



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 19, 2010

Mr. Mark J. Ajluni
Manager, Nuclear Licensing
Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
P.O. Box 1295
Birmingham, Alabama 35201

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 2, ISSUANCE OF
EMERGENCY AMENDMENT REGARDING ENGINEERED SAFETY (ESF)
ROOM COOLER AND SAFETY-RELATED CHILLER SYSTEM (TAC NO.
ME4507)

Dear Mr. Ajluni:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 139 to Renewed Facility Operating License NPF-81 for the Vogtle Electric Generating Plant, Unit 2. The amendment consists of changes to the Technical Specifications (TSs) in response to your application and its supplement, both dated August 18, 2010.

The amendment revises TS 3.7.14, "Engineered Safety Features (ESF) Room Cooler and Safety-Related Chiller System" such that, with one train of ESF Room Coolers inoperable, the allowed completion time for Condition A is extended from 72 hours to 14 days, on a one-time only basis. The 14-day allowable outage time will allow time to repair the Unit 2 A-train ESF room cooler. This amendment was issued as an emergency amendment to allow the licensee sufficient time to make repairs without requiring a shutdown of the unit.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in cursive script that reads "Robert Martin".

Robert E. Martin, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-425

Enclosures:

1. Amendment No. 139 to NPF-81
2. Safety Evaluation

cc w/encls: Distribution via Listserv



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SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 139
License No. NPF-81

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 2 (the facility) Facility Operating License No. NPF-81 filed by the Southern Nuclear Operating Company, Inc. (the licensee), acting for itself, Georgia Power Company Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the owners), dated August 18, 2010 (two letters), complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-81 is hereby amended to read as follows:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 139, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Gloria Kulesa, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification
Changes

Date of Issuance: August 19, 2010

ATTACHMENT TO LICENSE AMENDMENT NO. 139

FACILITY OPERATING LICENSE NO. NPF-81

DOCKET NO. 50-425

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contain marginal lines indicating the areas of change.

Remove

3
3.7.14-1

Insert

3
3.7.14-1

- (2) Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia, pursuant to the Act and 10 CFR Part 50, to possess but not operate the facility at the designated location in Burke County, Georgia, in accordance with the procedures and limitations set forth in this license;
 - (3) Southern Nuclear, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;
 - (4) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
 - (5) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;
 - (6) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility authorized herein.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified or incorporated below.

(1) Maximum Power Level

Southern Nuclear is authorized to operate the facility at reactor core power levels not in excess of 3625.6 megawatts thermal (100 percent power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 139 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

The Surveillance Requirements (SRs) contained in the Appendix A Technical Specifications and listed below are not required to be performed immediately upon implementation of Amendment No. 74. The SRs listed below shall be

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.	72 hours*
B. Required Action and Associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> 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.



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NPF-81

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

DOCKET NO. 50-425

1.0 INTRODUCTION

By letter dated August 18, 2010 (NL-10-1609), and a supplement also dated August 18, 2010 (NL-10-1623), Southern Nuclear Operating Company, Inc., (SNC, the licensee) for the operation of Vogtle Electric Generating Plant (Vogtle, or VEGP), Unit 2, requested an emergency amendment to the Vogtle Unit 2 Technical Specifications (TS). On August 16, 2010, at 1304 hours, the Unit 2 A-train engineered safety feature (ESF) room cooler chiller was declared INOPERABLE due to water in leakage and a 72 hour action statement of Limiting Condition for Operation (LCO) 3.7.14, "Engineered Safety Features (ESF) Room Cooler and Safety-Related Chiller System," was entered. Specifically, the change revises the completion time (CT) for one train being inoperable from 72 hours to 14 days. The licensee stated that repair of the chiller is a complex activity which cannot be completed within the 72-hour CT, which will expire on August 19, 2010, at 1304 hours. The 14-day CT will allow time to repair the Unit 2 A-train ESF chiller while maintaining plant operation. This amendment was issued as an emergency to allow sufficient time to make repairs without requiring a shutdown of the unit.

2.0 REGULATORY EVALUATION

2.1 Description of System/Component and Current Requirements

The Updated Final Safety Analysis Report (UFSAR), Section 3.1, provides a discussion in enough detail to demonstrate compliance of the Vogtle plant with each of the General Design Criteria. The Essential Chilled Water System is described in Updated Final Safety Analysis Report (UFSAR), Section 9.2.9. The UFSAR states:

The essential chilled water system consists of two independent trains. Major components for each of the two independent trains include a centrifugal chilled water refrigeration machine (chiller), a full capacity chilled water pump, expansion tank, and a nonsafety-related, normally isolated chemical addition subsystem. The essential chilled water system provides chilled water to the cooling coils of the various ESF areas such as the battery rooms, switchgear rooms, control rooms, ESF pump rooms, penetration areas, and the spent fuel pool heat exchanger and pump rooms. The air handling units for the ESF areas which operate during power generation have two sets of cooling coils, one of which is served by the normal chilled water system while the other is supplied by the essential chilled water system. During normal plant operation, chilled water to the air handling unit is

supplied by the normal chilled water system, and during accident conditions, chilled water is supplied by the essential chilled water system. Air handling units serving areas which are only required following an accident, such as a safety injection and containment spray pump rooms are provided only with cooling coils supplied by the essential chilled water system.

The essential chilled water system is designed to remain functional during and following a safe shutdown earthquake . The essential chilled water system is designed to maintain stipulated ambient air temperature of the ESF equipment rooms and the switchgear rooms during operation under accident conditions below the maximum design ambient air temperature of 104 °F. The essential chilled water system is designed so that a single failure of any active component, assuming loss of offsite power, cannot result in loss of ESF switchgear or the ability to operate at least one of the redundant emergency safeguard feature pumps.

In a telephone conference call on August 18, 2010, the NRC staff asked the licensee to identify each cooling load supplied by the Unit 2 Train A essential chilled water system and identify which loads are also supplied by normal chilled water (NCW). These components are supported components in accordance with Limiting Condition for Operation Applicability LCO 3.0.6 and are therefore declared to be inoperable during the extended completion time. In their written response dated August 18, 2010, the licensee provided the following list of Train A cooling loads:

GENERAL ROOM/COMPONENT DESCRIPTION	SERVED BY NORMAL CHILLED WATER (NCW)	SERVED BY ESSENTIAL CHILLED WATER (ECW)
A Train Switchgear and motor control center (MCC)	NCW	ECW
A Train Switchgear and motor control center (MCC)	NCW	ECW
A Train Switchgear and motor control center (MCC)	NCW	ECW
Residual Heat Removal Train A Pump	NCW	ECW
Containment Spray Train A pump		ECW
Component Cooling Water Train A pump		ECW
CVCS Charging Pump A	NCW	ECW
Safety Injection Train A Pump		ECW
Spent Fuel Pool HX and Pump Room A	NCW	ECW
A Train Switchgear, ESF Sequencers, MCC A train rooms, A Train Battery Room	NCW	ECW
A Train Switchgear and MCC, Cable Spreading Room	NCW	ECW
Aux Relay Room Train A		ECW

Cable Spreading Room		
Piping Penetration Area Train A Cooler	Served by Nuclear Service Cooling Water	ECW
Control Room	NCW	ECW

The redundant cooling loads on the Unit 2 Train B essential chilled water system will be protected as a compensatory measure during the extended completion time.

2.2 Applicable Regulatory Requirements and Review Criteria – Balance of Plant Considerations

The NRC staff performs its review of risk-informed changes to TS requirements in accordance with the guidance provided by Standard Review Plan (SRP) Chapter 16.1, “Risk-Informed Decisionmaking: Technical Specifications.” The SRP Chapter 16.1 refers to Regulatory Guide (RG) 1.177 as an acceptable approach for assessing proposed risk-informed changes to TS allowed completion times.

One acceptable approach for making risk-informed decisions about proposed TS changes, including both permanent and temporary TS changes, is to show that the proposed changes meet the following five key principles stated in RG 1.177:

1. The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.
2. The proposed change is consistent with the defense-in-depth philosophy.
3. The proposed change maintains sufficient safety margins.
4. When the proposed changes result in an increase in core-damage frequency or risk, the increases should be small and consistent with the intent of the Commission’s Safety Goal Policy Statement.
5. The impact of the proposed changes should be monitored using performance measurement strategies.

The first three principles pertain to traditional engineering considerations and are evaluated in Section 3, below. Risk considerations are discussed in Section 3.4 below.

The TS 3.7.14 requires two ESF Room Cooler and Safety-Related Chiller trains to be OPERABLE when the unit is in either MODE 1, 2, 3 or 4.

2.3 Applicable Regulatory Requirements and Review Criteria – Reactor Systems Considerations

The ESF equipment, identified above, that receives cooling from the A-train ESF chiller is comprised of systems, structures, and components that are used primarily to mitigate the consequences of a loss of coolant accident (LOCA), to provide residual heat removal (RHR) capability following a shutdown, to provide cooling to the control room, and to the spent fuel

pool. Therefore, the NRC staff considered the regulatory requirements in its evaluation that are applicable to those supported systems, as well as those that relate to TSS.

The NRC staff evaluated the licensee's proposed changes with respect to Element 2, "Engineering Evaluation," of the Regulatory Position contained in RG 1.177. Specifically, the NRC staff evaluated the proposed changes to confirm that the request is consistent with Regulatory Positions 2.1, "Compliance with Current Regulations," and 2.2, "Traditional Engineering Considerations," of RG 1.177.

2.3.1 Emergency Core Cooling System (ECCS)

The ECCS functions to provide core cooling and negative reactivity to ensure that the reactor core is protected after a design basis accident. The ECCS consists of 3 separate subsystems: centrifugal charging, safety injection (SI), and RHR. Each subsystem consists of two, 100-percent capacity trains that are interconnected and redundant such that either train is capable of taking suction from the refueling water storage tank (RWST) and supplying 100-percent of the flow to the reactor core required to mitigate the accident consequences.

Each ECCS train consists of an ECCS centrifugal charging pump (CCP), an SI pump, an RHR pump, and associated piping, valves and heat exchangers. In Modes 1, 2 and 3, two independent and redundant ECCS trains are required by the TS to be OPERABLE to protect against a single failure, which could affect either train.

Requirements for the ECCS are contained in Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Section 46, (10 CFR 50.46), "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors." During its technical review of the licensee's proposed changes, the NRC staff evaluated compliance with 10 CFR 50.46, considering Appendix A to 10 CFR 50, "General Design Criteria for the Design of Nuclear Power Plants." The applicable General Design Criteria (GDC) and regulatory requirements are discussed in the SRP for the Review of Safety Analysis Reports for Nuclear Power Plants, Chapter 6.3, "Emergency Core Cooling System," and Chapter 15.6.5, "Loss-of-Coolant Accidents Resulting from Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary" (Reference 5).

Specifically, 10 CFR 50.46(a)(1)(i) requires, among other things, that each pressurized, lightwater nuclear power reactor must be provided with an ECCS that must be designed so that its calculated cooling performance following postulated LOCA conforms to certain acceptance criteria. These acceptance criteria, 10 CFR 50.46(b)(1) through (b)(5), include limiting requirements for peak fuel clad temperature, maximum fuel cladding oxidation, maximum hydrogen generation, coolable core geometry, and long-term cooling.

2.3.2 Containment Spray System

The CS system is designed to provide containment atmosphere cooling to limit post-accident pressure and temperature in containment to less than the design values. During a design basis accident inside containment, the CS system sprays RWST water, mixed with sodium hydroxide from the spray additive tank, into the upper region of containment. The CS system, together with the containment fan cooler units, provides the heat removal capability to reduce fission products from the containment temperature. The CS system is also credited to reduce fission products from the containment atmospheres. The CS system consists of two separate trains of

containment spray pumps. The CS system takes suction from the RWST using the injection phase of operation. In the recirculation phase of operation, CS is supplied by manual realignment of the RHR pumps to supply the CS header after the low water level is reached in the RWST.

The containment spray system is required to maintain a suitable containment environment such that the capability for long-term core cooling following a LOCA is preserved. The containment spray system is thus considered a part of the ECCS, to the extent that it is a system required to function in order to meet the requirements of 10 CFR 50.46(b)(5). During its review of the subject license amendment request, the NRC staff also considered the GDC applicable to the Containment Spray system, as discussed in Chapter 6.2.2 of the Standard Review Plan, "Containment Heat Removal Systems."

2.3.3 Residual Heat Removal System

The RHR system is used to cool down the reactor coolant system (RCS) following shutdown. The RHR system is typically a low pressure system which takes over the shutdown cooling function when the RCS temperature is reduced. The NRC staff's review covered the effect of the proposed completion time extension on the functional capability of the RHR system to cool the RCS following shutdown and provide decay heat removal.

The NRC staff considered GDC 34, "Residual Heat Removal," in Appendix A to 10 CFR 50 in its review, insofar as it requires the RHR system to transfer fission product decay heat and other residual heat from the reactor core at an acceptable rate

GDC 34 also requires that the RHR system contains suitable redundancy in components and features, and suitable interconnections, leak detection, and isolation capabilities to assure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished, assuming a single-failure.

2.3.4 Spent Fuel Pool Cooling System

The NRC staff considered the spent fuel pool cooling system is a supported system affected by the requested Completion Time extension. In its review of the requested change, the NRC staff considered the following applicable GDC established in Appendix A to 10 CFR 50:

GDC 44, "Cooling Water," requires that a system with the capability to transfer heat loads from safety-related SSCs to a heat sink under both normal operating and accident conditions be provided.

GDC 61, "Fuel Storage and Handling and Radioactivity Control," requires that fuel storage systems be designed with RHR capability reflecting the importance to safety of decay heat removal, and measures to prevent a significant loss of fuel storage coolant inventory under accident conditions.

2.3.5 Control Room

The licensee stated that the Vogtle units share a control room and each unit has two control room emergency filtration system (CREFS) trains served by their respective ESF chillers. Any two of the four CREF trains can provide the required shared control room habitability function for design basis accident airborne radiological conditions.

The NRC staff evaluated the impact that the inoperability of the VEGP Unit 2, A-train ESF chiller would have on the CREFS with respect to the following GDC set forth in Appendix A to 10 CFR 50:

GDC 5, "Sharing of Structures, Systems, and Components," requires that structures, systems, and components important to safety shall not be shared among nuclear power units unless it can be shown that the sharing will not significantly impair the ability of the structures, systems, and components from performing their safety functions.

GDC 19, "Control Room," requires that a control room be provided from which actions can be taken to operate the unit safely under normal conditions and maintain it in a safe condition during and after an accident.

2.3.6 Technical Specifications

10 CFR 50.36, "Technical specifications," requires applicants for a license authorizing operation of a production or utilization facility to include in the application technical specifications in accordance with 10 CFR 50.36. 10 CFR 50.36(c)(2)(i), Limiting conditions for operation, defines LCOs as the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the Technical Specifications until the condition can be met. 10 CFR 50.36(c)(2)(ii) contains a list of four criteria and requires a technical specification limiting condition for operation for a nuclear reactor to be established for each item [structure, system or component] that meet one or more criteria. The ESF room coolers and safety-related chiller system at VEGP Unit 2 meet 10 CFR 50.36(c)(2)(ii)(C), Criterion 3.

VEGP Unit 2 LCO 3.7.14 for Engineered Safety Features (ESF) Room Cooler and Safety Related Chiller System requires two ESF Room Cooler and Safety-Related Chiller trains to be operable. TS 3.7.14 Actions Condition A contains remedial actions when one ESF Room Cooler and Safety-Related Chiller System train is inoperable. Condition A, Required Action A.1 provides a 72 hour completion time to restore the inoperable train to operable status. If the Required Action and Associated Completion Time are not met Actions Condition B requires the unit to be in Mode 3 in 6 hours and Mode 5 in 36 hours. The ESF room cooler and safety-related chiller system is not required to be operable in Mode 5. The subject license amendment request proposes, on a risk-informed basis, to extend the specified completion time

3.0 TECHNICAL EVALUATION

3.1 Traditional Engineering Considerations – Balance of Plant Considerations

3.1.1 Compliance with Current Regulations

The licensee does not propose to deviate from existing regulatory requirements and compliance with existing regulations is maintained by the proposed TS changes. Therefore, with respect to compliance with current regulations, the NRC staff considers the proposed TS changes to be acceptable.

3.1.2 Defense-In-Depth Evaluation

Consistency with defense in depth philosophy is maintained if:

- A reasonable balance among prevention of core damage, prevention of containment failure and consequence mitigation is preserved.

The essential chilled water system is designed so that a single-failure coincident with a loss of offsite power does not result in loss of ESF switchgear or the ability to operate at least one of the redundant emergency safeguard feature pumps. The proposed change does not eliminate any system function that is designed for the prevention of core damage, consequence mitigation or containment failure in that the essential chilled water system will continue to support these functions during the extended completion time with one fully operable chiller train.

Compensatory measures will be in effect to account for the temporary loss of redundancy. The compensatory measures are described below.

- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided.

The emergency TS revision request for TS 3.7.14 does not change the plant design. A protected equipment list will be in effect as compensatory actions in accordance with plant procedures. The NRC staff does not consider this an over-reliance on programmatic activities for this one-time extension of the allowed completion time.

- System redundancy, independence, and diversity are maintained commensurate with the expected frequency of challenges to the system.

The licensee has stated that the loss of the 2A chiller results in each cooling load supplied by Unit 2 Train A to be INOPERABLE in accordance with TS 3.0.6. The proposed change increases the length of time that Train 2A cooling loads are INOPERABLE; increasing the amount of time that redundancy is reduced from 72 hours to 14 days. During the length of time that redundancy is reduced, compensatory actions include protecting the redundant Unit 2 Train B equipment and cooling loads and restricting maintenance in accordance with plant procedures, Procedure NMP-OS-010, "Protected Train and Protected Equipment." The compensatory measures put in place ensure work on equipment that could potentially have an adverse impact on the normal chilled water system, the 2B ESF chilled water system are screened and limited to only that deemed necessary to ensure regulatory compliance or to

support safe continued plant operation. Protected equipment will be posted with signs to warn personnel of the protected status. No routine maintenance or testing will be performed in the Unit 1 and 2 high and low voltage switchyards. All Units 1 and 2 emergency diesel generators will be maintained available. The nonsafety-related normal chilled water system will also be protected. A contingency plan will be in place for propping open doors and supplying portable fans to rooms in case cooling is lost to the rooms.

In a telephone conference call on August 18, 2010, the NRC staff asked the licensee whether the Unit 2 Train B chiller has been confirmed to be OPERABLE since the equipment does not normally run. In their written response dated August 18, 2010, the licensee confirmed that the Unit 2 Train B chiller is OPERABLE.

- Defense against potential common cause failures is preserved, and the potential for the introduction of new common cause failure mechanisms is assessed.

Pressure testing and eddy current testing of the 2A chiller evaporator and condenser found identified one leaking tube and one possible leaking tube in the condenser. Considering overall good condition of the tubes and no historical ESF chiller heat exchanger problems, the root cause of the tube failure is yet to be determined. Therefore, no specific defense against potential common cause failure in the 2B chiller is possible at this time.

- Independence of barriers is not degraded.

The relationship of the 2A chiller system to individual barriers such as fuel pellets, fuel cladding, reactor coolant pressure boundary and the containment will not change as a result of the proposed TS change.

- Defense against human errors is preserved.

Operator response is not expected to change during normal, abnormal or emergency operating conditions. Therefore, the NRC staff finds that this criterion is satisfied by the proposed TS change.

- The intent of the GDC in Appendix A to 10 CFR Part 50, is maintained.

The completion time for restoring the 2A ESF room cooler and safety-related chiller train is being extended to 14 days on a one-time basis in order to complete repairs to the 2A chiller. The proposed change does not involve any design changes to the 2A chiller system. The normal allowed completion time is an NRC-approved temporary relaxation of the single-failure criterion specified in GDC 34, "Residual Heat Removal," and GDC 35, "Emergency Core Cooling." The extension of the completion time is judged to be satisfactory on a one-time basis considering compensatory action. Therefore, the NRC staff finds that this criterion is satisfied by the proposed TS change.

3.1.3 Safety Margins

The extended allowed completion time is not in conflict with Codes and Standards approved for use by the NRC relevant to the essential chilled water system. Safety analysis acceptance criteria as specified in the UFSAR, particularly for the large break LOCA, are met during the

extended allowed completion time, assuming no additional failures. The essential chilled water system is not being physically modified, except for some tube plugging, and the proposed action completion time does not result in an unreasonable decrease in the availability of a redundant train of the essential chilled water. Therefore, an adequate margin of safety will be maintained for the extended completion time.

3.1.4 Summary

The NRC staff has reviewed the traditional engineering aspects of the licensee's evaluation related to the proposed changes to TS 3.7.14. Based on the results of the evaluation of traditional engineering considerations, the NRC staff finds that the proposed increase in action completion time on a one-time basis with applicable compensatory action is consistent with current regulations, defense-in-depth attributes, and maintenance of adequate safety margins.

3.2 Traditional Engineering Considerations – Reactor Systems Evaluation

Regulatory Position 2.1 – Compliance with Current Regulations

The requested licensing action proposed to extend a completion time, and is not associated with a design or configuration change that affects component redundancy in any of the emergency core cooling, containment spray, or residual heat removal systems. Because the FSAR acceptance criteria continue to be met in light of the 2B essential chilled water system operability, the NRC staff finds that the requested licensing action does not affect compliance with regulatory requirements regarding either the LOCA analysis or the systems supported by the essential chilled water system.

The NRC staff requested that the licensee address whether suitable provisions for spent fuel pool cooling systems are available such that the requirements of GDC 44 and 61 could be met in light of the proposed extension of the CT for Required Action A.1 of TS LCO 3.7.14. The licensee responded that the spent fuel heat exchanger rooms are cooled by train-oriented room coolers with both normal cooling water and train-oriented essential cooling water cooling coils for each spent fuel pool cooling train. During normal plant operating, the normal cooling water cooling coil in the room coolers provides the necessary cooling function for the spent fuel heat exchanger rooms. In the event of loss of the normal cooling water cooling source while the A train is inoperable, the B train essential cooling water coil will provide the necessary cooling function for the B train spent fuel heat exchanger room. The NRC staff evaluated the licensee's statement, and because the statement establishes that the A train spent fuel heat exchanger room is cooled by normal cooling water, and that the B train spent fuel heat exchanger room remains available as a backup in the event normal cooling water is lost to the A train spent fuel heat exchanger room, the NRC staff finds that suitable cooling and residual heat removal is provided to the spent fuel pool in light of the requested CT increase.

The shared control room at Vogtle contains four CREFS trains that are served by their respective ESF chillers, and any two of the four CREFS trains can provide the required shared control room habitability functions for design basis accident airborne radiological considerations. Based on this consideration, the NRC staff finds that the requested CT increase does not affect compliance with the requirements of GDC 5 and 19 with respect to the control room.

Because the proposed changes provide a risk-informed basis to increase the required completion times, and they do not propose to change the LCOs associated with the ESF room cooler and safety-related chiller system, the NRC staff finds that the licensee remains generally in compliance with 10 CFR 50.36(d)(2)(ii). The NRC staff's evaluation of the risk analysis demonstrates that the proposed increases in CTs are acceptable to satisfy the intent of 10 CFR 50.36(d)(2)(ii).

In consideration of the information discussed above, the NRC staff has determined that the licensee has adequately met the intent of Regulatory Position 2.1 of RG 1.177. From this perspective, the proposed TS modification is acceptable.

Regulatory Position 2.2 – Traditional Engineering Considerations

Because LCO 3.7.14 requires that both essential chilled water system trains must be operable, this license amendment request does not affect defense-in-depth considerations at Vogtle. The requested CT change will increase the amount of time that one train may remain inoperable; however, the licensee stated that the alternate train will be kept in an operable status.

The licensee discussed compensatory measures that would be taken to preclude simultaneous equipment outages that would erode the principles of redundancy and diversity. This includes placing the Unit 2 Train B ESF Room Cooler and Safety-Related Chiller System equipment in a protected status, which means that no elective or corrective maintenance, surveillance testing or any activity that could adversely affect the availability of the B-train equipment would be permitted, unless the activity was needed to ensure continued safe operation of the plant and was approved by the licensee operations management. The licensee noted, in its supplemental letter, that two surveillances will be required near the expiry of the proposed, extended CT, and identified the required TS actions that will be taken should the A train of the ESF chiller remain out of service at that time.

Based on the considerations discussed above, the NRC staff finds that the requested CT increase is consistent with Regulatory Position 2.2.1 of RG 1.177 and is hence acceptable in that respect.

Regulatory Position 2.2.2 of RG 1.177 provides guidance regarding the safety margins associated with the requested licensing action, indicating that, among other things, sufficient safety margins are maintained when safety analysis acceptance criteria in the FSAR are met.

The licensee stated, in its supplemental letter, that the essential chilled water system is comprised of two separate 100% independent trains. The essential chilled water system is designed so that a single failure of any active component cannot result in a complete loss of both trains of ESF equipment, thus ensuring a safe shutdown condition. Since the 2B essential chilled water system is expected to remain available, all of the FSAR acceptance criteria continue to be met.

The licensee stated that room/area heat-up calculations/evaluations (for Unit 1, Unit 2 room and component configuration is similar enough to that of Unit 1 to claim equal applicability to Unit 2) showed more than 8 hours (11 hours worst-case room/area) would be available following a total loss (2B ESF Chiller and NCW system) of air cooling capability within the unit. This would allow for a controlled plant shutdown to proceed and contingency actions such as opening room doors

and using portable fans to maintain acceptable ambient temperatures for equipment functioning. Should an accident occur while the 2A ESF chiller is not operable, the 2B ESF chiller and associated train of EWCS are fully capable of providing the needed cooling for that train of ESF equipment. If the 2B ESF chiller failed while the 2A ESF chiller was inoperable, the normal chillers and chilled water system would provide the air cooling needed to support safe plant shutdown and cooldown.

Based on these considerations, the NRC staff finds that the licensee has demonstrated sufficient safety margins consistent with Regulatory Position 2.2.2 of RG 1.177.

3.3 TS Changes

Limiting Condition for Operation 3.7.14 specifies that "Two ESF Room Cooler and Safety-Related Chiller trains shall be OPERABLE." Condition A for this LCO states that, with one ESF room cooler and safety-related chiller train inoperable the required action is to restore the ESF room cooler and safety-related chiller train to OPERABLE status within 72 hours.

The emergency TS change adds a footnote to the completion time for LCO 3.7.14 to read: "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."

3.4 Risk Informed Evaluation

The licensee stated that any risk increase due to the 14-day outage of the ESF Chiller would be negligible (zero). This assertion is based on plant-specific room heatup evaluations which demonstrate that temperatures in the affected plant areas would not reach levels which impact the functioning of the equipment over the 24-hour mission time applied in the PRA, and on industry guidance documents regarding equipment operation without room cooling, such as during station blackout events. Based on these evaluations, the peer-reviewed Vogtle PRA model did not include the ESF Chiller, and therefore its unavailability has no impact on either core damage frequency or large early release frequency calculations. The licensee further stated that the normal room cooling system would be available to most plant areas if offsite power is available, and that procedurally directed actions, such as opening doors, could be employed for specific areas if needed if offsite power were unavailable. Based on these considerations, the staff concurs that the risk impact of the ESF Chiller outage would be negligible or zero.

3.5 Summary

The NRC staff has reviewed the licensee's emergency TS change to LCO 3.7.14 to add a footnote as follows: "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."

Based on the evaluation described above, the NRC staff concludes that the proposed changes are acceptable.

4.0 STATEMENT OF EMERGENCY CIRCUMSTANCES

Section 50.91 of 10 CFR Part 50 provides special exceptions for the issuance of amendments when the usual 30-day public notice cannot be met. One type of special exception is an emergency. Specifically, 10 CFR 50.91(a)(5) provides that where the NRC finds that an emergency situation exists, in that failure to act in a timely way would result in the derating or shutdown of a nuclear power plant, it may issue a license amendment involving no significant hazards consideration without prior notice and opportunity for a hearing or public comment. In this situation, the NRC will publish a notice of issuance under 10 CFR 2.106, providing for opportunity of a hearing and for public comment after issuance.

The licensee states that on August 14 and 15, 2010, it noticed indications of increasing in-leakage of non-condensables into the refrigerant for the Unit 2 train A chiller. Further investigation by the licensee, including involvement of a chiller system vendor representative, determined that water was present in the refrigerant and the Unit 2 Train A ESF chiller was declared to be inoperable on August 16, 2010 at 1304 hours. The licensee cited a number of factors that would preclude completing the repairs within the current TS 72 hour completion time. These include the large size of system components which require special lifting rigging for disassembly and reassembly, the small size of the room that the components are located in which constrains work activities, the need for testing of the condenser and evaporator tubes to locate the leaking tube(s) and to plug those tube(s), the necessity of replacing the refrigerant compressor motor and the necessity for protracted purging of the repaired system to remove moisture from the refrigerant system. The licensee listed ten phases for this repair activity and stated that its experience has shown that substantially more time than 72 hours would be required for such activities. The licensee assessed these issues in further detail as follows:

The request for a 14 day allowable completion time is based on a number of factors. This work involves a complete teardown of a large, complicated, 300 ton chiller. As the machine is reassembled, parts must be perfectly sealed as the system operates under vacuum. It is not uncommon to have leakage requiring rework and even disassembly for re-sealing. In addition, the relatively large amount of water which leaked into the refrigerant will likely necessitate protracted purging for moisture removal from the refrigerant system. These are variables that make scheduling the work activity challenging with many unknown contingencies. In this case, complete motor replacement is deemed necessary due to moisture entrainment in the windings and this motor work is the principle driver for the time required to return the 2A chiller to service. The size of the machine and the size of the room additionally create challenges with constraining some activities to being performed in series. Special lifting and rigging of large components require detailed planning and limit work activities during lifts. A schedule was generated within 24 hours of the LCO entry resulting in a 228 hour duration. Variables associated with potentially finding corrosion or erosion, damaged soft parts, availability of vendors, the need for special welding, and the aforementioned sealing and purging difficulties have resulted in our request for the schedule duration plus contingency time. Work activities like this on the ESF Chillers have exclusively been performed during refueling outages. As such, planning and scheduling for this discovery activity will require re-evaluation and adjustment.

The licensee stated that leakage has historically not been a problem for these chillers and that previous eddy current testing of the tubes in all four of the Vogtle Units 1 and 2 ESF chillers have not resulted in the need to plug any tubes. The licensee also specifically stated that there have been no previous tube leaks on the Vogtle ESF chillers. The licensee requested that the NRC issue this amendment on an emergency basis to allow the licensee sufficient time to repair the Vogtle Unit 2 A-train ESF Room Cooler and Safety-Related Chiller without requiring a shutdown of the unit. On these bases, the NRC staff concludes that the failure of the ESF room cooler chiller was unexpected, and that the licensee could not have anticipated the need for a license amendment that would allow for a 30-day comment period. Additionally, the proposed amendment involves no significant hazards as specified in 10 CFR 50.92.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92(c) state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility in accordance with the amendment would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or,
- (2) Create the possibility of a new or different kind of accident from any previously evaluated; or,
- (3) Involve a significant reduction in a margin of safety.

The following analysis was provided by the licensee in its August 18, 2010, letter:

The proposed change will provide a one-time revision to the VEGP Unit 2 completion time of TS 3.7.14, Condition A, to allow one inoperable ESF Room Cooler and Safety-Related Chiller train for 14 days. The extended completion time will permit repair of the Train-A ESF chiller while continuing plant operation.

1. Does the proposed license amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed change does not alter any plant equipment or operating practices in such a manner that the probability of an accident is increased. The proposed changes will not alter assumptions relative to the mitigation of an accident or transient event. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed license amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change does not involve any physical alteration of the plant or a change in the methods governing normal plant operation. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Based on the operability of the remaining ESF Room Cooler and Safety-Related Chiller train, the accident analysis assumptions continue to be met with enactment of the proposed change. The system design and operation are not affected by the proposed changes. The safety analysis acceptance criteria are not altered by the proposed changes. Finally, the proposed compensatory measures will provide further assurance that no significant reduction in safety margin will occur.

Therefore, the proposed change does not involve a significant reduction in the margin of safety.

Based on the above, SNC concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

The NRC staff has reviewed the licensee's analysis and, based on this review, has concluded that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the NRC staff has determined that the proposed amendment involves no significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendment. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final no significant hazards finding with respect to the amendment. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

8.0 CONCLUSION

The NRC staff has concluded, based on the considerations discussed above, that (1) the amendment does not (a) involve a significant increase in the probability or consequences of an accident previously evaluated or, (b) create the possibility of a new or different kind of accident from any previously evaluated or, (c) involve a significant reduction in a margin of safety and therefore, the amendment involves no significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (3) such activities will be conducted in compliance with the Commission's regulations, and (4) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date : August 19, 2010

Mr. Mark J. Ajluni
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Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
P.O. Box 1295
Birmingham, Alabama 35201

August 19, 2010

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 2, ISSUANCE OF
EMERGENCY AMENDMENT REGARDING ENGINEERED SAFETY (ESF)
ROOM COOLER AND SAFETY-RELATED CHILLER SYSTEM (TAC NO.
ME4507)

Dear Mr. Ajluni:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 139 to Renewed Facility Operating License NPF-81 for the Vogtle Electric Generating Plant, Unit 2. The amendment consists of changes to the Technical Specifications (TSs) in response to your application and its supplement, both dated August 18, 2010.

The amendment revises TS 3.7.14, "Engineered Safety Features (ESF) Room Cooler and Safety-Related Chiller System" such that, with one train of ESF Room Coolers inoperable, the allowed completion time for Condition A is extended from 72 hours to 14 days, on a one-time only basis. The 14-day allowable outage time will allow time to repair the Unit 2 A-train ESF room cooler. This amendment was issued as an emergency amendment to allow the licensee sufficient time to make repairs without requiring a shutdown of the unit.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Robert E. Martin, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-425

Enclosures:

1. Amendment No. 139 to NPF-81
2. Safety Evaluation

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