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

NL-13-1648

Vogtle Electric Generating Plant
Response to Supplemental Information Needed for Acceptance of License
Amendment Request for Technical Specification 3.7.14 Completion Time

Ladies and Gentlemen:

By letter dated September 26, 2012, Southern Nuclear Operating Company (SNC), submitted a license amendment request (LAR) to revise the Completion Time (CT) for Technical Specification (TS) 3.7.14, "Engineered Safety Features (ESF) Room Cooler and Safety Related Chiller System." The LAR proposes to revise the CT for Condition A, "One ESF room cooler and safety-related chiller train inoperable," from "72 hours" to "7 days OR 14 days for chiller overhaul maintenance." By letter dated April 26, 2013, the U. S. Nuclear Regulatory Commission (NRC) staff requested supplemental information to enable the staff to begin its detailed technical review.

Enclosure 1 to this document provides SNC's response to the NRC's April 26, 2013 letter. Based on discussions subsequent to the LAR submittal, SNC is revising the TS amendment request to no longer request 14 days for chiller overhaul maintenance. Enclosure 2 contains the revised marked-up TS and TS Bases pages. Enclosure 3 contains the revised clean typed TS page. Based on the proposed changes, SNC is withdrawing the commitments listed in Enclosure 4 of the September 26, 2012 LAR and issuing new commitments. The new commitments are listed in Enclosure 4 of this letter. Due to the nature of the differences between the proposed TS and TS Bases changes in the September 26, 2012 LAR and the proposed changes in this letter, the "Significant Hazards Consideration" given in Section 4.1 of the September 26, 2012 LAR remains valid. Enclosure 5 contains requested drawings per NRC question 1b. Please note that the originals of the drawings provided in Enclosure 5 contain the following statement:

> "This document contains proprietary, confidential, and/or trade secret information of the subsidiaries of the Southern Company or of third parties. It is intended for use only by employees of, or authorized contractors of, the subsidiaries of the Southern Company. Unauthorized possession, use, distribution, copying, dissemination, or disclosure of any portion hereof is prohibited."

SNC does not request exclusion from the public domain via 10 CFR 2.390 for these drawings. For Enclosure 5 of this letter, the drawings have been modified to not include the above statement.

This letter supersedes SNC letter NL-13-0972, dated June 24, 2013, in its entirety.

This letter contains NRC commitments (reference Enclosure 4). If you have any questions, please contact Ken McElroy at (205) 992-7369.

Mr. C. R. Pierce states he is Regulatory Affairs Director of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and, to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

C. R. Pierce

C. R. Pierce
Regulatory Affairs Director

CRP/RMJ

Sworn to and subscribed before me this 7th *day of* August, *2013.*

Laura L. Crapt
Notary Public

My commission expires: 11-02-2013

Enclosures:
1. SNC Response to April 26, 2013 NRC Letter
2. Revised Marked-Up Technical Specification and Bases Pages
3. Revised Clean Typed Technical Specification Page
4. Commitment Table
5. Requested Drawings

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Vogtle Electric Generating Plant
Response to Supplemental Information Needed for Acceptance of License Amendment Request for Technical Specification 3.7.14 Completion Time

Enclosure 1

SNC Response to April 26, 2013 NRC Letter

NRC Question 1

Please provide a complete description of the engineered safety feature (ESF) Essential Chilled Water/Room Cooler System, as follows:

NRC Question 1a

Provide a listing of all ESF room coolers/air handling units in the system. If Enclosure 6 to the LAR constitutes such a list, clarify that there is a total of 14 room coolers per train, with several room coolers serving multiple rooms, such as for example 2-1532-A7-002-000 and 2-1561-E7-001-000. Clarify why train 2B lists 13 room coolers whereas trains 1A, 1B, and 2A list 14 room coolers.

SNC Response to NRC Question 1a

Enclosure 6 of the LAR provides a listing of all ESF room coolers / air handling units in the system. Each chiller system train serves 14 room coolers, with the exception of the 2B chiller system train, which only serves 13 room coolers. This is because trains 1A, 1B, and 2A have an additional room cooler not present in train 2B. The additional room cooler in trains 1A (1-1539-A7-005-000) and 2A (2-1539-A7-005-000) serves the separate Control Building Normal AC Room in Units 1 and 2, respectively. The additional room cooler in train 1B (1-1539-A7-006-000), serves the Control Building Electrical Equipment Room, which is a common area. Train 2B does not contain a room cooler that serves either of these areas. Certain room coolers, such as 2-1532-A7-002-000 and 2-1561-E7-001-000, are designed such that they service multiple rooms.

NRC Question 1b

Provide piping and instrumentation drawings and floor location drawings showing each room cooler in the system.

SNC Response to NRC Question 1b

The requested piping and instrumentation drawings are provided in Enclosure 5. The requested floor plan drawings will be provided in a separate letter at a later date.

NRC Question 1c

The Bases for TS 3.7.14, states in part, the following:

The ESF room cooler and safety-related chiller system provides cooling to ESF equipment rooms during abnormal, accident, and post accident conditions. The ESF room coolers supplement the normal HVAC system in cooling certain rooms during normal operations. The essential chilled water system supplies chilled water to the cooling coils for all ESF room coolers and the Control Room Emergency Filtration System (CREFS) ....

In addition to a manual start capability, automatic cooling of each ESF equipment room is initiated by three possible signals. All room coolers start upon receipt of a high temperature signal from the associated room. Certain room coolers will start upon receipt of an equipment running signal or a safety injection (SI) signal. The equipment

running signal is used to provide supplemental cooling for the normal ventilation system in some ESF equipment rooms. The high room temperature signal supplements the normal cooling system function and does not constitute a credited safety function. The SI signal or the equipment running signal is the credited safety function automatic start and will start only those ESF room coolers which are required to operate during an SI. In addition the safety-related chillers receive an automatic start from the Control Room Isolation (CRI) signal to provide chilled water to the CREFS. In addition, the containment spray pump room coolers start when the containment spray pumps start. Containment spray is actuated when containment pressure reaches the Hi-3 set point, which may occur following a loss of coolant accident or a steam line break.

This could imply that some of the room coolers in the ESF chiller/room cooler system are not required in response to accidents and transients as analyzed in the VEGP USFAR. For each of the room coolers/AHUs listed in response to item 1.a above, identify the UFSAR transient, accident analysis or condition for which its function is required. Also include identification of what start Signal each room cooler/AHU responds to.

SNC Response to NRC Question 1c

The design basis of the ESF room cooler and safety-related chiller system is to maintain air temperatures as required in rooms containing safety-related equipment during and after a design basis loss of coolant accident (LOCA), loss of offsite power (LOSP), and other postulated accidents including a line rupture with a radioactive release inside the auxiliary building. The ESF room cooler and safety-related chiller system are required to automatically start when the systems or components it supports are required to operate following a Safety Injection (SI) or Control Room Isolation (CRI) signal. The safety-related chiller system is manually started following a LOSP. The system is designed to perform its function with a single failure of any active component, assuming the loss of offsite power. One train of the ESF room cooler and safety-related chiller system provides 100% of the required cooling for the associated train of ESF equipment.

Considering the applicability of specification LCO 3.7.14 is MODES 1 through 4, the bounding accident or event for the ESF Chiller and ESF Room Cooler trains is the requirement to perform the credited safety function following a large break LOCA. Therefore, the ability to perform the safety function is required in the event of a SI in which Containment pressure reaches the Hi-3 setpoint of 21.5 psig.

The only room cooler that does not perform a credited safety function in response to a large break LOCA is the Fuel Handling Building Spent Fuel Pool Heat Exchanger and Pump Room cooler. This subsystem is a defense in depth system that does not perform a credited safety function for the accidents and events analyzed for LCO 3.7.14.

The following table identifies the specific start signals for each of the components provided in the previous submittal. Please note that Unit 2 equipment is redundant to Unit 1 in regards to safety feature and start signal; therefore, only Unit 1 equipment data is provided.

Unit 1 Train A

ESF Room Cooler	Area Served	Credited Safety Related Start Signal	Non-credited Start Signal
1-1531-N7-001-000	Main Control Room (Common to Units 1 and 2)	CRI	
1-1532-A7-001-000	Control Building battery Rooms, MCC Room, Switchgear Rooms, and Shutdown Panel Rooms	SI	
1-1539-A7-001-000	Control Building Auxiliary Relay Room	SI	
1-1555-A7-001-000	Auxiliary Building Electrical Switchgear and MCC Room	SI	High Room Temp
1-1555-A7-003-000	Auxiliary Building Electrical Switchgear and MCC Room	SI	High Room Temp
1-1555-A7-005-000	Auxiliary Building Electrical Switchgear and MCC Room	SI	High Room Temp
1-1555-A7-007-000	Auxiliary Building Residual Heat Removal Pump Room	Pump Start	High Room Temp
1-1555-A7-009-000	Auxiliary Building Containment Spray Pump Room	Pump Start	High Room Temp
1-1555-A7-011-000	Auxiliary Building Component Cooling Water Pumps Room	SI	High Room Temp
1-1555-A7-013-000	Auxiliary Building Chemical and Volume Control System Pump Room	Pump Start	High Room Temp
1-1555-A7-015-000	Auxiliary Building Safety Injection System Pump Room	Pump Start	High Room Temp
1-1555-A7-017-000	Fuel handling Building Spent Fuel Pool Heat Exchanger and Pump Room	SI (no credited safety function)	High Room Temp
1-1561-E7-001-000	Piping Penetration Area	CVI	
1-1539-A7-005-000	Control Building Normal AC Room	SI	High Room Temp

Unit 1 Train B

ESF Room Cooler	Area Served	Credited Safety Related Start Signal	Non-credited Start Signal
1-1531-N7-002-000	Main Control Room (Common to Units 1 and 2)	CRI	
1-1532-A7-002-000	Control Building battery Rooms, MCC Room, Switchgear Rooms, and Shutdown Panel Rooms	SI	
1-1539-A7-002-000	Control Building Auxiliary Relay Room	SI	
1-1555-A7-002-000	Auxiliary Building Electrical Switchgear and MCC Room	SI	High Room Temp
1-1555-A7-004-000	Auxiliary Building Electrical Switchgear and MCC Room	SI	High Room Temp
1-1555-A7-006-000	Auxiliary Building Electrical Switchgear and MCC Room	SI	High Room Temp
1-1555-A7-008-000	Auxiliary Building Residual Heat Removal Pump Room	Pump Start	High Room Temp
1-1555-A7-010-000	Auxiliary Building Containment Spray Pump Room	Pump Start	High Room Temp
1-1555-A7-012-000	Auxiliary Building Component Cooling Water Pumps Room	SI	High Room Temp
1-1555-A7-014-000	Auxiliary Building Chemical and Volume Control System Pump Room	Pump Start	High Room Temp
1-1555-A7-016-000	Auxiliary Building Safety Injection System Pump Room	Pump Start	High Room Temp
1-1555-A7-018-000	Fuel handling Building Spent Fuel Pool Heat Exchanger and Pump Room	SI (no credited safety function)	High Room Temp
1-1561-E7-002-000	Piping Penetration Area	CVI	
1-1539-A7-006-000	Control Building Normal AC Room	SI	High Room Temp

NRC Question 1d

Discuss the licensing basis mission time for the ESF chiller/room cooler system. If other coolers have a different mission time than the period of thirty days discussed in BASES 3.7.10 please discuss their mission time(s). Please discuss this with respect to each room cooler/AHU in the ESF chiller/cooler system.

SNC Response to NRC Question 1d

The design basis of the ESF room cooler and safety-related chiller system is to maintain air temperatures as required in rooms containing safety-related equipment during and after a design basis LOCA, loss of offsite power, and other postulated accidents including a line rupture with a radioactive release inside the auxiliary building. The licensing basis mission time for the ESF chiller/room cooler system is not explicitly listed in Sections 3.7.10 or 3.7.14 of the Bases. The chiller/room cooler systems are credited in maintaining the ambient air temperature within the continuous duty rating of the ESF equipment located in each room. It can therefore be inferred that the chiller/room cooler systems must remain capable, as needed, to maintain the room temperatures for the duration that the supported systems must perform their safety related function. Safety related electrical and active mechanical equipment supported by the ESF Chiller and Room Cooler Train can be required to operate continuously following a design basis accident (DBA). The assumed post-accident operating time for equipment included within the scope of the equipment qualification (EQ) program is one year. Many of the rooms served by ESF room coolers contain EQ equipment. FSAR Section 3.11.N.1.3 provides additional discussion regarding required equipment operability times. Per the FSAR, Westinghouse NSSS supplied Class 1E electrical and active mechanical equipment located outside containment, is accessible, and can be repaired, replaced, or recalibrated generally has a required post-accident operability time of two weeks.

NRC Question 2

The LAR states that "The ESF room coolers are designed to maintain the ambient air temperature below the environmental qualification rating of the ESF equipment served by the system." For each cooler, provide a discussion of the structure, system or component (SSC) protected by that cooler, its equipment qualification limit and the margin to that limit determined in the licensing basis accident analysis for both cases of the chiller being in operation and the chiller being inoperable during the extended CT as proposed by the LAR. Include the time after initiation of the event that the peak temperature occurs.

SNC Response to NRC Question 2

The following tables lists the room name, the calculated abnormal temperature for each room, and the room's equipment qualification (EQ) limit. Abnormal conditions are those sets of plant conditions, including a loss of normal cooling, for which the equipment is designed to operate for a period of time. Abnormal temperatures are calculated for rooms that contain normal Class 1E equipment. The criteria used to determine abnormal temperatures due to a loss of the normal environmental support systems are as follows:

- A loss of heating, ventilation, and air-conditioning (HVAC) is postulated when there is a failure of either the system airflow (fan failure) or system cooling capability (chilled water).

- The initial temperature in the spaces is assumed to be the cooling design temperature used in the HVAC load calculation (typically 100°F).

- For calculation purposes, the maximum duration of the postulated loss of HVAC is 24 hours.

- Each room containing Class 1E equipment is analyzed for a loss of normal HVAC during normal operation at full load with all normal heat sources operating.

- Analysis is performed on a closed room or area basis, assuming no airflow in or out of the room.

- For those rooms served by the ESF HVAC systems, it is assumed that the ESF system is activated upon loss of normal HVAC. Analysis is performed using normal heat sources operating in the room and using the ESF HVAC system's heat removal capacity for a period of 24 hours.

The results of the calculation for the abnormal temperature were used to determine many of the appropriate temperatures for the EQ abnormal temperature limit. The calculated "margin to the limit" is therefore not applicable for these cases. VEGP does not have EQ limits that are based on both the loss of both normal and emergency cooling for an extended period of time. Given the similarities between Unit 1 and Unit 2, only Unit 1 data is shown below. Heatup calculations performed in support of the probabilistic risk assessment (PRA) are described in the response to Question 4.

Unit 1 Train A

ESF Room Cooler	Room Number	Abnormal Heatup Results °F (Note 2)	EQ Abnormal Temp Limit °F	SSC Area Served
1-1531-N7-001-000	Main Control Room (Rooms 156, 157, 158, 161, 162, 164)	--	85	Main Control Room (Common to Units 1 and 2)
	160	93	93	
	163	76	85	
1 -1532-A7-001-000	B84	75	100	Control Building Non-ESF DC Room
	B76	86	86	Control Building Switchgear Room
	B79	85	100	Control Building MCC Room
	B60	90	100	Control Building HVAC Train "A"
	B56	76	76	Control Building Train "C" Channel 3
	B55	95	100	Control Building Train "C" Channel 3
	B54	80	80	Control Building Train "A" Channel 1
	B52	85	100	Control Building Train "A" Channel 1
	A48	100	100	Control Building Switchgear Train "A"
	A75	76	76	Control Building Shutdown Room Train "A"
1 -1539-A7-001-000	A45	81	100	Control Building Auxiliary Relay Room
1 -1555-A7-001-000	D105	< 120	120	Auxiliary Building Electrical Switchgear and Motor Control Center Room
1 -1555-A7-003-000	C109	< 120	120	Auxiliary Building Electrical Switchgear and Motor Control Center Room
1 -1555-A7-005-000	118	< 120	120	Auxiliary Building Electrical Switchgear and Motor Control Center Room
1 -1555-A7-007-000	D48	< 120	120	Auxiliary Building Residual Heat Removal Pump Room
1 -1555-A7-009-000	D76	< 120	120	Auxiliary Building Containment Spray Pump Room

Unit 1 Train A

ESF Room Cooler	Room Number	Abnormal Heatup Results °F (Note 2)	EQ Abnormal Temp Limit °F	SSC Area Served
1 -1555-A7-011-000	A05	< 120	120	Auxiliary Building Component Cooling Water Pumps Room
1 -1555-A7-013-000	C115	< 120	120	Auxiliary Building Chemical and Volume Control System Charging Pump Room
1 -1555-A7-015-000	B15	< 120	120	Auxiliary Building Safety Injection System Pump Room
1 -1555-A7-017-000	A53	< 120	120	Fuel Handling Building Spent Fuel Pool Heat Exchanger and Pump Room
1 -1561-E7-001-000	Series of Rooms	-	Varies (Note 1)	Piping Penetration Area
1-1539-A7-005-000	325	118	118	Control Building Normal AC Room

Note 1: Drawing 1X4DB205-2 lists all rooms located within the piping penetration area. Calculation X4C1500S20 determines that all rooms within the piping penetration area are maintained below the environmental qualification abnormal temperature limit.
Note 2: All heatup result values from calculation X4C1500S20

Unit 1 Train B

ESF Room Cooler	Room Number	Abnormal Heatup Results (Note 2) °F	EQ Abnormal Temp Limit °F	Area Served
1 -1531-N7-002-000	Main Control Room (Rooms 156, 157, 158, 161, 162, 164)	--	85	Main Control Room (Common to Units 1 and 2)
	160	93	93	
	163	76	85	
1 -1532-A7-002-000	B62	90	100	Control Building HVAC Train "B"
	B61	86	100	Control Building Switchgear
	B53	-	80	Control Building Non-Train D.C.Room
	B44	74	80	Control Building Train "D" Channel 4
	B48	100	100	Control Building Train "D" Channel 4
	B47	92	92	Control Building ESF & Channel 2
	B49	75	80	Control Building Train "B" Channel 2
	A50	97	100	Control Building Switchgear Train"B"
	A77	75	100	Control Building MCC Room
	A43	72	80	Control Building Shutdown Room Train "B"
1 -1539-A7-002-000	226	75	100	Control Building Auxiliary Isolating Relay Room
1 -1555-A7-002-000	207	< 120	120	Auxiliary Building Electrical Switchgear and Motor Control Center Room
1 -1555-A7-004-000	B16	< 120	120	Auxiliary Building Electrical Switchgear and Motor Control Center Room
1 -1555-A7-006-000	116	< 120	120	Auxiliary Building Electrical Switchgear and Motor Control Center Room
1 -1555-A7-008-000	D49	< 120	120	Auxiliary Building Residual Heat Removal Pump Room
1 -1555-A7-010-000	D77	< 120	120	Auxiliary Building Containment Spray Pump Room
1 -1555-A7-012-000	A03	< 120	120	Auxiliary Building Component Cooling Water Pumps Room

Unit 1 Train B

ESF Room Cooler	Room Number	Abnormal Heatup Results (Note 2) °F	EQ Abnormal Temp Limit °F	Area Served
1 -1555-A7-014-000	C118	< 120	120	Auxiliary Building Chemical and Volume Control System Charging Pump Room
1 -1555-A7-016-000	B19	< 120	120	Auxiliary Building Safety Injection System Pump Room
1 -1555-A7-018-000	A07	108	108	Fuel Handling Building Spent Fuel Pool Heat Exchanger and Pump Room
1 -1561-E7-001-000	Series of Rooms	-	Varies (Note 1)	Piping Penetration Area
1-1539-A7-006-000	322	77	100	Control Building Electrical Equipment Room

Note 1: Drawing 1X4DB205-2 lists all rooms located within the piping penetration area. Calculation X4C1500S20 determines that all rooms within the piping penetration area are maintained below the environmental qualification abnormal temperature limit.
Note 2: All heatup result values, except for ESF room cooler 1-1555-A7-018-000, are from calculation X4C1500S20. ESF room cooler 1-1555-A7-018-000 heatup result is from calculation X4C1500S04.

NRC Question 3

Compensatory Measures

NRC Question 3a

Compensatory measures are proposed for the duration of TS 3.7.14 Condition A for overhaul maintenance. Are compensatory measures proposed for the extension to 7 days? As such, please describe these additional compensatory measures.

SNC Response to NRC Question 3a

The compensatory measures provided in Enclosure 4 of the SNC LAR dated September 26, 2012, were originally only intended to support 14-day overhaul maintenance, and not for the 7 day required action statement completion time. However, SNC is revising this amendment request to require compensatory measures to be active within 72 hours of entering Condition A. These compensatory measures will remain in effect until the time that Condition A is exited. SNC is no longer requesting the Condition A 14-day completion time for chiller overhaul maintenance. See Enclosure 2 to this letter.

NRC Question 3b

Discuss plans for the provision of a governing requirement for implementation of compensatory measures such as inclusion in the TS Bases, the UFSAR or in the TS Administrative Controls section.

SNC Response to NRC Question 3b

SNC is revising this amendment request to include the compensatory measures as part of the Configuration Risk Management Program (CRMP). The CRMP is controlled per Section 5.5.18 of the Vogtle Technical Specifications. Site procedure(s) implementing CRMP will be revised to direct implementation of the compensatory measures as risk management actions within 72 hours of entering LCO 3.7.14 Condition A. The current CRMP model does not model the opening of doors as a risk mitigating measure.

NRC Question 3c

Discuss the basis for the assumed effectiveness of the compensatory measures. For example, regarding the placement of fans, discuss prior experience that supports that the fans would have the desired result on room temperatures during abnormal, accident, and post accident conditions.

SNC Response to NRC Question 3c

SNC is able to quantify the effect of opening doors on the expected peak room temperature. Westinghouse heatup calculations supporting PRA model development provide the heatup results for electrical room R-B47 with and without credit taken for opening doors. R-B47 is a representative DC electrical room containing sensitive electrical equipment, and has the highest calculated temperature of the DC electrical rooms that are modeled. Without credit for opening doors, this room has a calculated peak temperature of 159.1 °F at 24 hours, and 183.3 °F at 72 hours. With credit taken for opening doors, this room has a calculated temperature of 91.1 °F at 24 hours, and 96.2 °F at 72 hours. As stated in the Enclosure 4

list of regulatory commitments, for safety related 125VDC and 120VAC equipment rooms on the affected train, the equipment room doors will be propped open within 72 hours of entering Condition A. Although the placement of fans is another method that can be used to reduce room temperature if necessary, it is currently not procedurally required, nor its benefits quantified. SNC is revising the commitments originally provided in the License Amendment Request (LAR) dated September 26, 2012 to no longer specify the placement of fans.

It is important to note that, although the compensatory measures given in Enclosure 4 will be implemented within 72 hours of entering Condition A, reliance on compensatory measures would only be required if the non-safety Normal Chilled Water System is not available concurrently with the inoperable ESF Chiller and Room Cooler Train. The compensatory measures are being established as defense-in-depth to reduce the overall risk.

NRC Question 3d

The last item in the Enclosure 4 Table discusses actions to be taken if the remaining ESF train is out of service. Discuss the action required by TS 3.7.14, Condition B in this case with respect to whether this represents a TS 3.0.3 condition.

SNC Response to NRC Question 3d

If both ESF Chiller and Room Cooler Trains are inoperable on a single unit, Technical Specification Limiting Condition for Operation (LCO) 3.0.3 would apply. Appropriate actions would be taken per LCO 3.0.3. LCO 3.7.14 Condition B applies when a single ESF room cooler and safety-related chiller train cannot be recovered to operable status within the specified Completion Time upon entering Condition A.

NRC Question 4

Risk Assessment

NRC Question 4a

Provide a list of the rooms addressed by the following statement "Room heat-up evaluations were performed for every room that contains PRA credited components." Identify any rooms with equipment having a safety function that are not evaluated by a heat-up calculation. How is the impact of heat-up determined in these rooms and what is the time to action? Also, identify the specific action and how long the action must be maintained.

SNC Response to NRC Question 4a

As part of VEGP PRA development task, room heat-up evaluations were conducted for all Unit 1 rooms containing PRA credited accident initiating and mitigating equipment. The rooms listed in table 4a-1 are included in the scope of a heat-up calculation performed in support of the PRA. Due to similarities in the room characteristics between the Unit 1 and Unit 2 rooms, the results of the Unit 1 PRA heat-up evaluations are judged to be applicable to the Unit 2 rooms. A listing of Unit 1 rooms served by ESF room coolers that contain PRA credited accident initiating and mitigating equipment for which heat-up evaluations were conducted follows in Table 4a-1.

Certain rooms served by the piping penetration filtration and exhaust system are the only rooms with equipment having a safety function for which a heat-up calculation was not identified. The piping penetration filtrations and exhaust system serves various rooms within the auxiliary building. The piping penetration filtrations and exhaust system is cooled by the ESF chilled water system and by Nuclear Service Cooling Water (NSCW). On loss of ESF chilled water cooling, the NSCW would continue to provide cooling to the rooms served by the piping penetration filtration and exhaust system. As a result, heatup calculations for these rooms are not needed. There are no additional compensatory actions necessary for the piping penetration filtrations and exhaust system on loss of ESF chilled water.

Table 4a-1

Room No. Unit 1	Location	Components
R-D76	Aux Bldg Lvl D	Cont. Spray Tr. A pump
R-D77	Aux Bldg Lvl D	Cont. Spray Tr. B pump
R-A05	Aux Bldg Lvl A	CCW Tr. A pumps
R-A03	Aux Bldg Lvl A	CCW Tr. B pumps
R-C115	Aux Bldg Lvl C	CCP A
R-C118	Aux Bldg Lvl C	CCP B
R-B15	Aux Bldg Lvl B	SIP A
R-B19	Aux Bldg Lvl B	SIP B
R-D48	Aux Bldg Lvl D	RHR pump A
R-D49	Aux Bldg Lvl D	RHR pump B
R-163 (CR)	Control Bldg Lvl 1	U1 Solid State Protection Cabinets
R-164 (CR)	Control Bldg Lvl 1	U2 Solid State Protection Cabinets
R-A48	Control Bldg Lvl A	4160V SWGR 1AA02 (Tr. A), ESF Sequencer A
R-A50	Control Bldg Lvl A	4160V SWGR 1BA03(Tr. B), ESF Sequencer B
R-B76	Control Bldg, Lvl B	480V SWGRs 1AB04, 1AB05 & MCC 1ABC
R-D105	Aux Bldg Lvl D	480V SWGR 1AB15
R-B61	Control Bldg Lvl B	480V SGWR 1BB06, 1BB07 & MCC 1BBC
R-207	Aux Bldg Lvl 2	480V SWGR 1BB16
R-325	Control Bldg Lvl 3	480V MCC 1ABA
R-118	Aux Bldg Lvl 1	480V MCC 1ABB, Inverter 1AD1I11
R-C109	Aux Bldg Lvl C	480V MCC 1ABD
R-B79	Control Bldg Lvl B	480V MCC 1ABE
R-322	Control Bldg Lvl 3	480V MCC 1BBA
R-116	Aux Bldg Lvl 1	480V MCC 1BBB, Inverter 1BD1I12
R-B16	Aux Bldg Lvl B	480V MCC 1BBD
R-A77	Control Bldg Lvl A	480V MCC 1BBE
R-B52	Control Bldg Lvl B	125V DC Bus 1AD1, Pnls 1AD11& 12, Inv. 1AD1I1, BCs 1AD1CA & 1CB, MCC 1AD1M, and 120 VAC Pnl 1AY1A
R-B47	Control Bldg Lvl B	125V DC Bus 1BD1, Pnls 1BD11& 12, Inv 1BD1I2, BCs 1BD1CA & 1CB, MCC 1BD1M, and 120V AC Pnl 1BY1B
R-B55	Control Bldg Lvl B	125V DC Bus 1CD1, Pnl 1CD11, Inv 1CD1I3, BCs 1CD1CA & 1CB, 120V AC Pnl 1CY1A
R-B48	Control Bldg Lvl B	125V DC Bus 1DD1, Pnl 1DD11, Inv 1DD1I4, BCs 1DD1CA & 1CB, 120V AC Pnl 1DY1B
R-B56	Control Bldg Lvl B	125VDC battery 1CD1B
R-B54	Control Bldg Lvl B	125VDC battery 1AD1B
R-B44	Control Bldg Lvl B	125VDC battery 1DD1B
R-B49	Control Bldg Lvl B	125VDC battery 1BD1B

The above listed rooms served by ESF room coolers include all rooms that contain equipment having a safety function that are credited in the PRA for which a heat-up calculation was performed.

NRC Question 4b

Are rooms R-B61, Unit 1 Train 1B and R-B18, Unit 2 Train 2B the only two rooms requiring the compensatory action of opening doors and placing fans?

SNC Response to NRC Question 4b

No, the VEGP PRA model assumes the compensatory action of opening doors may be necessary for the following rooms. These are the only rooms served by ESF room cooling for which PRA heat-up evaluations determined the room may reach 150 °F within 24 hours of loss of room cooling.

UNIT 1
- Train A B52, B55
- Train B B47, B48, B61

UNIT 2
- Train A B26, B29
- Train B B18, B31, B36

The VEGP PRA model does not assume placement of fans as a compensatory action.

Room cooling is considered an important support system for SSCs modeled in the PRA; as a result, PRA heat-up evaluations were performed for the rooms in Table 4a-1 to determine the temperature profile during the 24 hour PRA mission time, assuming a total loss of room cooling. The PRA heat-up evaluations determined that the room temperature remained below 150 °F in all rooms, assuming compensatory action to open doors to the five rooms per Unit listed above. Using industry references that describe equipment survivability and accelerated thermal aging test results, the PRA heat-up evaluation determined equipment functionality is not affected when room temperature stays below 150 °F for the duration of the PRA mission time. The heat-up evaluations concluded it was not necessary to include room cooling in the PRA model either as an initiating event or a mitigating system. Additionally, it was judged that the human error probability for failing to open the doors is extremely small and has a negligible impact on the core damage frequency and large early release frequency.

VEGP procedures provide guidance on taking the compensatory action of opening doors following loss of room cooling and include the five rooms per Unit identified by the PRA as necessary for preventing the likelihood of a core damage or large early release event.

NRC Question 4c

Does the information provided for room R-B18 on page E1-11 (as well as all other rooms) indicate that the results of the room heatup calculations - for abnormal, accident, and post accident conditions - are that compensatory measures must be implemented by 11.5 hours into the event? Without recovery of room cooling how long must the compensatory measures be maintained?

SNC Response to NRC Question 4c

The VEGP PRA assumes the compensatory measure of opening room doors is implemented before room heat-up affects PRA-credited accident initiating and mitigating equipment for the five rooms per unit that are listed in the Question 4b response. The VEGP PRA heat-up evaluations do not specify a time for taking the compensatory action of

opening doors after loss of ESF room cooling. According to the PRA heat-up evaluations, the shortest time to 150 °F after loss of ESF room cooling with no operator action will occur in rooms R-B61 (Unit 1) and R-B18 (Unit 2). These rooms are expected to heat-up to 150 °F at 11.5 hours after loss of ESF room cooling with no operator action. Additionally, industry references that describe equipment survivability and accelerated thermal aging test results establish equipment survivability for several hours at temperatures above 150 °F. Conservatively, compensatory measures must be implemented by 11.5 hours after loss of ESF room cooling for rooms R-B61 (Unit 1) and R-B18 (Unit 2). Rooms R-B47, R-B52, R-B55, and R-B48 (Unit 1) and R-B26, R-B29, R-B31, and R-B36 (Unit 2) reach 150 °F at times longer than 11.5 hours after loss of ESF room cooling without implementation of compensatory actions of opening doors. For all other rooms, the VEGP PRA heat-up evaluations concluded that the room temperature remained below 150 °F during the 24 hour PRA mission time after loss of ESF room cooler with no operator action.

The VEGP PRA assumes that the compensatory measure of opening doors for the five rooms per Unit listed above will be maintained until PRA success criteria are met or until the action is no longer needed (e.g. due to recovery of ESF chiller and room coolers).

NRC Question 5

No Significant Hazards Consideration Determination (NSHC)

The FSAR 9.2.9.1.1.1, Safety Design Basis C, discusses the loss of ESF switchgear and the emergency safeguard feature pumps. Please discuss any change in the probability of a loss of function for these components due to the proposed CT extension and its impact on the NSHC determination.

SNC Response to NRC Question 5

During normal plant operation, both trains of the essential chilled water system are on standby, as the power plant cooling is provided by the normal chilled water system. On a safety injection signal, or control room isolation signal, both trains of the essential chilled water system are automatically actuated; however, on loss of offsite power the essential chilled water system is manually actuated.

The Unit's operable emergency chilled water system (ECWS) is a separate independent train that provides the required cooling to the redundant loads in the operable ECWS train and all of the equipment served by the operable ECWS train will provide the required cooling. Disregarding other unrelated failures, the redundant train loads will be operable and capable of performing their intended function. Should LCO 3.7.14 Condition A be entered, the remaining train's ESF room coolers and ECWS will be designated as a "Protected Train" within 72 hours, and until the time that Condition A is exited. Page E1-14 of the SNC LAR describes actions required once a train is designated as protected. As stated in the response to Question 3a, the remaining compensatory actions listed in Enclosure 4 to the SNC LAR will also be implemented within 72 hours of entering Condition A, through the time that Condition A is exited. The compensatory actions will increase the likelihood that the ESF systems will respond as required following a DBA, even without its associated ESF room cooler and chiller system being operable. Per LCO 3.0.6, if a loss of safety function of the supported equipment is determined to exist by the Safety Function Determination Program (SFDP) (Specification 5.5.15), the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered. If the remaining operable ECWS train were to become inoperable, LCO 3.0.3 would be entered. Accordingly, there is no significant reduction in margin

of safety. The probability of an accident previously evaluated and the probability of a new or different kind of accident from any previously evaluated are unaffected by this change.

NRC Question 6

Technical Specifications

The LAR would increase the Completion Time for TS 3.7.14 Condition A from 72 hours to 7 days or 14 days for chiller overhaul maintenance. Page E1-3 of the LAR request states:

> This proposed change to the TS is similar to the previous 2A essential chiller emergency TS revision request for the 2A chiller to be inoperable for 14 days to repair water leakage into the refrigerant side and to replace the chiller hermetic compressor motor (SNC letter NL-10-1609 and NL-10-1623 dated August 18, 2010), for which Southern Nuclear Operating Company (SNC) received NRC approval on August 19, 2010.

Page E1-7 of the amendment request states that the chiller overhaul planned maintenance activities require substantially more time than CT currently allowed by TS 3.7.14 and therefore such work is typically performed during refueling outages. It is further stated that the work is scheduled to be performed while online.

On December 19. 2011, the licensee submitted an amendment request for a similar change (ADAMS Accession No. ML 113550489). Page E1-6 of the December 2011 amendment request states that a chiller overhaul was originally scheduled for September 18, 2011 with a late date of March 11, 2013 and that the overhaul was deferred from the fall 2011 outage. Page 2 of the December 2011 amendment request cover letter states that a refueling outage is scheduled to start on March 10, 2013.

Page B 3.0-2 of Vogtle Units 1 and 2 TS Bases states:

> The Completion Times of the Required Actions are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the ACTIONS include, but are not limited to, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering ACTIONS for these reasons must be done in a manner that does not compromise safety. Intentional entry into ACTIONS should not be made for operational convenience. Alternatives that would not result in redundant equipment being inoperable should be used instead.

NRC Question 6a

Given that the August 2010 amendment was necessary to preclude an unplanned shutdown and that the chiller overhaul was deferred in the fall 2011 outage and that a refueling outage is scheduled to start on March 10, 2013, it is not apparent to the staff that the operational conditions at the plant in 2010 are similar to conditions at this time. Please state why the current operational conditions justify this amendment.

SNC Response to NRC Question 6a

SNC is no longer pursuing the 14-day completion time for the chiller overhaul maintenance activities. The current 72-hour completion time for Condition A has resulted in SNC either having to seek or being prepared to seek emergency regulatory relief due to the insufficient

72-hour LCO time to complete needed maintenance on several occasions. Allowing a 7-day completion time will allow for more thorough troubleshooting techniques and for resolution to prepare and perform maintenance activities and functional testing.

NRC Question 6b

Please demonstrate how the alternative to intentionally entering Condition A, that is, overhauling the system during the outage, is not possible.

SNC Response to NRC Question 6b

SNC is no longer pursuing the 14 day completion time for overhaul maintenance.

Vogtle Electric Generating Plant
Response to Supplemental Information Needed for Acceptance of License Amendment Request for Technical Specification 3.7.14 Completion Time

Enclosure 2

Revised Marked-Up Technical Specification and Bases Pages

3.7 PLANT SYSTEMS

3.7.14 Engineered Safety Features (ESF) Room Cooler and Safety Related Chiller System

LCO 3.7.14 Two ESF Room Cooler and Safety-Related Chiller trains shall be OPERABLE.

---NOTE---
One Safety-Related Chiller train may be removed from service for ≤ 2 hours under administrative controls for surveillance testing of the other Safety-Related Chiller train.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One ESF room cooler and safety-related chiller train inoperable.	A.1	Restore the ESF room cooler and safety-related chiller train to OPERABLE status.	7 days ~~72 hours*~~
B. Required Action and Associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

~~*For the VEGP Unit 2 August 16, 2010 entry into Technical Specifications 3.7.14 Condition A, one ESF room cooler and safety-related chiller train may be inoperable for a period not to exceed 14 days.~~

BASES

LCO (continued)

b. The associated chilled water system, including the chiller, water pump, piping, valves, and instrumentation required to perform the safety-related function is OPERABLE.

The LCO is modified by a Note that allows one safety-related chiller train to be removed from service for up to 2 hours under administrative controls for surveillance testing of the other chiller train. This note is required to allow surveillance testing to be performed separately on each safety-related chiller train. Such testing may include individual automatic starts of each chiller train. Administrative controls must be in place to ensure the train removed from service can be rapidly returned to service if the need arises. When this note is utilized, the train removed from service is not required OPERABLE during the testing of the other train.

APPLICABILITY

In MODES 1, 2, 3, and 4, the ESF room cooler and safety-related chiller system must be OPERABLE to provide a safety-related cooling function consistent with the OPERABILITY requirements of the ESF equipment it supports. In MODES 5 or 6, there are no TS OPERABILITY requirements for the ESF room cooler and safety-related chiller system. However, the functional requirements of the ESF room cooler and safety-related chiller system to provide supplemental cooling for normal HVAC are determined by the systems it supports. In these MODES, any supplemental cooling provided by the ESF room cooler and safety-related chiller system is not a required safety function of the system.

ACTIONS

A.1

If one ESF room cooler and safety-related chiller system train is inoperable, action must be taken to restore the train to OPERABLE status within ~~72 hours~~. In this Condition, the remaining OPERABLE ESF room cooler and safety-related chiller system train is adequate to perform the heat removal function for its associated ESF equipment.

7 days

However, the overall reliability is reduced because a single failure in the OPERABLE ESF room cooler and safety-related chiller system train could result in loss of the ESF room cooler and safety-related chiller system function. The ~~72-hour~~ Completion Time is based on the redundant capabilities afforded by the OPERABLE train, and the low probability of a DBA occurring during this time.

7-day

Insert 1:

(continued)

Insert 1

Within 72 hours of entering Condition A, the Configuration Risk Management Program (CRMP) shall be implemented. The CRMP is used to assess changes in core damage frequency resulting from applicable plant configurations. The CRMP uses the equipment out of service risk monitor, a computer based tool that may be used to aid in the risk assessment of on-line maintenance and to evaluate the change in risk from a component failure. The equipment out of service risk monitor uses the plant probabilistic risk assessment model to evaluate the risk of removing equipment from service based on current plant configuration and equipment condition.

Vogtle Electric Generating Plant
Response to Supplemental Information Needed for Acceptance of License Amendment Request for Technical Specification 3.7.14 Completion Time

Enclosure 3

Revised Clean Typed Technical Specification Page

3.7 PLANT SYSTEMS

3.7.14 Engineered Safety Features (ESF) Room Cooler and Safety Related Chiller System

LCO 3.7.14 Two ESF Room Cooler and Safety-Related Chiller trains shall be OPERABLE.

---NOTE---
One Safety-Related Chiller train may be removed from service for ≤ 2 hours under administrative controls for surveillance testing of the other Safety-Related Chiller train.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One ESF room cooler and safety-related chiller train inoperable.	A.1	Restore the ESF room cooler and safety-related chiller train to OPERABLE status.	7 days
B. Required Action and Associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

Vogtle Electric Generating Plant
Response to Supplemental Information Needed for Acceptance of License Amendment Request for Technical Specification 3.7.14 Completion Time

Enclosure 4

Commitment Table

Enclosure 4 to NL-13-1648
Commitment Table

List of Regulatory Commitments

The following table identifies the regulatory commitments in this document. Any other statements in this submittal represent intended or planned actions. Such statements are provided for information purposes and are not considered to be regulatory commitments.

Regulatory Commitments	Event Duration
The remaining train ESF Room Cooler and Safety-Related Chiller System will be operated as a Protected Train per procedure NMP-OS-010.	Within 72 hours of entering Condition A
The Unit 1 low voltage switchyards and the Unit 2 low voltage switchyards will be maintained available (that is, no routine testing or maintenance activities will be performed).	Within 72 hours of entering Condition A
High voltage switchyards will be maintained available (that is, no routine testing or maintenance activities will be performed) with the exception of work activities which do not challenge both feeders from offsite power sources will be permitted and managed as a high Operational Risk Awareness job.	Within 72 hours of entering Condition A
The Unit 1 and Unit 2 Train A and Train B Emergency Diesel Generators will be maintained available (that is, no routine testing or maintenance activities will be performed).	Within 72 hours of entering Condition A
The Normal Chilled Water System will be maintained available (that is, no routine testing or maintenance activities will be performed).	Within 72 hours of entering Condition A
The opposite Unit's Essential Chilled Water System and the opposite Unit's CREFS will be maintained available to support control room cooling (that is, no routine testing or maintenance activities will be performed).	Within 72 hours of entering Condition A
Equipment room doors will be propped open for safety related 125VDC and 120VAC equipment rooms on the affected train.	Within 72 hours of entering Condition A