final Safety Analysis Report |
| VEGP | Vogtle Electric Generating Plant |