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10 CFR 50.54(q)
NL-16-1409

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 1 and 2;
Report of Changes to Emergency Plan

Ladies and Gentlemen:

In accordance with 10 CFR 50.54(q)(5) and 10 CFR 72.44(f), Southern Nuclear Operating Company (SNC) hereby submits descriptions of changes to plant emergency plans and a summary of the analysis demonstrating that the changes did not reduce the effectiveness of the plans. The plans, as changed, continue to meet the requirements in 10 CFR 50 Appendix E and the planning standards of 10 CFR 50.47(b).

Description of Changes and Summary of Analysis

Effective July 26, 2016, Vogtle Electric Generating Plant (Vogtle) implemented changes to the emergency preparedness procedure NMP-EP-110-GL03, "VEGP EALs – ICs, Threshold Values and Basis" and changes to the Vogtle Emergency Plan (Version 67). Several changes resulted from a Vogtle engineering analysis of setpoints for Emergency Operating Procedures (EOPs) and Abnormal Operating Procedures (AOPs). This analysis refined the setpoints to improve the accuracy of the values. Specifically, EAL values were changed to align with tolerance improvements described in EOP and AOP setpoint documents. In addition, a requirement for the TSC Director to have Self Contained Breathing Apparatus (SCBA) training was eliminated because the requirement was not related to any emergency planning commitment. Finally, conforming changes were made due to errors found in implementation procedures that were not in alignment with the approved NEI 99-01 Rev. 4 EAL scheme.

Following the guidance in NRC R.G. 1.219, SNC concluded that the changes to EAL values reflected the design documents and that the meaning and intent of the basis of the approved EAL was unchanged. All of the changes were evaluated in accordance with 10 CFR 50.54(q)(3); and it was determined that these changes did not reduce the effectiveness of the Vogtle Emergency Plan and the revised procedure and Vogtle Emergency Plan continue to meet the requirements in 10 CFR 50 Appendix E and the planning standards of 10 CFR 50.47(b).

AX45
NRR

This letter contains no NRC commitments. If you have any questions, please contact Ken McElroy at (205) 992-7369.

Respectfully submitted,

Justin T. Wheat
Nuclear Licensing Manager

jtw/efb/lac

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VOGTLE ELECTRIC GENERATING PLANT
UNIT 1 AND UNIT 2
EMERGENCY PLAN
Revision 67 June 2016
Revision Insertion Instructions

Please replace the affected pages in your copy of the Plan with the corresponding Revision 67 pages. Pages included in this package are:

Title Page

List of Effective Pages page x, xi, xii, xiii, xiv, and xv

Section D pages D-13, D-60, D-61, D-62, D-110, and D-115

Section O Table O-2 sheet 1

Discard these instructions after use and sign and return Transmittal Acknowledgment to address indicated.

VOGTLE ELECTRIC GENERATING PLANT

UNIT 1 AND UNIT 2

EMERGENCY PLAN

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challenges as YELLOW, ORANGE, and RED paths. If the core exit thermocouples exceed 1200 degrees F or 700 degrees F with low reactor vessel water level, a RED path condition exists. The ERG considers a RED path as "... an extreme challenge to a plant function necessary for the protection of the public ..." This is almost identical to the present NRC NUREG-0654 description of a site area emergency "... actual or likely failures of plant functions needed for the protection of the public ..." It reasonably follows that if any CSF enters a RED path, a site area emergency exists. A general emergency could be considered to exist if core cooling CSF is in a RED path and the EOP function restoration procedures have not been successful in restoring core cooling.

Although the majority of the EALs provide very specific thresholds, the Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Emergency Director, an imminent situation is at hand, the classification should be made as if the thresholds has been exceeded. While this is particularly prudent at the higher emergency classes (as the early classification may provide for more effective implementation of protective measures), it is nonetheless applicable to all emergency classes.

Multiple Events and Emergency Class Upgrading

The SNC Classification procedures are written to classify events based on meeting the Initiating Condition (IC) and a Threshold Value (TV) for an EAL considering each Unit independently. Two IC Matrices are used, one for Hot ICs and one for Cold ICs. The temperature criteria of the Cold Shutdown Mode determines if the unit should use the Hot or Cold Matrix.

The IC Matrices are human factored to read from top to bottom General Emergency to Notification of Unusual Event within a category or subcategory to eliminate the higher classifications before reaching a lower classification. This arrangement lessens the possibility of under-classifying a condition.

During events, the ICs and TVs are monitored and if conditions meet another higher EAL, that higher emergency classification is declared and appropriate notifications made. Notifications are made on a site basis. If both units are in concurrent classifications, the highest classification would be used for the notification and the other unit classification noted on the notification form.

There are six EALs which specifically state that if the condition cannot be mitigated and is imminent, the Emergency

Vogtle Fission Product Barrier Evaluation

General Emergency	Site Area Emergency	Alert	Unusual Event
FG1 Loss of ANY Two Barriers **AND** Loss or Potential Loss of Third Barrier	**FS1** Loss or Potential Loss of ANY Two Barriers	**FA1** ANY Loss or ANY Potential Loss of **EITHER** Fuel Clad **OR** RCS	**FU1** ANY Loss or ANY Potential Loss of Containment

Fuel Clad Barrier	
Loss	**Potential Loss**
1. Critical Safety Function Status Core-Cooling RED	**1. Critical Safety Function Status** Core Cooling-ORANGE **OR** Heat Sink-RED
2. Primary Coolant Activity Level Indications of RCS Coolant Activity greater than 300 µCi/gm Dose Equivalent I-131	2. Primary Coolant Activity Level Not Applicable
3. Core Exit Thermocouple Readings Core Exit TCs greater than 1200°F	**3. Core Exit Thermocouple Readings** Core Exit TCs greater than 700°F
4. Reactor Vessel Water Level Not Applicable	**4. Reactor Vessel Water Level** RVLIS LEVEL less than 63%
5. Containment Radiation Monitoring Containment Radiation Monitor RE-005 **OR** 006 ≥ 2 6E+5 mR/hr	5. Containment Radiation Monitoring Not Applicable
6. Other Indications Not applicable	6. Other Indications Not applicable
7. Emergency Director Judgment Judgment by the ED that the Fuel Clad Barrier is lost. Consider conditions not addressed and inability to determine the status of the Fuel Clad Barrier	**7. Emergency Director Judgment** Judgment by the ED that the Fuel Clad Barrier is potentially lost. Consider conditions not addressed and inability to determine the status of the Fuel Clad Barrier.

RCS Barrier	
Loss	**Potential Loss**
1. Critical Safety Function Status Not Applicable	**1. Critical Safety Function Status** RCS Integrity-RED **OR** Heat Sink-RED
2. RCS Leak Rate RCS subcooling less than 22°F {less than 22° F Adverse} due to an RCS leak greater than Charging / RHR capacity	**2. RCS Leak Rate** Non-isolable RCS leak (including SG tube Leakage) greater than 120 gpm
3. SG Tube Rupture SGTR resulting in an SI actuation	3. SG Tube Rupture Not Applicable
4. Containment Radiation Monitoring CTMT Rad Monitor RE-005 **OR** 006 ≥ 8.7E+2 mR/hr	4. Containment Radiation Monitoring Not Applicable
5. Other Indications Not applicable	**5. Other Indications** Unexplained level rise in ANY of the following: Containment sump Reactor Coolant Drain Tank (RCDT) Waste Holdup Tank (WHT)
6. Emergency Director Judgment Judgment by the ED that the RCS Barrier is lost. Consider conditions not addressed and inability to determine the status of the RCS Barrier	**6. Emergency Director Judgment** Judgment by the ED that the RCS Barrier is potentially lost. Consider conditions not addressed and inability to determine the status of the RCS Barrier.

Containment Barrier	
Loss	**Potential Loss**
1. Critical Safety Function Status Not Applicable	**1. Critical Safety Function Status** Containment-RED
2. Containment Pressure Rapid unexplained CTMT pressure lowering following initial pressure rise **OR** Intersystem LOCA indicated by CTMT pressure or sump level response not consistent with a loss of primary or secondary coolant	**2. Containment Pressure** CTMT pressure greater than 52 psig **OR** CTMT hydrogen concentration greater than 6% **OR** CTMT pressure greater than 21.5 psig **AND** Less than the following minimum operable equipment: Four CTMT fan coolers **AND** One train of CTMT spray
3. Core Exit Thermocouple Reading Not applicable	**3. Core Exit Thermocouple Reading** CORE COOLING CSF - RED for greater than 15min **OR** CORE COOLING CSF - ORANGE for greater than 15min **AND** RVLIS LEVEL less than 63%
4. SG Secondary Side Release with Primary to Secondary Leakage RUPTURED S/G is also FAULTED outside of containment **OR** Primary-to-Secondary leakrate greater than 10 gpm with nonisolable steam release from affected S/G to the environment	4. SG Secondary Side Release with P-to-S Leakage Not applicable
5. CNMT Isolation Valves Status After CNMT Isolation CTMT isolation valve(s) **OR** damper(s) are **NOT** closed resulting in a direct pathway to the environment after containment isolation is required	5. CNMT Isolation Valves Status After CNMT Isolation Not Applicable
6. Significant Radioactive Inventory in Containment Not Applicable	**6. Significant Radioactive Inventory in Containment** CTMT Rad monitor RE-005 **OR** 006 ≥ 1.3E+7 mR/hr
7. Other Indications Pathway to the environment exists based on VALID RE-2562C Alarm **AND** RE-12444C **OR** RE-12442C Alarms	7. Other Indications Not applicable
8. Emergency Director Judgment Judgment by the ED that the CTMT Barrier is lost. Consider conditions not addressed and inability to determine the status of the CTMT Barrier	**8. Emergency Director Judgment** Judgment by the ED that the CTMT Barrier is potentially lost. Consider conditions not addressed and inability to determine the status of the CTMT Barrier

FUEL CLAD BARRIER Threshold Values:

The Fuel Clad Barrier is the zircalloy or stainless steel tubes that contain the fuel pellets.

1. Critical Safety Function Status

NOTE

Heat Sink CSF should not be considered –RED if total AFW flow is less than 535 gpm due to operator action.

RED path indicates an extreme challenge to the safety function. ORANGE path indicates a severe challenge to the safety function.

Core Cooling - ORANGE indicates subcooling has been lost and that some clad damage may occur. Heat Sink - RED indicates the ultimate heat sink function is under extreme challenge and thus these two items indicate potential loss of the Fuel Clad Barrier.

Core Cooling - RED indicates significant superheating and core uncovery and is considered to indicate loss of the Fuel Clad Barrier.

2. Primary Coolant Activity Level

Assessment by the NUMARC EAL Task Force indicates that this amount of coolant activity is well above that expected for iodine spikes and corresponds to less than 5% fuel clad damage. This amount of radioactivity indicates significant clad damage and thus the Fuel Clad Barrier is considered lost.

There is no equivalent "Potential Loss" Threshold Value for this item.

3. Core Exit Thermocouple Readings

Core Exit Thermocouple Readings are included in addition to the Critical Safety Functions to include conditions when the CSFs may not be in use (initiation after SI is blocked).

The "Loss" Threshold Value of 1200 degrees F corresponds to significant superheating of the coolant. This value corresponds to the temperature reading that indicates core cooling - RED in Fuel Clad Barrier Threshold Value #1.

The "Potential Loss" Threshold Value of 700 degrees F corresponds to loss of subcooling. This value corresponds to the temperature reading that indicates core cooling - ORANGE in Fuel Clad Barrier Threshold Value #1.

4. Reactor Vessel Water Level

There is no "Loss" Threshold Value corresponding to this item because it is better covered by the other Fuel Clad Barrier "Loss" Threshold Values.

The 63% RVLIS value for the "Potential Loss" Threshold Value corresponds to the top of the active fuel. The "Potential Loss" Threshold Value is defined by the Core Cooling - ORANGE path.

5. Containment Radiation Monitoring

The ≥ 2.6E+5 mR/hr reading is a value which indicates the release of reactor coolant, with elevated activity indicative of fuel damage, into the containment. The reading is calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with a concentration of 300 μCi/gm dose equivalent I-131 into the containment atmosphere. Reactor coolant concentrations of this magnitude are several times larger than the maximum concentrations (including iodine spiking) allowed within technical specifications and are therefore indicative of fuel damage. This value is higher than that specified for RCS barrier Loss Threshold Value #4. Thus, this Threshold Value indicates a loss of both the fuel clad barrier and a loss of RCS barrier.

There is no "Potential Loss" Threshold Value associated with this item.

7. Emergency Director Judgment

This Threshold Value addresses any other factors that are to be used by the Emergency Director in determining whether the Fuel Clad barrier is lost or potentially lost. In addition, the inability to monitor the barrier is incorporated in this Threshold Value as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC SG1, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power", for additional information.)

RCS BARRIER Threshold Values:

The RCS Barrier includes the RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including the primary isolation valves.

1. Critical Safety Function Status

NOTE

Heat Sink CSF should not be considered –RED if total AFW flow is less than 535 gpm due to operator action.

This Threshold Value uses the Critical Safety Function Status Tree (CSFST) monitoring and functional restoration procedures. An RCS Integrity RED path indicates an extreme challenge to the safety function derived from appropriate instrument readings, and these CSFs indicate a potential loss of RCS barrier.

There is no "Loss" Threshold Value associated with this item.

SYSTEM MALFUNCTION

SS4

Initiating Condition -- SITE AREA EMERGENCY

Complete Loss of Heat Removal Capability.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Hot Shutdown

Threshold Value:

NOTE

Heat Sink CSF should not be considered –RED if total AFW flow is less than 535 gpm due to operator action.

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1. Complete Loss of Heat Removal Capability as indicated by:

   a. Core Cooling CSF - ORANGE

   AND

   b. Heat Sink CSF - RED

Basis:

This Threshold Value addresses complete loss of functions, including ultimate heat sink (NSCW), required for hot shutdown with the reactor at pressure and temperature. Reactivity control is addressed in other Threshold Values.

Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted. Escalation to General Emergency would be via Abnormal Rad Levels / Radiological Effluent, Emergency Director Judgment, or Fission Product Barrier Degradation ICs.

SYSTEM MALFUNCTION

SG2

Initiating Condition -- GENERAL EMERGENCY

Failure of the Reactor Protection System to Complete an Automatic Trip and Manual Trip was NOT Successful **AND** there is Indication of an Extreme Challenge to the Ability to Cool the Core.

Operating Mode Applicability: Power Operation
Startup

Threshold Value:

NOTE

Heat Sink CSF should not be considered – RED if total AFW flow is less than 535 gpm due to operator action.

1. Indications exist that a reactor protection system setpoint was exceeded and automatic trip did not occur, and a manual trip did not result in the reactor being made subcritical.

   AND

   Core Cooling CSF - RED

   OR

   Heat Sink CSF - RED

Basis:

Automatic and manual trip are not considered successful if action away from the reactor control console is required to trip the reactor.

The Reactor should be considered subcritical when reactor power level has been reduced to less than 5% power and SUR is negative.

Under the conditions of this IC and its associated Threshold Values, the efforts to bring the reactor subcritical have been unsuccessful and, as a result, the reactor is producing more heat than the maximum decay heat load for which the safety systems were designed. Although there are capabilities away from the reactor control console, such as emergency boration, the continuing temperature rise indicates that these capabilities are not effective. This situation could be a precursor for a core melt sequence. This Threshold Value equates to a Subcriticality RED condition.

The extreme challenge to the ability to cool the core is intended to mean that the core exit temperatures are at or approaching 1200 degrees F or that the reactor vessel water level is below the top of active fuel. This Threshold Value equates to a Core Cooling RED condition.

TABLE O-2 (Sheet 1 of 2)

Training Requirements For VEGP ERO Personnel	CORE DAMAGE ASSESSMENT	OFFSITE COMMUNICATIONS	EMERGENCY PLAN OVERVIEW	FIRST AID	MANAGEMENT OF RADIOLOGICAL EMERGENCIES	OFFSITE DOSE ASSESSMENT	POST-ACCIDENT SAMPLING	REPAIR AND CORRECTIVE ACTIONS	FIELD MONITORING TEAM	RAD EMERGENCY TEAM IN-PLANT	SECURITY	MEDICAL SUPPORT OF RADIOLOGICAL EMERGENCY	SCBA
Emergency Director			x		x								
EOF Management	- Training provided as described in Appendix 7												
EOF Staff	- Training provided as described in Appendix 7												
Dose Analyst			x			x							
Security Coordinators			x								x		
TSC Manager			x		x								
TSC Support Coordinator			x										
Engineering Supervisor	x		x										
Maintenance Supervisor			x					x					
Operations Supervisor			x		x								
Radiation Protection Supervisor			x			x				x		x	
Chemistry Supervisor			x				x						
TSC Engineering Staff			x										
OSC Manager			x		x			x					
Communicators		x	x										
Clerks			x										
Teams													
In-Plant Monitoring			x							x			x
Damage Control/Assessment			x					x					x
Repair And Modification			x					x					x
Search And Rescue			x	X(a)									x
Fire Brigade			x										x
First Aid			x	x									x