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SOUTHERN COMPANY

August 18, 2010

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U. S. Nuclear Regulatory Commission
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Washington, D. C. 20555-0001

Vogtle Electric Generating Plant Unit 2
Emergency Technical Specification Revision Request for TS 3.7.14
Engineered Safety Features (ESF)
Room Cooler and Safety-Related Chiller System

Ladies and Gentlemen:

Pursuant to 10 CFR 50.90 and 10 CFR 50.91(a)(5), Southern Nuclear Operating Company (SNC), hereby requests an emergency amendment to Vogtle Electric Generating Plant (VEGP) Unit 2 Technical Specifications (TS), Appendix A to Operating License NPF-81. The proposed TS change contained herein would revise TS 3.7.14, "Engineered Safety Features (ESF) Room Cooler and Safety-Related Chiller System" such that, with one safety-related chiller train inoperable, the allowed Completion Time (CT) for Condition A is extended from 72 hours to 14 days, on a one-time only basis. The 14 day CT will allow time to repair the Unit 2 A-train ESF chiller while maintaining plant operation.

This request should be processed as an emergency change to prevent incurring the inherent risk of an unscheduled shutdown of Vogtle Unit 2 in response to a condition that is assessed as risk-neutral.

The Unit 2 Train A ESF chiller was declared inoperable on August 16, 2010 at 1304 hours, as a result of water leakage into the refrigerant. Repair of the chiller is a complex activity which cannot be completed within the 72 hour CT (which will expire at 1304 hours on August 19, 2010), therefore this one-time emergency TS amendment is requested.

A discussion of the proposed TS change, the basis for the change and Significant Hazards Considerations are provided in Enclosure 1. Enclosure 2 supplements Enclosure 1 by providing a discussion of probabilistic risk assessment (PRA) capability for VEGP. SNC has evaluated the proposed TS change and has determined that it does not involve a significant hazards consideration as defined in 10 CFR 50.92. In addition, based on the result of a risk evaluation of the proposed increase in CT, it is shown that the proposed change is risk-neutral.

SNC has also determined that operation with the proposed change will not result in any significant increase in the amount of effluents that may be released offsite and no significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed amendment is eligible for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change. The basis for that determination is also provided in Enclosure 1. The marked-up and clean typed proposed TS pages are provided in Enclosures 3 and 4, respectively.

To avoid an unnecessary plant shutdown, SNC requests that the proposed TS change be reviewed and approved by 1304 hours on August 19, 2010. The proposed Unit 2 CT for one safety-related chiller train will expire upon returning the Train A ESF chiller to operable status, or on August 30, 2010 at 1304 hours, whichever occurs first.

Ms. P. M. Marino states she is Vice President - Engineering of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of her knowledge and belief, the facts set forth in this letter are true.

This letter contains NRC commitments (see Enclosure 5). If you have any questions, please contact Ms. Tracy Honeycutt at (205)992-6896.

Respectfully submitted,

Paula M. Marino

P. M. Marino
Vice President - Engineering

Sworn to and subscribed before me this 18th *day of* August *, 2010.*

Charlotte A. Graham
Notary Public

My commission expires: 6/9/12

PMM/DWD/lac

Enclosure 1: Description and Evaluation of the Proposed Change
Enclosure 2: Discussion of Probabilistic Risk Analysis (PRA) Capability
Enclosure 3: Marked-Up Technical Specifications Page
Enclosure 4: Clean Typed Technical Specifications Page
Enclosure 5: Commitment Table

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Mr. C. Clark, Commissioner – Department of Natural Resources

Vogtle Electric Generating Plant Unit 2
Emergency Technical Specification Revision Request for TS 3.7.14
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Enclosure 1

Description and Evaluation of the Proposed Change

Vogtle Electric Generating Plant Unit 2
Emergency Technical Specification Revision Request for TS 3.7.14
Engineered Safety Features (ESF)
Room Cooler and Safety-Related Chiller System

Enclosure 1

Description and Evaluation of the Proposed Change

Table of Contents

1.0 Introduction

Pursuant to 10 CFR 50.90 and 10 CFR 50.91(a)(5), Southern Nuclear Operating Company (SNC), hereby requests an emergency amendment to Vogtle Electric Generating Plant (VEGP) Unit 2 Operating License NPF-81. The proposed change to the Technical Specifications (TS) contained herein would revise TS 3.7.14, "Engineered Safety Features (ESF) Room Cooler and Safety-Related Chiller System" such that, with one safety-related chiller train 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 completion time will allow time to repair the Unit 2 A-train ESF chiller while maintaining plant operation. This change should be processed as an emergency change to prevent an unscheduled shutdown of VEGP Unit 2 for a condition that is assessed as risk-neutral.

The proposed change qualifies for categorical exclusion from an environmental assessment as set forth in 10 CFR 51.22(c)(9). Therefore, no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change.

2.0 Background

Each ESF chiller train at VEGP is equipped with a purge system for removing non-condensables from the refrigerant. The purge unit is equipped with a pump-out rate alarm. Excessive pump-out run time provides indication of potential non-condensable in-leakage. The pump-out alarm is set at a nominal value of 40 minutes/day and is monitored each shift by the system operator performing Control Building rounds. During rounds on Saturday August 14, 2010, the Unit 2 Control Building operator noted that the purge unit pump-out run time had alarmed for the 2A ESF chiller.

The system operators began monitoring the 2A chiller more closely and on Sunday, August 15, 2010 determined that the pump-out rate had increased. During subsequent visual inspection of the chiller by maintenance personnel, it was noted that a film was present on top of the refrigerant as viewed through the evaporator sightglass. Due to the increased purge unit pump-out rate and the presence of the film, Operations personnel started and operated the 2A ESF chiller to provide additional assurance that the chiller remained operable. No abnormalities were noted during this performance run.

As investigation into the increased pump-out rate continued, a vendor representative was brought on site and, in conjunction with the system engineer, determined that water was present in the refrigerant. The Unit 2 Train A ESF Chiller was consequently declared inoperable on Monday, August 16, 2010 at 1304 hours.

The ESF chillers are very large, 300 ton capacity units, and as such special rigging and lifting preparations are required for component removal and re-installation, while the limited room size constrains some activities to being performed in series. In this case motor replacement is deemed necessary due to moisture entrainment in the windings and this motor work drives the time required to return the 2A chiller to service. 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. Experience has shown that such maintenance activities require substantially more time than the 72 hour CT allowed by TS 3.7.14 and such work is therefore normally performed only during refueling outages.

Steps involved in repair of the chiller train include:

1. Removal of condenser and evaporator end bells
2. Removal of refrigerant
3. Leak checking of condenser and evaporator
4. Eddy current testing and tube plugging as needed
5. Machine teardown and motor removal
6. Purge system maintenance
7. Motor replacement and machine reassembly
8. End bell replacement and pressure test
9. Vacuum drawdown and refrigerant replacement
10. Testing and return to service

ESF chiller heat exchanger (HX) leakage has historically not been a problem at VEGP. All four VEGP ESF chillers have had previous eddy current testing (ECT) performed and no tube plugging has heretofore been needed. In 2002, ECT was performed on the Unit 2 ESF chiller HXs, and at that time the 2A chiller had indications of wear in only 3 condenser tubes (thinning less than 20% of tube wall thickness) and no issues were found with the evaporator tubes. Pressure testing and ECT of the 2A chiller HXs performed as part of the repair work now in progress has identified one leaking tube and one suspect tube in the condenser (both will be plugged) and no problems in the evaporator. Considering the overall good condition of the tube bundles, the condenser tube problems have preliminarily been attributed to latent manufacturing defects.

Repair of the 2A chiller is proceeding on an expedited around-the-clock basis, but due to the complexity of the activities involved, the 72 hour TS 3.7.14 Condition A LCO CT (which will expire at 1304 hours on August 19, 2010) allows insufficient time to complete all needed work, necessitating this request for a one-time emergency TS amendment.

3.0 Need for Technical Specification Change

The proposed one-time change to the CT of TS 3.7.14, Condition A, is needed to avoid the unnecessary shutdown of the unit due to the additional time required to complete repair of the Unit 2 ESF Train A chiller. A risk assessment has been performed which shows that the proposed change does not result in an incremental risk increase. Shutting down VEGP Unit 2 would incur the inherent risk associated with a shutdown transient and, further, reduce the available margin for grid electrical reserve during the current high demand summer period while providing no corresponding safety benefit.

4.0 Description of Proposed Change

4.1 Proposed Change

Add a note to allow a one-time change to TS LCO 3.7.14 Condition A completion time to extend it from 72 hours to 14 days.

4.2 System Description

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).

The ESF room coolers are designed to maintain the ambient air temperature within the continuous duty rating of the ESF equipment served by the system. Each equipment room is cooled by a fan cooler and associated chiller that are powered from the same ESF train as that associated with the equipment in the room. Thus, a power failure or other single failure to one cooling system train will not prevent the cooling of redundant ESF equipment in the other train.

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 setpoint, which may occur following a loss of coolant accident or a steam line break.

The ESF room cooler and safety-related chiller system is seismic category 1, 1E power and remains operational during and after a safe shutdown earthquake.

4.3 Basis for the Technical Specification Change

TS 3.7.14, "Engineered Safety Features (ESF) Room Cooler and Safety-Related Chiller System," requires that two ESF room coolers and safety-related chiller trains be OPERABLE in MODES 1, 2, 3, and 4.

With one ESF room cooler and safety-related chiller train inoperable, TS 3.7.14 Condition A allows 72 hours to restore operability to those components.

The basis for the proposed extension of the Condition A completion time to 14 days is the risk assessment in Section 5.0 below, which shows the proposed CT extension to be risk-neutral.

Compensatory Measures

SNC commits (see Enclosure 5) to implementing compensatory measures as follows during the extended completion time period required for repair of the 2A ESF chiller, including designation of the Unit 2 Train B ESF Room Cooler and Safety-Related Chiller System as a "Protected Train."

Protected Train status means that activities such as corrective and preventative maintenance, system or component testing or activities where human error could result in damage to or loss of protected equipment (e.g. erecting scaffolding in the vicinity) are prohibited unless authorized by Operations management.

Unit 2 Train B ESF Room Cooler and Safety-Related Chiller System equipment will be protected during this time period. Specifically, 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 Operations management. Additionally, major components/locations associated with the ESF Room Cooler and Safety-Related Chiller System will have signage placed to alert personnel that the equipment is "Protected." Signage locations include both entrances to the room housing the Train B ESF chiller and Control Room Emergency Filtration System (CREFS), the entrance to the Train B chiller power supply room, and the main control room handswitches for the Train B chiller and chilled water pump.

Nuclear management procedure NMP-OS-010 defines the "Protected Train and Protected Equipment" process. The fundamental objective of the procedure is to enhance nuclear safety by ensuring continued availability of equipment necessary to maintain plant emergency response capability and prevent inadvertent plant trips, transients, or safety system challenges. This procedure provides guidance for management of the protected train and for posting protected equipment when redundant equipment is out of service. Additionally, operation or maintenance of protected plant equipment is limited or prohibited.

To maintain plant personnel awareness of the protected train, at a minimum, the protected train is identified on the plant morning report, in the Main Control Room, Maintenance Shop areas, HP Control Point and in the Work Release office. The protected train is also discussed at the beginning of shift briefings for each group.

Additional compensatory measures include maintaining the following equipment available (i.e. no routine testing or maintenance activities will be performed):

- Unit 1 high & low voltage switchyards and Unit 2 high & low voltage switchyards

- Unit 2 Train A and Train B Emergency Diesel Generators

- Normal Chilled Water System (NCWS)

Also, a contingency plan will be in place for propping open doors per procedure 19100-C and putting temporary cooling measures (fans) in place if the 2B ESF chiller and the normal chillers are out of service.

5.0 Risk Assessment

An assessment is necessary to evaluate the acceptability of the proposed continued operation while repairing the Train A Essential Chilled Water System (ECWS) beyond the Technical Specification allowed Completion Time (CT), using acceptance criteria from Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decision Making: Technical Specifications" for the Incremental Conditional Core Damage probability (ICCDP) and the Incremental Conditional Large Early Release Probability (ICLERP) figures of merit. The ICCDP and ICLERP represent the change in the Core Damage Frequency (delta CDF) and the Large Early Release Frequency (delta LERF) multiplied by the proposed increase in the CT. It should be noted that the ECWS is not included in the peer reviewed VEGP Probabilistic Risk Assessment (PRA) model due to the negligible impact of ECWS on the reliability of PRA-credited functions, as discussed below. It follows, therefore, that ICCDP and ICLERF are assessed to be negligible (zero) when the ECWS system is in a degraded one train mode of operation such as that proposed by this request.

This assessment has been performed using the recently peer reviewed Probabilistic Risk Assessment (PRA) model, using the NRC's three-tier approach described in RG 1.177. The three tiers consist of:

Tier 1 - PRA Capability and Insights
Tier 2 - Avoidance of Risk-Significant Plant Configurations, and
Tier 3 - Risk-Informed Configuration Risk Management

Tier 1: PRA Capability and Insights

(Reference Enclosure 2 for a discussion of VEGP PRA capability.)

Risk Evaluation

In the VEGP internal events PRA model, room cooling is only modeled for the Emergency Diesel Generator (EDG) Rooms. The EDG room cooling is provided by plant systems other than ECWS. This assessment addresses the basis for justification of the reduction in redundancy of room cooling for those rooms that are supported by the ECWS.

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Methodology

The approach used in the assessment of the increase in risk included the following considerations:
1) potential for creating a new initiating event (IE),
2) potential for an increase in the frequency of an existing IE(s), and
3) the impact on the consequence of an IE.

New IE

As documented in the VEGP PRA Model (PRA-BC-V-06-01, Appendix 2A, 2/10/2006), a number of VEGP specific room heat-up calculations have shown that room heat-up occurs over time and the room temperature can readily be reduced below equipment operating temperature limits by opening doors. Therefore, at the worst case a loss of room cooling will result in a controlled plant manual shutdown. Crediting the "door-opening" operator action to prevent an initiating event was limited to those cases where

- there was at least 8 hours available prior to room heat up to a temperature at which damage might occur to supported equipment, and
- the room temperature was found to be stabilized.

Impact on the Frequency of an Existing IE

The ECWS maintains ambient air temperature in the ESF equipment rooms and switchgear rooms below the continuous duty rating of the ESF equipment served by the system during all postulated accidents. The ECWS consists of two independent trains, each a closed loop system. Following a SI-inducing IE, both trains of the ECWS are automatically actuated; upon a loss of offsite power, the ECWS is manually actuated. During normal operation, the ECWS is the backup to the Normal Chilled Water System (NCWS), which provides chilled water throughout the plant to all air conditioning and air cooling units which are required during normal plant operation. Because VEGP specific room heat-up calculations have shown that room heat-up occurs over time and the room temperature can readily be reduced below equipment operating temperature limits by opening doors, the impact of the proposed completion time extension on the frequency of an existing IE is negligible.

Impact on Consequences of Other IEs

As stated above, the ECWS is credited to provide cooling following a SI-inducing initiating event or a loss of offsite power event. Based on a detailed review of a number of VEGP-specific room heat up calculations and industry reference documents (such as NUMARC 87-00, and NUREG/CR-4942, cited in the VEGP PRA model calculation), it has been concluded that the ECWS-supported systems will be able to perform their safety function within the PRA credited mission time (24 hours). The basis for this conclusion was reached by using the industry reference documents to establish survivability and VEGP specific calculations to establish room heat up. Industry and VEGP specific reference documents used for establishing the basis for survivability include the following:

- "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," NUMARC 87-00 Rev.1, Nuclear Management and Resource Council, Inc., 1991.
- "Equipment Operability During Station Blackout Events," NUREG/CR-4942, Sandia National Laboratories, 1987.
- "Equipment Qualification Test Report Long Term Component Aging Program," WCAP 8687 (VEGP document number: AX6AA10-00124), Westinghouse, 1987.
- "Equipment Qualification of Westinghouse NSSS Class 1E Equipment," WCAP-8587, Westinghouse, 1987.

The VEGP specific room heat up evaluations include the following:

- "Room Heat Up Calculations," REA 95-VAA093, Southern Nuclear Operating Company, 1996.
- "Loss of HVAC," REA VG-2007, Southern Nuclear Operating Company, 1992
- "VEGP 1&2 Room Temperature Heatup Calculation," GP-17289, Westinghouse, 2001.

Room heat up evaluations were performed for every room that contains PRA credited components.

For one room (R-B18, "480V SWGR 2BB06"), located in the Control Building, the requirement for room cooling following an accident was screened out by crediting operator action to open door. In this case, the available time to take the action was over 11 hours.

It should be noted that the results of the Unit 1 heat up calculations are used in this evaluation. Due to similarities in the room characteristics between the Unit 1 and Unit 2 rooms, the results of the Unit 1 heat up calculations are judged to be applicable to the Unit 2 rooms.

Operator actions to open doors were only credited where the action would not be impacted by the post accident environmental condition (such as radiological concern) (e.g., the SWGR in the Control Building). Also, the following should be noted:

- There is a procedure (19100-C) that provides guidance on establishing room cooling in an event of total loss of all AC power.
- For the non loss-of-offsite-power (LOSP) initiating events, the NCWS is available to provide cooling to most rooms supported by the ECWS. The most likely use of the door-opening compensatory measure is an event of LOSP or during normal operation. There is no radiological concern in either case.

Since the loss of ECWS does not result in an initiating event or impact any accident mitigating systems and, therefore, does not impact core damage, external events are discounted in the evaluation of the proposed extension of the ECWS CT.

Therefore, the impact of loss of ECWS on the consequences of any initiating event (due to external or internal hazards) is considered to be negligible.

Results and Conclusion

The results of the risk evaluation indicate that the potential impact of the unavailability of the ECWS on the PRA figures of merit (CDF and LERF) is negligible because the PRA credited components can perform their intended function within the PRA mission time. Therefore, the ICCDP and ICLERP for the proposed change in the CT are well below the Regulatory Guide 1.177 acceptance criteria (the ICCDP and ICLERP are negligible).

Tier 2: Avoidance of Risk-Significant Plant Configurations

The objective of the second tier, which is applicable to completion time extensions, is to provide reasonable assurance that risk-significant plant equipment outage configurations will not occur when equipment is out of service. If risk-significant configurations do occur, then enhancements to the TS or procedures, such as limiting unavailability of backup systems, increased surveillance frequencies, or upgrading procedures or training, can be made that avoid, limit, or lessen the importance of these configurations.

Specifically, the following Tier 2 controls are implemented:

- Increase reliability and availability of the NCWS
  - No work will be performed in the U1 and U2 Low Voltage or High Voltage Switchyard that might result in a loss of offsite power.
  - No work will be performed on the NCWS components and their supporting components that would reduce system reliability.
- Increase reliability and availability of the Train B of the ECWS.
  - Availability of the ECWS Train B is verified.
  - No work will be performed on ECWS train B components and their supporting components that would reduce system reliability.
- Increase the reliability of providing cooling to the affected room.
  - Contingency plan for propping open doors and placing temporary cooling (fans) in place if the Normal Chillers and the 2B ESF Chiller are lost.
  - Minimize work on Unit 1 ECWS components that support the control room.

Tier 3: Risk-Informed Configuration Risk Management

The objective of the third tier is to ensure that the risk impact of out-of-service equipment is evaluated prior to performing any maintenance activity. As stated in RG 1.177, "a viable program would be one that is able to uncover risk-significant plant equipment outage configurations as they evolve during real-time, normal plant operation." The third-tier requirement is an extension of the second-tier requirement, but addresses the limitation of not being able to identify all possible risk-significant plant configurations in the second-tier evaluation.

SNC has developed a process for online risk assessment and management. Following the process and procedures ensures that the risk impact of equipment unavailability is appropriately evaluated prior to performing any maintenance activity, or following an equipment failure or other internal or external event that impacts risk. Nuclear management procedure NMP-OS-010, "Protected Train/Division and Protected Equipment Program," provides guidance for managing safety function, probabilistic, and plant trip risks as required by 10 CFR 50.65(a)(4) of the Maintenance Rule. The procedure addresses risk management practices in the maintenance planning phase and maintenance execution (real time) phase for Modes 1 through 4. Appropriate consideration is given to equipment unavailability, operational activities such as testing, and weather conditions.

In general, risk from performing maintenance on-line is minimized by:

- Performing only those preventive and corrective maintenance items on-line required to maintain the reliability of systems, structures or components (SSC)s.
- Minimizing cumulative unavailability of safety-related and risk-significant SSCs by limiting the number of at-power maintenance outage windows per cycle per train/component.
- Minimizing the total number of SSCs out of service at the same time.
- Minimizing the risk of initiating plant transients (trips) that could challenge safety systems by implementing compensatory measures.
- Avoiding higher risk combinations of out of service SSCs using PRA insights.
- Maintaining defense-in-depth by avoiding combinations of out of service SSCs that are related to similar safety functions or that affect multiple safety functions.
- Scheduling in train/bus windows to avoid removing equipment from different trains simultaneously.

In general, risk is managed by:

- Evaluating plant trip risk activities or conditions and mitigating them by taking appropriate compensatory measures and/or ensuring defense-in-depth of safety systems that are challenged by a plant trip.
- Evaluating and controlling risk based on probabilistic and key safety function defense-in-depth evaluations.
- Implementing compensatory measures and requirements for management authorization or notification for certain "high-risk" configurations.

Actions are taken and appropriate attention is given to configurations and situations commensurate with the level of risk. This occurs both during planning and real time (execution) phases.

For planned maintenance activities, an assessment of the overall risk of the activity on plant safety, including benefits to system reliability and performance, is currently performed and documented prior to scheduled work. Consideration is given to plant and external conditions, the number of activities being performed concurrently, the potential for plant trips, and the availability of redundant trains.

Risk is evaluated, managed and documented for all activities or conditions based on the current plant state:

- Before any planned or emergent maintenance is to be performed.
- As soon as possible when an emergent plant condition is discovered.
- As soon as possible when an external or internal event or condition is recognized.

Compensatory measures are implemented as necessary and if the risk assessment reveals unacceptable risk, a course of action is determined to restore degraded or failed safety functions and reduce the probabilistic risk.

6.0 Regulatory Safety Analysis

6.1 No Significant Hazards Consideration

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.

6.2 Environmental Assessment

This amendment request meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) as follows:

(i) The amendment involves no significant hazards consideration.

As described above, the proposed change involves no significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The proposed change does not involve the installation of any new equipment or the modification of any equipment that may affect the types or amounts of effluents that may be released offsite. Therefore, there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

(iii) There is no significant increase in individual or cumulative occupation radiation exposure.

The proposed change does not involve plant physical changes or introduce any new mode of plant operation. Therefore, there is no significant increase in individual or cumulative occupational radiation exposure.

Based on the above, SNC concludes that the proposed change meets the criteria specified in 10 CFR 51.22(b) for a categorical exclusion from the requirements of 10 CFR 51.22(c)(9) relative to requiring a specific environmental assessment by the Commission.

7.0 Conclusion

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 an 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.

The Plant Review Board reviewed the proposed change to the Technical Specifications and concluded that it does not involve a significant hazard consideration and will not endanger the health and safety of the public.

Vogtle Electric Generating Plant Unit 2
Emergency Technical Specification Revision Request for TS 3.7.14
Engineered Safety Features (ESF)
Room Cooler and Safety-Related Chiller System

Enclosure 2

Discussion of Probabilistic Risk Analysis (PRA) Capability

Discussion of Probabilistic Risk Assessment (PRA) Capability

PRA Capability

SNC employs a multi-faceted approach to establishing and maintaining the technical adequacy and plant fidelity of the PRA models for all operating SNC nuclear generation sites. This approach includes both a proceduralized PRA maintenance and update process, and the use of self-assessments and independent peer reviews. The following information describes this approach as it applies to the VEGP PRA.

Technical Adequacy of VEGP PRA Model

The SNC risk management process ensures that the applicable PRA model remains an accurate reflection of the as-built and as-operated units. The SNC risk management process also delineates the responsibilities and guidelines for updating the full power internal events PRA models at all operating SNC nuclear generation sites. The overall SNC risk management program defines the process for implementing regularly scheduled and interim PRA model updates, for tracking issues identified as potentially affecting the PRA models (e.g., due to changes in the plant, errors or limitations identified in the model, industry operational experience), and for controlling the model and associated computer files. To ensure that the current PRA model remains an accurate reflection of the as-built, as-operated plant, the VEGP PRA model has been updated according to the requirements defined in the SNC risk management process:

- Pertinent modifications to the physical plant (i.e. those potentially affecting the Base Line PRA (BL-PRA) models, calculated core damage frequencies (CDFs), or large early release frequencies (LERFs) to a significant degree) shall be reviewed to determine the scope and necessity of a revision to the baseline model within six months following the Unit 2 refueling outage or a specific major plant modification occurring outside a refueling outage. The BL-PRAs should be updated as necessary in accordance with a schedule approved by the PRA Manager following the scoping review. Upon completion of the lead Unit's BL-PRA, the other Unit's BL-PRA will be regenerated by modification of the updated BL-PRAs to account for Unit differences which significantly impact the results.

- Pertinent modifications to plant procedures and Technical Specifications shall be reviewed annually for changes which are of statistical significance to the results of the BL-PRA and those changes documented. Reliability data, failure data, initiating events frequency data, human reliability data, and other such PRA inputs shall be reviewed approximately every three years for statistical significance to the results of the BL-PRAs. Following the tri-annual review, the BL-PRAs shall be updated to account for the statistically significant changes to these two categories of PRA inputs in accordance with an approved schedule.

- BL-PRAs shall be updated to reflect germane changes in methodology, phenomenology, and regulation as judged to be prudent by the PRA custodian or as required by regulation.

In addition to these activities, SNC risk management procedures provide the guidance for particular risk management and PRA quality and maintenance activities. This guidance includes:

- Documentation of the PRA model, PRA products, and bases documents.

- The approach for controlling electronic storage of Risk Management (RM) products including PRA update information, PRA models, and PRA applications.

- Guidelines for updating the full power, internal events PRA models for SNC nuclear generation sites.

- Guidance for use of quantitative and qualitative risk models in support of the On-Line Work Control Process Program for risk evaluations for maintenance tasks (corrective maintenance, preventive maintenance, minor maintenance, surveillance tests and modifications) on systems, structures, and components (SSCs) within the scope of the Maintenance Rule (10 CFR 50.65 (a)(4)).

In accordance with this guidance, regularly scheduled PRA model updates nominally occur on an approximate three year cycle; however, longer intervals may be justified if it can be shown that the PRA continues to adequately represent the as-built, as-operated plant. Table 1 shows the brief history of the major VEGP PRA model updates.

Table 1: History of the Major VEGP PRA Model Updates

Model	Document No.	Scope	Updated Items	CDF and LERF (/yr)
IPE	WCAP-13553 (Westinghouse report) by Westinghouse and SNC, 11/1992	At-power, internal and external, CDF and Level 2 PRA	The original	CDF: 4.9E-5 LERF: 1.78E-6
Rev. 0	SAIC prepared reports, 3/1998.	At-power, internal, CDF and LERF	Conversion from a large Event Tree/small Fault Tree approach to a small Event Tree/large Fault Tree approach (linked fault tree model method). PRA software change from WESQT/GRAFTER (Westinghouse Event Tree and Fault tree software) to CAFTA.	CDF: 3.62E-5 LERF: 1.72E-6 The CDF reduction was mainly due to changes, such as, removal of unrealistic SBO scenarios, addition of more realistic assumptions regarding the effect of loss of room cooling, and removal of a 'guaranteed failure' assumption made during IPE for event CON (operator action to depressurize one SG to cause feed flow from the condensate pumps if AFW failed).
Rev. 1	PSA-V-99-002 by SNC, 9/1999	At-power, internal, CDF and LERF	Enhanced the treatment of operator action dependency, removal of circular logic, and minor corrections/ improvements.	CDF: 3.702E-5 LERF: 2.290E-6

Table 1: History of the Major VEGP PRA Model Updates				
Model	Document No.	Scope	Updated Items	CDF and LERF (/yr)
Rev. 2	PSA-V-99-012 by SNC, 1/2000	At-power, internal, CDF and LERF	Update of initiating event frequencies, component failure data, and maintenance unavailablities using plant specific data collected though the end of 1998. Incorporated plant changes.	CDF: 1.48E-5 LERF:1.15E-6 There was a considerable reduction in CDF mainly due to reduction in the transient event frequency. The sum of frequencies of eight transient subcategories was reduced from 4.04/yr to 2.64/yr after the data update. Also, items updated during revision 0a, 0b, and 0c, especially the crediting of the plant Wilson switchyard for a back up AC power source, contributed to the reduction in CDF. The reduction in LERF was mainly due to reduced failure probabilities of some of the components, especially NSCW pumps, which have a significant contribution to the LERF after the Bayesian update of failure data using VEGP specific failure data.

Table 1: History of the Major VEGP PRA Model Updates				
Model	Document No.	Scope	Updated Items	CDF and LERF (/yr)
Rev. 2a	PSA-V-00-003 by SNC, 7/2000	At-power, internal, CDF and LERF	Addition of RCP seal LOCA failure modes which were newly identified by the Westinghouse Owners Group (WOG), changes in success criteria for Steam Generator Tube Rupture (SGTR), and minor changes to facilitate Maintenance Rule and MOV/AOV risk ranking.	CDF = 2.40E-5, LERF = 7.34E-7 CDF increase was due to new RCP seal LOCA failure modes. LERF decrease due to changes in success criteria for SGTR
Rev. 2b	PSA-V-00-020 by SNC, 11/2000	At-power, internal, CDF and LERF	Minor improvement in recovery tree for recovery analysis.	CDF = 2.38E-5 LERF = 7.34E-7 No significant changes in CDF and LERF
Rev. 2c	PSA-V-00-030 by SNC, 11/2001	At-power, internal, CDF and LERF	Peer reviewed model by the WOG PRA peer review team. Revised the LERF model based on the new WOG LERF modeling guidelines. Updated the initiating event frequencies using the more recent generic data source (NUREG/CR-5750). Some SGTR scenarios were removed from the LERF scenarios and minor changes were made to facilitate RIS_B analysis. Removed circular logic in normal charging pump fault trees.	CDF: 1.602E-5, LERF:7.802E-8 The CDF decrease was mainly due to a decrease in LOCA frequencies after an update of initiating frequencies using NUREG/CR-5750 data. The decrease in LERF was due to the removal of some SGTR scenarios from the LERF model.

Table 1: History of the Major VEGP PRA Model Updates				
Model	Document No.	Scope	Updated Items	CDF and LERF (/yr)
Rev. 3	PRA-BC-V-06-001, by SNC, 2/2006	At-power, internal, CDF and LERF	This is the most extensive upgrade of the VEGP PRA model since the IPE. • All level 1 PRA tasks, from the selection and grouping of initiating events to the final quantification were practically re-done. • Resolved all Westinghouse Owners Group PRA peer review B Facts & Observations (F&Os). There were no A F&O for VEGP.	CDF: 1.28E-5 LERF: 1.10E-7 The CDF changes were due to combined effects of many changes during revision 3. The main cause of the LERF increase was the regrouping of all of the SGTR sequences back into the containment bypass scenarios, and the removal of the credit for mitigating systems for some Interfacing Systems LOCA scenarios (as resolutions of peer review findings).

Table 1: History of the Major VEGP PRA Model Updates

Model	Document No.	Scope	Updated Items	CDF and LERF (/yr)
VEGPL2UP model	P0293060001-2707 (ERIN report) by SNC and ERIN, 11/2006	At-power, internal, CDF and full level 2	Based on the Rev.3 level 1 PRA logic. This model was used for the Severe Accident Management Alternative Analysis for the VEGP license renewal which was submitted in 2007. Upgraded the full Level 2 PRA model, based on WCAP-16341-P guidelines which aim for producing an ASME PRA capability category II LERF model. Incorporated success terms in level 1 and level 2 logic. Corrected an error in the level 1 PRA failure data.	CDF: 1.552E-5 1.529E-5 (after treating success terms) LERF: 1.819E-7 The increase in CDF (before treating success terms) from revision 3 to VEGPL2UP model was due to the correction of a RCP seal LOCA probability from WCAP-16141. The above LERF value is the sum of four LERF release categories: LERF-BYPASS, LERF-ISO, LERF-CFE, and LERF-SGTR.

Table 1: History of the Major VEGP PRA Model Updates

Model	Document No.	Scope	Updated Items	CDF and LERF (/yr)
Rev. 4	PRA-BC-V-07-003 The original was prepared in April 2009 for R.G 1.200 R1 peer review against ASME PRA standard in May 2009. Rev.4 model will be re-issued after resolving all “SR Not met” Finding and Observations (total three).	At power, internal, CDF and full level 2	The following items are complete: • Closed all gaps identified from a self assessment. • Re-performed pre-initiator HFE screening for gap closure. • Update of initiating frequency and component failure data using new plant experiences and new generic failure data base (NUREG/CR-6928). • Re-performed internal flooding PRA. • Update of system notebooks. • Uncertainty analysis considering the state of knowledge correlation.	CDF: mean = 1.40E-5/yr, error factor = 1.8 LERF: mean = 4.96E-8, error factor = 3.1 LERF reduction was due to correct a wrong Steam generator tube condition used in the previous model. SG tube condition affects the probabilities of induced SGTR. Based on the current VEGP SG tube plugging rate, which is less than 2.5%, the current VEGP SG tube condition is “pristine”, instead of “average” as assumed in the previous model (ref: WCAP-16341-P) . Also, by use of new generic initiating event frequency, medium LOCA contributions increased significantly because the revised medium LOCA frequency based on new generic data base (NUREG/CR-6928) is almost an order of magnitude higher than previous generic value.

Consistency with Applicable ASME PRA Standard Requirements

Previous peer review and Self Assessment for VEGP PRA Model

In addition to independent internal and external review during each VEGP PRA model development and update, several assessments of the technical capability have been made before the PWR Owners Group (PWROG) peer review against ASME PRA Standard and R.G. 1.200, Revision 1 in May of 2009. Listed below are the previous assessments for VEGP PRA:

- An independent PRA peer review was conducted under the auspices of the Westinghouse Owners Group (WOG) in December 2001, following the Industry PRA Peer Review process (Reference 1). This peer review included an assessment of the PRA model maintenance and an update process. This assessment did not identify any "A" Facts & Observations (F&Os). All "B" F&Os from the 2001 Industry PRA Peer Review for VEGP PRA were addressed in VEGP PRA model Revision 3.

- During 2005, the VEGP PRA model results were evaluated in the WOG PRA cross-comparisons study performed in support of implementation of the mitigating systems performance indicator (MSPI) process. Results of this cross-comparison are presented in WCAP-16464, Westinghouse Owner's Group Mitigating Systems Performance Index (MSPI) Cross Comparison. The PRA Cross comparison Candidate Outlier Status was described in section 3.4 of VEGP MSPI base document. Noted in this document was the fact that, after allowing for plant-specific features, there are no MSPI cross-comparison outliers for VEGP PRA.

- In 2006, a gap analysis was performed against the available versions of the ASME PRA Standard (Reference 2) and Regulatory Guide 1.200, Revision 0 (2003 trial version).

- In 2008, VEGP PRA model (draft Revision 4) was benchmarked with three Westinghouse PWRs (Comanche Peak, Callaway, Wolf Creek) as a part of MSPI margin study. The benchmarking concluded that there were no significant issues in the VEGP PRA model which would impact MSPI calculations

RG 1.200 PRA Peer Review for VEGP PRA Model against ASME PRA Standard Requirements

The VEGP PRA model for internal events (including internal flooding) at power was updated to Revision 4 early in 2009 to close the gaps from the 2006 self assessment, to meet the ASME PRA standard supporting requirements, and to represent as-built as-operated plant.

Discussion of Probabilistic Risk Assessment (PRA) Capability

In May of 2009, the VEGP PRA model Revision 4 was reviewed per RG 1.200 Revision 1 (Reference 3) against ASME PRA Standard Requirements (Reference 4). A summary of this peer review is provided below:

The ASME PRA Standard (Reference 4) contains a total of 327 numbered supporting requirements (SRs) in nine technical elements and the configuration control element. Eleven of the SRs represent deleted requirements (IE-A8, IE-A9, SC-A3, SY-A9, SY-B9, HR-G8, IF-A2, IF-B4, IF-D2, IF-E2, and QU-D2) and 20 were determined to be not applicable to the VEGP PRA. Among 296 applicable SRs, 99% of SRs met Capability Category II or higher as follows:

Capability Category Met	No. of SRs	% of total applicable SRs
CC-I/II/III (or SR Met)	210	70.9%
CC I	0	0%
CC II	38	12.8%
CC III	7	2.4%
CC I/II	14	4.7%
CC II/III	24	8.1%
SR Not Met	3	1.0%
SR (CC-I/II/III) Met	296	100

Three SRs were judged to be not met. These are HR-G6, QU-D3, and LE-G5. HR-G6 was not met because the reasonableness check of Human Reliability Analyses (HRA) was done for the previous revision of the PRA and not the latest revision. QU-D3 was not met because the SR requires the PRA results to be compared with those from similar plants. The VEGP PRA report cites the MSPI benchmark report as evidence of meeting this requirement, which is an outdated comparison. SR LE-G5 was characterized as "Not Met" because the limitation of the LERF calculations that could impact risk-informed applications was not identified

Resolution of Findings from RG 1.200 PRA Peer Review

Table 2 shows details of the three "SR Not Met" findings and resolutions after the peer review. As shown in Table 2, the three not met SRs have been resolved.

Table 2 Resolution of the VEGP PRA Peer Review F&Os associated three "SR not Met" SRs				
F&O #	Review Element	Level[1]	Resolution	The Status of Resolution by SNC
HR-G6-01	HR-G6 (SR not met CC-I/II/III)	Finding	Check of consistency and review for reasonableness is missing in the Revision 4 updated HRA draft and the prior revision document information related to these items is not appropriate to use in light of the updates performed and changes to the results. Section 8 includes a table of HFEs and HEPs but does not include HEP reasonableness check, as is documented in Section 8.3 of the November 2005 HRA update for Revision 3.	Reasonableness check for all HRAs for Revision 4 model was re-performed. All HRAs have been determined to be reasonable or have been appropriately revised.

Table 2 Resolution of the VEGP PRA Peer Review F&Os associated three "SR not Met" SRs				
F&O #	Review Element	Level[1]	Resolution	The Status of Resolution by SNC
QU-D3-01	QU-D3 (SR CC-II Not met)	Finding	Reviewer asked the VEGP Staff to provide evidence of comparison of the VEGP results to those from similar plants. The VEGP staff presented the benchmark report for MSPI as evidence of comparison. Reviewers concluded that report is not sufficient evidence for demonstrating compliance to this SR.	In order to resolve this F&O, a new comparison study was performed by comparing VEGP PRA results with two PWR PRAs (Callaway and Wolf Creek) which are considered relatively similar to VEGP. In addition to the comparison of PRA reports, a plant visit to Callaway was performed to identify more details of Callaway systems and PRA modeling. The comparison showed that all three plants have LOSP/Station black out as the most dominant contributors which indicated that the VEGP PRA results are not an outlier as compared to similar PWRs. Differences in dominant CDF contributors were investigated and it was found that those differences are due to differences in details of system configuration/operation and physical barriers for internal flooding, and in the sources for generic initiating event frequency data (VEGP PRA used the latest generic initiating frequency and failure data along with VEGP specific experience data for its data update). Therefore, this F&O has been resolved.

Table 2 Resolution of the VEGP PRA Peer Review F&Os associated three "SR not Met" SRs

F&O #	Review Element	Level[1]	Resolution	The Status of Resolution by SNC
LE-G5-01	LE-G5 (SR Not met CC I/II/III)	Finding	Limitations in the LERF analysis that would impact applications are not identified. LERF analysis documentation is incomplete because limitations in the LERF analysis that would impact applications, as required by SR LE-G5, are not identified.	A comparison of Vogtle LERF scenarios with those in Table 4.5.9.3 of the ASME PRA standard revealed that the Vogtle PRA included more potential LERF scenarios than as required for a large dry containment plant in ASME PRA standard. The LERF scenarios modeled in VEGP PRA include containment bypass core damage scenarios (steam generator tube rupture and Interfacing systems LOCA), thermally or pressure induced steam generator tube rupture after core damage, containment isolation failure with core damage, and various early containment failure modes. Therefore, this F&O has been resolved.

Vogtle Electric Generating Plant Unit 2
Emergency Technical Specification Revision Request for TS 3.7.14
Engineered Safety Features (ESF)
Room Cooler and Safety-Related Chiller System

Enclosure 3

Marked-up Technical Specifications 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.	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.

Vogtle Electric Generating Plant Unit 2
Emergency Technical Specification Revision Request for TS 3.7.14
Engineered Safety Features (ESF)
Room Cooler and Safety-Related Chiller System

Enclosure 4

Clean Typed Technical Specifications Page

3.7 PLANT SYSTEMS

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

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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.

Vogtle Electric Generating Plant Unit 2
Emergency Technical Specification Revision Request for TS 3.7.14
Engineered Safety Features (ESF)
<u>Room Cooler and Safety-Related Chiller System</u>

Enclosure 5

Commitment Table

Commitment Table

Commitment	Type		Scheduled Completion Date (If Required)
	One-Time Action	Continuing Compliance	
The Unit 2 Train B ESF Room Cooler and Safety-Related Chiller System will be operated as a Protected Train per procedure NMP-OS-010.	X		Exit of TS 3.7.14 Condition A
The Unit 1 high & low voltage switchyards and the Unit 2 high & low voltage switchyards will be maintained available (i.e. no routine testing or maintenance activities will be performed).	X		Exit of TS 3.7.14 Condition A
The Unit 2 Train A and Train B Emergency Diesel Generators will be maintained available (i.e. no routine testing or maintenance activities will be performed).	X		Exit of TS 3.7.14 Condition A
The Normal Chilled Water System (NCWS) will be maintained available (i.e. no routine testing or maintenance activities will be performed).	X		Exit of TS 3.7.14 Condition A
The Unit 1 Essential Chilled Water System will be maintained available to support control room cooling (i.e. no routine testing or maintenance activities will be performed).	X		Exit of TS 3.7.14 Condition A
A contingency plan will be in,place for propping open doors per procedure19100-C and putting temporary cooling measures (fans) in place if the 2B ESF chiller and the normal chillers are out of service.	X		Exit of TS 3.7.14 Condition A