



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

February 3, 2016

Mr. C. R. Pierce  
Regulatory Affairs Director  
Southern Nuclear Operating Company, Inc.  
P. O. Box 1295/Bin - 038  
Birmingham, AL 35201-1295

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT – LICENSE AMENDMENT REQUEST  
UNACCEPTABLE WITH OPPORTUNITY TO SUPPLEMENT (CAC NOS.  
MF6611 AND MF6612)

Dear Mr. Pierce:

By letter dated August 11, 2015, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15226A276), the Southern Nuclear Operating Company (SNC) submitted a license amendment request (LAR) to revise Technical Specifications (TS) regarding TSTF-500, Direct Current (DC) Electrical Rewrite, for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. The LAR proposes to revise TS requirements related to DC electrical systems in TS limiting condition for operation (LCO) 3.8.4, "DC Sources - Operating," LCO 3.8.5, "DC Sources - Shutdown," and LCO 3.8.6, "Battery Cell Parameters." A new "Battery Monitoring and Maintenance Program" is being proposed for Section 5.5 "Administrative Controls - Programs and Manuals."

The purpose of this letter is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff's acceptance review of this LAR. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review is also intended to identify whether the application has any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Consistent with Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), an amendment to the license (including the technical specifications) must fully describe the changes requested, and following as far as applicable, the form prescribed for original applications. Section 50.34 of 10 CFR addresses the content of technical information required. This section stipulates that the submittal address the design and operating characteristics, unusual or novel design features, and principal safety considerations.

The NRC staff has reviewed your application and concluded that the information regarding the engineering evaluation, delineated in the enclosure to this letter, is necessary to enable the NRC staff to make an independent assessment regarding the acceptability of the LAR in terms of regulatory requirements and the protection of public health and safety and the environment. In order to make the application complete, the NRC staff requests that SNC supplement the application to address the information requested in the enclosure by March 21, 2016. This will enable the NRC staff to complete its detailed technical review. If the information responsive

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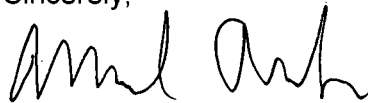
to the NRC staff's request is not received by the above date, the application will not be accepted for review pursuant to 10 CFR 2.101, and the NRC staff will cease its review activities associated with the application.

If the application is subsequently accepted for review, you will be advised of any further information needed to support the NRC staff's detailed technical review by separate correspondence.

This information requested and associated time frame in this letter were discussed with Ozzie Vidal of your staff on January 25, 2016.

If you have any questions, please contact the Hatch Project Manager, Michael D. Orenak, at (301) 415-3229.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Orenak". The signature is fluid and cursive, with the first name "Michael" and last name "Orenak" clearly distinguishable.

Michael D. Orenak, Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No.: 50-321, 50-366

cc: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST REGARDING THE IMPLEMENTATION OF TSTF-500

HATCH NUCLEAR PLANT, UNITS 1 AND 2

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

DOCKET NOS. 50-321, 50-366

By letter dated August 11, 2015, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15226A276), the Southern Nuclear Operating Company (SNC) submitted a license amendment request (LAR) to revise Technical Specifications (TS) regarding TSTF-500, Direct Current (DC) Electrical Rewrite, for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. The LAR proposes to revise TS requirements related to DC electrical systems in TS limiting condition for operation (LCO) 3.8.4, "DC Sources - Operating," LCO 3.8.5, "DC Sources - Shutdown," and LCO 3.8.6, "Battery Cell Parameters." A new "Battery Monitoring and Maintenance Program" is being proposed for Section 5.5 "Administrative Controls - Programs and Manuals."

The U.S. Nuclear Regulatory Commission (NRC) staff has determined that the following additional information regarding the engineering evaluation is necessary to enable the NRC staff to make an independent assessment regarding the acceptability of the LAR in terms of regulatory requirements and the protection of public health and safety and the environment.

Section 2.3 of the LAR "OPTIONAL CHANGES AND VARIATIONS," stated that "SNC is proposing a completion time (CT) longer than 2 hours for proposed Specification 3.8.4, Required Action E.I. A risk evaluation supporting the longer CT is included as Enclosure 2 of the LAR." SNC stated that their Enclosure 2 evaluation is in accordance with the guidance provided in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications, Revision 1" and RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis, Revision 2." It was not apparent to the NRC staff where SNC provided the applicable engineering evaluations to support the CT extension of batteries from 2 hours to 12 hours. SNC states that defense-in-depth is primarily provided by the fact that the other division is operable. To complete the staff's acceptance review, the NRC staff requests a detailed engineering evaluation to assess whether the impact of the proposed TS change is consistent with the selected principles identified in RG 1.177 and RG 1.174, as noted below, with respect to whether:

1. The proposed change meets the current regulations (unless it is explicitly related to a specific exemption pursuant to 10 CFR 50.12, "Specific Exemptions").
2. The proposed change is consistent with a defense-in-depth philosophy.
3. The proposed change maintains sufficient safety margins.

The NRC staff has additional requests regarding the engineering evaluation.

4. Please provide an analysis to show the DC system can still provide the safety function for a:
  - a. Loss-of-offsite-power/loss-of-coolant-accident (LOOP/LOCA) when the plant is in a TS LCO for one inoperable battery train and other battery train is found to be inoperable.
  - b. LOOP/LOCA with only the battery charger available. Please explain if the battery charger is auto-sequenced during a LOOP and LOOP/LOCA. Also, please explain the plant systems' response if no DC power is available in the time between the LOOP or LOOP/LOCA and when the battery chargers are connected to the emergency diesel generator.
5. Please provide justification for the 12 hour CT duration of the batteries. Specifically, provide (1) the actual hours needed and (2) a detailed schedule of the activities performed to restore battery operability based on HNP-specific operating experience.

Additionally, the NRC staff notes that the information regarding the risk assessment is sufficient to begin its review of that component of the LAR; however, the NRC staff requests additional information to complete its review. The following questions are being provided in this letter to support the timeliness of the NRC review.

6. Regulatory Position 2.3.4 of Regulatory Guide (RG) 1.177, "An approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," states that "Usually, data for outage times correspond to the current CT [completion time], but not to the proposed CT. Different assumptions are made to estimate the outage time corresponding to the proposed CT. Assumptions concerning changes in maintenance practices under the extended CT regime should be discussed and their impact on the results of the analysis characterized."
  - a. Please discuss the assumption concerning changes in maintenance practices under the extended CT regime and characterize their impact on the results of the analysis.

Regulatory Position 2.3.4 of RG 1.177 further states "[w]hen the risk impact of a CT change is evaluated, the yearly risk impact that is calculated takes into account the outage frequency."

- b. Please state the battery outage frequency used for estimating the risk impact of the proposed change and explain the assumptions related to the outage frequency used in the calculations. Please clarify whether the same assumption related to outage frequency is used in estimating the risk impact of both internal and external events.

7. Regulatory Position 2.3.2 of RG 1.177 states that the scope of the analysis to support risk-informed changes to Technical Specification (TS):

...should include all hazard groups (i.e., internal events, internal flood, internal fires, seismic events, high winds, transportation events, and other external hazards) unless it can be shown that the contribution from specific hazard groups does not affect the decision.

- a. The licensee stated in the submittal that Edwin I. Hatch Nuclear Plant (HNP) does not have a Seismic probabilistic risk assessment (PRA) model. For estimating incremental conditional core damage probability (ICCDP) and incremental large early release probability (ICLERP) due to seismic and other external events, the licensee stated the ICCDP and ICLERP from those hazards were "conservatively" assumed to be the same as the internal events ICCDP and ICLERP. Please justify that this assumption is valid or provide a bounding assessment of seismic and other external hazards for estimating ICCDP and ICLERP and demonstrate that the updated results meet the acceptance guidelines.
- b. The licensee stated in the submittal that HNP does not have a Fire PRA model that can be used for risk-informed applications. The licensee further stated that

...it is conservatively assumed that fire risk contribution is three times as much as the internal events (including internal flooding) risk.

The licensee stated that ICCDP and ICLERP for internal fire are "conservatively" assumed to be three times the internal events. Please justify that this evaluation (i.e., ICCDP and ICLERP for internal fire are three times as much as the ICCDP and ICLERP for internal events) is bounding by summarizing an evaluation of the expected dominant fire scenarios and determining the impact of extended CT on those scenarios.

- c. The methodology used by the licensee for estimating the change in core damage frequency ( $\Delta$ CDF) and the change in large early release frequency ( $\Delta$ LERF) from seismic events appears to only consider the change in risk due to seismically-induced loss of offsite power. Please provide justification that this evaluation is a bounding evaluation that adequately estimates the seismic risk contribution for the proposed TS change even though it only consider seismically-induced loss of offsite power. Otherwise, please provide a quantitative assessment of seismic risk contribution for the proposed change.
- d. Please confirm that the 2008 United States Geological Survey (USGS) hazard curves were used in performing the seismic risk evaluation in response to part (c) above. Otherwise, discuss how the hazard curves used in the submittal or the bounding assessment in response to part (c) yield results that are more conservative than the results obtained from 2008 USGS hazard curves.

- e. The licensee estimated “the bounding”  $\Delta$ CDF due to internal fires by multiplying  $\Delta$ CDF from the internal events by three. Please justify that the estimated  $\Delta$ CDF is bounding or provide a bounding assessment of  $\Delta$ CDF due to internal fire.
  - f. For estimating  $\Delta$ CDF and  $\Delta$ LERF from other external events (other than seismic and fire), the licensee has only discussed the risk contribution from tornadoes and the tornado analysis is limited to risk of tornado-induced loss of offsite power. Please justify that the reported results provide a conservative or bounding assessment of the impact of all other external events on this application by summarizing the hazards, the design-basis scenarios that mitigate the hazards, the compliance with the design basis, and the potential impact of the extended CT on these scenarios. Alternatively, provide a qualitative bounding analyses of other external hazards and report the results, or provide a justification that those hazards do not impact this application.
8. As described in RG 1.177, the objective of Tier 2 evaluation is to ensure that appropriate restrictions on dominant risk-significant configurations associated with the change are in place. Regulatory Position 2.3 of RG 1.177 states that “an effective way to perform such an assessment is to evaluate equipment according to its contribution to plant risk (or safety) while the equipment covered by the proposed CT change is out of service.” Regulatory Position 2.4 of RG 1.177 provides TS acceptance guidelines specific to permanent CT changes, which states “[t]he licensee has demonstrated that there are appropriate restrictions on dominant risk-significant configurations associated with the change”. Regulatory position 4 of RG 1.177 states that documentation to support risk-informed TS change requests should include, among other items, a tabulation of the outage configurations that could threaten the integrity of the safety functions of the subject equipment and that are, or will be, prohibited by TS or plant procedures.

Licensee stated in Enclosure 2 that “[a]voidance of Risk Significant Plant Configurations is accomplished by the Plant Hatch Maintenance Scheduling and Risk Assessment process.” The licensee further stated that “[n]o restrictions are proposed concerning the use of the 12-hour AOT on the station service battery.”

- a. Please summarize the dominant risk scenarios and associated plant characteristics that cause the risk associated with degraded direct current (DC) sources to be insensitive to all other plant configurations, such that risk significant plant configurations would not be created.
- b. Recent risk-informed applications for extending completion times have shown that the internal fires could result in dominant risk-significant configurations. As HNP does not have a fire PRA, explain how potential risk-significant configurations initiated by internal fires are identified to implement appropriate restrictions on activities, such as maintenance activities involving unavailability of fire protection equipment (detection, suppression or fire barriers), hot work, or introduction of transient combustible materials.

9. Regulatory Position 2.3.5 of RG 1.177 states that sensitivity analyses may be necessary to address the important assumptions in the submittal made with respect to TS change analyses. Regulatory Position 4 of RG 1.177 states that documentation to support risk-informed TS change requests should include, among other items, sensitivity and uncertainty analyses performed.

No sensitivity analyses were provided in the submittal. Briefly describe the sensitivity and uncertainty analyses performed to support the proposed TS change analyses or justify that no sensitivity analysis is warranted for this application.

10. RG 1.177 states that the common cause failure (CCF) contributions should be modeled so that they can be modified to reflect the condition in which one or more of the components is unavailable. RG 1.177 further states that for appropriate configuration risk management and control, preventive and corrective maintenance activities need to be considered, and licensees should, therefore, have the ability to address the subtle difference that exists between maintenance activities.

Please provide a discussion on treatment of CCF in the submittal. Briefly describe treatment of CCF performed to support the TS change analysis and demonstrate that the treatment of CCF is consistent with the guidance provided in RG 1.177.

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Sincerely,

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Michael D. Orenak, Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No.: 50-321, 50-366

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**ADAMS Accession No.: ML15331A337**

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