

UNITED STATES NUCLEAR REGULATORY COMMISSION REGION II

245 PEACHTREE CENTER AVENUE, SUITE 1200 ATLANTA, GEORGIA 30303-1257

May 13, 2011

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

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT - NRC TEMPORARY INSTRUCTION 2515/183 INSPECTION REPORT 05000424/2011009 AND 05000425/2011009

Dear Mr. Tynan:

On April 29, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vogtle Electric Generating Plant, Units 1 and 2, using Temporary Instruction 2515/183, "Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event." The enclosed inspection report documents the inspection results which were discussed on May 6, 2011, with Mr. Dedrickson and other members of your staff.

The objective of this inspection was to promptly assess the capabilities of Vogtle Electric Generating Plant, Units 1 and 2, to respond to extraordinary consequences similar to those that have recently occurred at the Japanese Fukushima Daiichi Nuclear Station. The results from this inspection, along with the results from this inspection performed at other operating commercial nuclear plants in the United States will be used to evaluate the U.S. nuclear industry's readiness to safely respond to similar events. These results will also help the NRC to determine if additional regulatory actions are warranted.

All of the potential issues and observations identified by this inspection are contained in this report. The NRC's Reactor Oversight Process will further evaluate any issues to determine if they are regulatory findings or violations. Any resulting findings or violations will be documented by the NRC in a separate report. You are not required to respond to this letter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made 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), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/**RA**/

Scott M. Shaeffer, Chief Reactor Projects Branch 2 Division of Reactor Projects

Docket No.: 50-424, 50-425 License No.: NPF-68, NPF-81

Enclosure: Inspection Report 05000424/2011009 and 05000425/2011009

cc w/encl: (See page 3)

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cc w/encl:

Division of Radiological Health TN Dept. of Environment & Conservation 401 Church Street Nashville, TN 37243-1532

B. D. McKinney, Jr. Regulatory Response Manager Southern Nuclear Operating Company, Inc. Electronic Mail Distribution

Hickox, T. Mark Vogtle Electric Generating Plant Electronic Mail Distribution

M. J. Ajluni Nuclear Licensing Director Southern Nuclear Operating Company, Inc. Electronic Mail Distribution

Sandra Threatt, Manager Nuclear Response and Emergency Environmental Surveillance Bureau of Land and Waste Management Department of Health and Environmental Control Electronic Mail Distribution

T. D. Honeycutt Regulatory Response Supervisor Southern Nuclear Operating Company, Inc. Electronic Mail Distribution

Jeffrey T. Gasser Chief Nuclear Officer Southern Nuclear Operating Company, Inc. Electronic Mail Distribution

L. Mike Stinson Vice President Fleet Operations Support Southern Nuclear Operating Company, Inc. Electronic Mail Distribution

R. D. Baker Licensing Supervisor Southern Nuclear Operating Company, Inc. Electronic Mail Distribution E. G. Anners Licensing Engineer Southern Nuclear Operating Company, Inc. Electronic Mail Distribution

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

Paula Marino Vice President Engineering Southern Nuclear Operating Company, Inc. Electronic Mail Distribution

Bob Masse Resident Manager Vogtle Electric Generating Plant Oglethorpe Power Corporation Electronic Mail Distribution

Moanica Caston Vice President and General Counsel Southern Nuclear Operating Company, Inc. Electronic Mail Distribution

S. C. Swanson Site Support Manager Vogtle Electric Generating Plant Electronic Mail Distribution

Chris Clark Commissioner Georgia Department of Natural Resources Electronic Mail Distribution

Lee Foley Manager of Contracts Generation Oglethorpe Power Corporation Electronic Mail Distribution

F. Allen Barnes Director Environmental Protection Division Georgia Department of Natural Resources Electronic Mail Distribution

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Cynthia A. Sanders Radioactive Materials Program Manager Environmental Protection Division Georgia Department of Natural Resources Electronic Mail Distribution

James A. Sommerville Program Coordination Branch Chief Environmental Protection Division Georgia Department of Natural Resources Electronic Mail Distribution

James C. Hardeman Environmental Radiation Program Manager Environmental Protection Division Georgia Department of Natural Resources Electronic Mail Distribution

Ted V. Jackson Emergency Response and Radiation Program Manager Environmental Protection Division Georgia Department of Natural Resources Electronic Mail Distribution

Mr. Steven M. Jackson Senior Engineer - Power Supply Municipal Electric Authority of Georgia Electronic Mail Distribution

Mr. Reece McAlister Executive Secretary Georgia Public Service Commission Electronic Mail Distribution

Office of the Attorney General 40 Capitol Square, SW Atlanta, GA 30334

Office of the County Commissioner Burke County Commission Electronic Mail Distribution

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

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

Richard Haynes Director, Division of Waste Management Bureau of Land and Waste Management S.C. Department of Health and Environmental Control Electronic Mail Distribution

Letter to Tom E. Tynan from Scott M. Shaeffer dated May 13, 2011

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT - NRC TEMPORARY INSTRUCTION 2515/183 INSPECTION REPORT 05000424/2011009 AND 05000425/2011009

Distribution w/encl: C. Evans, RII L. Douglas, RII OE Mail RIDSNRRDIRS PUBLIC RidsNrrPMVogtle Resource

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	05000424, 05000425
License Nos.:	NPF-68, NPF-81
Report No.:	05000424/2011009 and 05000425/2011009
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Electric Generating Plant, Units 1 and 2
Location:	Waynesboro, GA 30830
Dates:	April 4, 2011 through April 29, 2011
Inspectors:	M. Cain, Senior Resident Inspector T. Chandler, Resident Inspector
Approved by:	Scott M. Shaeffer, Chief Reactor Projects Branch 2 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000424/2011009, 05000425/2011009; 04/04/2011 – 04/29/2011; Vogtle Electric Generating Plant, Units 1 and 2, Temporary Instruction 2515/183 – Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event

This report covers an announced Temporary Instruction inspection. The inspection was conducted by resident inspectors. 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.

INSPECTION SCOPE

The intent of the TI is to provide a broad overview of the industry's preparedness for events that may exceed the current design basis for a plant. The focus of the TI was on (1) assessing the licensee's capability to mitigate consequences from large fires or explosions on site, (2) assessing the licensee's capability to mitigate station blackout (SBO) conditions, (3) assessing the licensee's capability to mitigate internal and external flooding events accounted for by the station's design, and (4) assessing the thoroughness of the licensee's walk downs and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site. If necessary, a more specific follow-up inspection will be performed at a later date.

INSPECTION RESULTS

All of the potential issues and observations identified by this inspection are contained in this report. The NRC's Reactor Oversight Process will further evaluate any issues to determine if they are regulatory findings or violations. Any resulting findings or violations will be documented by the NRC in a separate report.

INSPECTION RESULTS

The following table documents the NRC inspection at Vogtle Electric Generating Plant, Units 1 and 2 performed in accordance with TI 2515/183. The numbering system in the table corresponds to the inspection items in the TI.

03.01 Assess the licensee's capability to mitigate conditions that result from beyond design basis events, typically bounded by security threats, committed to as part of NRC Security Order Section B.5.b issued February 25, 2002, and severe accident management guidelines and as required by Title 10 of the Code of Federal Regulations (10 CFR) 50.54(hh). Use Inspection Procedure (IP) 71111.05T, "Fire Protection (Triennial)," Section 02.03 and 03.03 as a guideline. If IP 71111.05T was recently performed at the facility the inspector should review the inspection results and findings to identify any other potential areas of inspection. Particular emphasis should be placed on strategies related to the spent fuel pool. The inspection should include, but not be limited to, an assessment of any licensee actions to:

Licensee Action	Describe what the licensee did to test or inspect equipment.
 a. Verify through test or inspection that equipment is available and functional. Active equipment shall be tested and passive equipment shall be walked down and inspected. It is not expected that permanently installed equipment that is tested under an existing regulatory testing program be retested. This review should be done for a reasonable sample of mitigating strategies/equipment. 	Licensee personnel completed testing and inspections of equipment associated with Severe Accident Management Guidelines (SAMGs), Emergency Planning procedures, and Abnormal Operating procedures related to the scope of this report item to confirm readiness to execute the procedures. The B.5.b portable pump was operated to verify readiness. The licensee performed an inventory of all passive equipment utilized in these strategies. The licensee completed a review and walk down of SAMGs, Emergency Planning procedures and Abnormal Operating procedures related to the scope of this report item to confirm readiness to execute the procedures.
	Describe inspector actions taken to confirm equipment readiness (e.g., observed a test, reviewed test results, discussed actions, reviewed records, etc.).
	The inspectors reviewed the licensee's report documenting the completion of the above activities. The inspectors also scanned the above procedures to gain understanding of the strategies and to identify potential equipment for sampling its readiness. The inspectors interviewed station personnel involved in the walk downs and testing of equipment. The inspectors also visually inspected active and passive equipment to evaluate its condition and readiness for use. The inspectors reviewed all condition reports written by the licensee related to this verification. The inspectors reviewed planned licensee actions.

Discuss general results including corrective actions by licensee. The licensee discovered a small number of discrepancies which were entered into their corrective action program (i.e. B.5.b pump checks do not include a requirement to verify flow or discharge pressure checks; spare B.5.b pump has not been issued from the
corrective action program (i.e. B.5.b pump checks do not include a requirement to verify
warehouse yet and is currently not fitted-out with necessary adapters to function as a suitable spare, and equipment labeling issues). The licensee recognized some enhancements which would make equipment and procedures more functional. These items were also captured in the licensee corrective action program.
Describe the licensee's actions to verify that procedures are in place and can be executed (e.g. walkdowns, demonstrations, tests, etc.)
Senior operations personnel reviewed station procedures utilized in these strategies and performed walk downs to confirm the readiness to execute the procedures. Operations personnel walked down procedures to verify equipment connections could be properly made with equipment provided.
Describe inspector actions and the sample strategies reviewed. Assess whether procedures were in place and could be used as intended.
The inspectors reviewed each of the station procedures identified by the above senior operations personnel. The review included an evaluation of the planned strategies and how well the strategy encompassed potential events. The review also included an evaluation of the thoroughness of each procedure and potential for actions of one procedure to preclude implementation of another procedure. Additionally, the inspectors reviewed licensee procedures/strategies for addressing spent fuel pool emergencies. The inspectors reviewed all condition reports written by the licensee related to this verification. The inspectors reviewed planned licensee actions.

	Discuss general results including corrective actions by licensee.
	The licensee identified procedural enhancements which mainly encompassed procedure quality. The majority of the enhancements emphasized increased detail to provide the user with more specific direction and increased clarity of instructions. The more notable issues included limited guidance that exists if operators are required to evacuate the main control room coincident with a loss of off-site power and proper amounts of fire hose available for make-up between the two spent fuel pools. The license captured these enhancements in their corrective action program.
Licensee Action	Describe the licensee's actions and conclusions regarding training and qualifications of operators and support staff.
c. Verify the training and qualifications of operators and the support staff needed to implement the procedures and work instructions are current for activities related to Security Order Section B.5.b and severe accident management guidelines as required by 10 CFR 50.54 (hh).	The licensee reviewed their database to identify the number of qualified individuals for required positions such as system operators, reactor operators, shift technical advisors, maintenance, health physics, chemistry, fire protection, security and emergency response personnel. These numbers were verified to meet minimum required staffing numbers. Personnel qualifications were then verified to be current in the licensee's training database (plateau).
	Describe inspector actions and the sample strategies reviewed to assess training and qualifications of operators and support staff.
	The inspectors reviewed training material related to the implementation of SAMGs, Emergency Planning procedures, and B.5.b strategies. The inspectors also reviewed the table created in the licensee's review above to ensure than reasonable numbers of appropriate staff were provided. The inspectors interviewed station management related to the content of training for each site discipline and the periodicity of the training.
	Discuss general results including corrective actions by licensee.
	All required personnel were found to be current in qualifications.

Licensee Action	Describe the licensee's actions and conclusions regarding applicable agreements and contracts are in place.
 d. Verify that any applicable agreements and contracts are in place and are capable of meeting the conditions needed to mitigate the consequences of these events. This review should be done for a reasonable sample of mitigating strategies/equipment. 	The licensee reviewed all memorandums of understanding (MOUs) related to the scope of this item. The licensee compared these MOUs to station strategies and/or procedural requirements to identify any gaps or potential enhancements.
	For a sample of mitigating strategies involving contracts or agreements with offsite entities, describe inspector actions to confirm agreements and contracts are in place and current (e.g., confirm that offsite fire assistance agreement is in place and current).
	The inspectors obtained copies of each of the licensee's MOUs and compared services/equipment requested to those outlined in station procedures/strategies.
	Discuss general results including corrective actions by licensee.
	The licensee identified all MOUs were adequate to meet site needs to implement strategies.

Licensee Action	Document the corrective action report number and briefly summarize problems noted by the licensee that have significant potential to prevent the success of any existing mitigating strategy.
e. Review any open corrective action documents to assess problems with mitigating strategy implementation identified by the licensee. Assess the impact of the problem on the mitigating capability and the remaining capability that is not impacted.	The inspectors reviewed the licensee's condition reports written associated with equipment testing, strategy walk-downs, personnel qualifications and MOUs. All were deemed by the licensee to be enhancements to existing strategies. The inspectors determined that no significant potential to prevent the success of any existing mitigating strategy was identified. The inspectors reviewed planned corrective actions associated with these enhancements and determined the planned corrective actions were adequate.

03.02 Assess the licensee's capability to mitigate station blackout (SBO) conditions, as required by 10 CFR 50.63, "Loss of All Alternating Current Power," and station design, is functional and valid. Refer to TI 2515/120, "Inspection of Implementation of Station Blackout Rule Multi-Plant Action Item A-22," as a guideline. It is not intended that TI 2515/120 be completely reinspected. The inspection should include, but not be limited to, an assessment of any licensee actions to:

Licensee Action	Describe the licensee's actions to verify the adequacy of equipment needed to mitigate an SBO event.
a. Verify through walkdowns and inspection that all required	The licensee reviewed and walked down all procedures related to the mitigation of a station blackout. The emergency diesel generators and related equipment necessary to support the SBO procedures were also walked down.
materials are adequate and properly staged, tested, and	Describe inspector actions to verify equipment is available and useable.
maintained.	The inspectors obtained copies of station procedures that implement the various strategies for loss of 4160 volt electrical buses and off-site electrical power. The inspectors reviewed these procedures to evaluate thoroughness of licensee strategies. The inspectors reviewed the licensee's SBO coping study to identify the planned strategy and equipment necessary for its implementation including the required duration of time needed. The inspectors identified that all required equipment is permanently installed in the plant. The inspectors also inspected the emergency diesel generators and attendant equipment to evaluate equipment readiness.
	Discuss general results including corrective actions by licensee.
	The licensee identified one deficiency which dealt with procedure guidance quality. The issue identified one step in the Plant Wilson 'Blackstart' procedure that aligns Vogtle Electric Generating Plant (VEGP) switchyard per 'Transmission EOP Option 2A' which was not included in the Blackstart materials locker. The license captured this deficiency in their corrective action program.

Licensee Action	Describe the licensee's actions to verify the capability to mitigate an SBO event.
b. Demonstrate through walkdowns that procedures for	The licensee reviewed and walked down all procedures related to the mitigation of a station blackout. The emergency diesel generators and related equipment necessary to support the SBO procedures were also walked down.
response to an SBO are executable.	Describe inspector actions to assess whether procedures were in place and could be used as intended.
	The inspectors obtained copies of station procedures that implement the various strategies for loss of 4160 volt electrical buses and off-site electrical power. The inspectors reviewed these procedures to evaluate thoroughness of licensee strategies. The inspectors reviewed the licensee's SBO coping study to identify the planned strategy and equipment necessary for its implementation including the required duration of time needed.
	Discuss general results including corrective actions by licensee.
	 The licensee identified two issues related to SBO and EDGs: Communications may be lost or travel delays incurred due to severe weather or a seismic event that may delay Georgia Control Center (GCC) system operator response, potentially delaying power restoration to the plant.
	• Existing guidance contained within SBO procedures for realignment and restoration of off-site power cannot currently be performed if main control room evacuation is required. This 'beyond design basis' scenario was not considered during initial SBO procedure development.
	The inspectors reviewed planned corrective actions associated with these issues and determined the planned corrective actions were adequate.

03.03 Assess the licensee's capability to mitigate internal and external flooding events required by station design. Refer to IP 71111.01, "Adverse Weather Protection," Section 02.04, "Evaluate Readiness to Cope with External Flooding," as a guideline. The inspection should include, but not be limited to, an assessment of any licensee actions to verify through walkdowns and inspections that all required materials and equipment are adequate and properly staged. These walkdowns and inspections shall include verification that accessible doors, barriers, and penetration seals are functional.

Licensee Action	Describe the licensee's actions to verify the capability to mitigate existing design basis flooding events.
a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.	The licensee utilized teams to conduct walk downs. The scope of the walk downs and associated acceptance criteria were defined by the licensee request for engineering review RER C110461901. Accessible areas of Units 1 and 2 Auxiliary Buildings, Emergency Diesel Generator Buildings, Circulating Water Tower Basins, River Water Intake Structure, Nuclear Service Cooling Water Structures, Auxiliary Feedwater Structures, Fuel Handling Buildings, Control Buildings, Turbine Buildings and site grounds were investigated. Condition reports were written and entered into the CAP for deficiencies identified. No items were identified that failed to meet the current flood analysis. Design basis flooding of safety related structures from external sources is not considered credible at VEGP.
	Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.
	The inspectors reviewed the licensee internal flooding analysis to determine strategies and required equipment for the strategies. Equipment involved in the strategy included water tight doors and penetration seals determined to be required for flood protection of safety related equipment. The inspectors inspected these doors during plant tours to ensure the operability of the doors and their adequacy to meet the internal flooding analysis. The inspectors inspected a sample of the floor drains and reviewed condition reports written by the licensee related to potential debris blockage of floor drains. The inspectors also reviewed the licensee's Final Safety Analysis Report (FSAR) Section 2.4, Hydrologic Engineering, with emphasis upon site topography, proximity to the Savannah River and its dams, flood history, probable maximum precipitation (PMP) and probable maximum flood (PMF) levels. The inspectors evaluated the elevation of site buildings and structures related to the above information. The inspectors also walked down the protected area storm drains to ensure the grating was free of debris and would provide proper drainage. Additionally,

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the inspectors reviewed station procedures which involved strategies to combat internal flooding to ensure their adequacy to maintain necessary and appropriate equipment operable. The inspectors reviewed planned corrective actions associated with these minor deficiencies and determined the planned corrective actions were adequate.
Discuss general results including corrective actions by licensee.
The licensee noted minor discrepancies related to house keeping with temporary material stored in areas that could potentially impact the internal flooding analysis. The licensee noted some roof storm drains that were partially blocked by debris and required cleaning. The licensee identified one blocked floor drain in the Unit 2 nuclear service cooling water structure. The licensee entered all discrepancies in their corrective action program.

03.04 Assess the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site. Assess the licensee's development of any new mitigating strategies for identified vulnerabilities (e.g., entered it in to the corrective action program and any immediate actions taken). As a minimum, the licensee should have performed walkdowns and inspections of important equipment (permanent and temporary) such as storage tanks, plant water intake structures, and fire and flood response equipment; and developed mitigating strategies to cope with the loss of that important function. Use IP 71111.21, "Component Design Basis Inspection," Appendix 3, "Component Walkdown Considerations," as a guideline to assess the thoroughness of the licensee's walkdowns and inspections.

Licensee Action	Describe the licensee's actions to assess the potential impact of seismic events on the availability of equipment used in fire and flooding mitigation strategies.
a. Verify through walkdowns that all required materials are adequate and properly staged, tested, and maintained.	The licensee staff reviewed the Fire and Flood design basis with support from Southern Nuclear Engineering. Teams were assembled to walk down and inspect all accessible structures, systems, and components. The walk down focused on degraded material conditions that could impact the ability of fire or flood mitigation equipment to function in the event of a seismic event. All accessible areas/rooms in or around the Auxiliary Building, Control Buildings, Fuel Handling Building, Diesel Generator Buildings, River Water Intake Structure, Condensate Storage Tanks, Reactor Makeup Water Storage Tanks, Refueling Water Storage Tanks, Turbine Building, Main and Auxiliary Transformers, Circulating Water Canals, Stand Pipe in Containment, Fire Water Storage Tanks, Fire Pump Houses, and the

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	Fire Pump Diesel Fuel Oil Tanks, and portable firefighting equipment storage facilities were walked down by Plant Vogtle staff. Permanent and portable equipment were inspected by the staff.
	Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.
	The inspectors reviewed the licensee's Final Safety Analysis Report (FSAR) Section 3.2, Classification of Structures, Components and System, with emphasis on the related seismic classification. The inspectors reviewed the licensee's report documenting the completion of the above activities. The inspectors also reviewed SAMGs, Emergency Planning procedures, and Abnormal Operating procedures to evaluated licensee strategies and equipment utilized with these associated procedures. The inspectors determined that licensee activities were thorough.
	Discuss general results including corrective actions by licensee. Briefly summarize any new mitigating strategies identified by the licensee as a result of their reviews.
	The licensee inspections and reviews reveal that Plant Vogtle has the equipment, procedures, and agreements to respond to design basis fire and flood event following a seismic event (no gaps identified). Vulnerabilities were identified with the protected area yard's non-seismic fire protection piping. Enhancement opportunities exist in responding to multi-unit events beyond design basis, procedure clarification, equipment staging for seismic event, and housekeeping. Licensee staff also recognized training opportunities for additional SMAGs and accidents beyond design basis.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

R. Brigdon, Training Manager

R. Dorman, Operations Shift Manager

L. Mayo, Emergency Preparedness Supervisor

D. McCary, Operations Manager

T. Petrak, Engineering Systems Manager

D. Tamplin, Engineering Supervisor

S. Waldrup, Operations Superintendent

<u>NRC personnel</u> Scott M. Shaeffer, Chief, Branch 2, Division of Reactor Projects

Attachment

LIST OF DOCUMENTS REVIEWED

Condition Reports:

2011103885, 2011110826, 2011104827, 2011104828, 2011104949, 2011104952, 2011105016, 2011105200, 2011105201, 2011105204, 2011105205, 2011105214, 2011105546, 2011105636, 2011105736, 2011105662, 2011105774, 2011105776, 2011105782, 2011105776, 2011104417, 2011104425, 2011104431, 2011104432, 2011104435, 2011104009, 2011104011, 2011104355, 2011104356, 2011104359, 2011104360, 2011104958, 2011104961, 2011104965, 2011105206, 2011105207, 2011105211, 2011105292, 2011105327, 2011104883, 2011104909, 2011104955, 2011105022, 2011105025, 2011105293, 2011105179, 2011105210, 2011105635, 2011105002, 2011105003

Action Items:

AI2011201749, AI2011200894, AI2011201750

Documents:

Vogtle-Transmission Maintenance Center Interface Agreement- SO-OP-703, Restoration of Power to Plant Vogtle, Nuclear Plant Interface Requirements per NERC Standard NUC-001 (NMP-AD-014)

Agreement for Emergency Services between Burke County Emergency Management Agency and Vogtle Electric Generating Plant dated June 13, 2008

Georgia Emergency Management Agency Statewide Mutual Aid and Assistance Agreement dated March 12, 2002

RER C110461901, Walkdown Information for Inspection of Internal Flooding Features – In Support of INPO IER 11-1 Recommendation Number 3

Vogtle Electric Generating Plant Final Safety Analysis Review (FSAR), Rev. 17 Design Criteria for Flooding DC-1003, Rev. 9

Procedures:

18017-C, Rev. 8, Abnormal Grid Disturbance/Loss of Grid

18030-C, Rev. 20, Loss of Spent Fuel Cooling

18031-C, Rev. 27.1, Loss of Class 1E Electrical Systems

18036-C, Rev. 10.1, Seismic Event

18037-C, Rev. 10.2, Security Threat

18038-1/2, Rev. 32.1/25.2, Operation From Remote Shutdown Panels

19100-C/ECA-0.0, Rev. 36.0, ECA-0.0, Loss of All AC Power

SACRG-1, Rev. 8.1, Severe Accident Control Room Guideline Initial Response

SACRG-2, Rev. 7.0, Severe Accident Control Room Guideline for Transients after the TSC is Functional

- SAG-1, Rev. 3.1, Inject Into Steam Generators
- SAG-2, Rev. 3.0, Depressurize RCS
- SAG-3, Rev. 5.0, Inject Into RCS
- SAG-4, Rev. 3.0, Inject Into Containment
- SAG-5, Rev. 3.0, Reduce Fission Product Releases
- SAG-6, Rev. 3.0, Control Containment Conditions
- SAG-7, Rev. 3.0, Reduce Containment Hydrogen

SAG-8, Rev. 3.0, Flood Containment

NMP-EP-404, Rev. 8.0, Plant Vogtle Emergency Management Guideline

14958-C, Rev. 31.1, Fire Brigade Equipment - Quarterly Inspection

91705-C, Rev. 1.0, Inventory and Testing of Emergency Preparedness Material/Equipment which are not a part of the Emergency Kits

00352-C, Rev. 16, General Plant Housekeeping and In-Process Materials Control

13427A-1, Rev. 6.2, 4160V AC Bus 1AA02 1E Electrical Distribution System

13427B-1, Rev. 6.2, 4160V AC Bus 1BA03 1E Electrical Distribution System

13418A-1, Rev. 1.1, Standby Auxiliary Transformer Unit One Train A Operations

13418B-1, Rev. 1.1, Standby Auxiliary Transformer Unit One Train B Operations