



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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August 29, 2016

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

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2; EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2; AND VOGTLE ELECTRIC GENERATING PLANT, UNITS 1, AND 2 - REQUEST FOR ADDITIONAL INFORMATION (CAC NOS. MF7460, MF7461, MF7462, MF7463, MF7464, AND MF7465)

Dear Mr. Pierce:

By letter dated March 3, 2016, Southern Nuclear Operating Company, Inc. (SNC) submitted a license amendment request (LAR) for the Joseph M. Farley Nuclear Plant, Units 1 and 2 (FNP); Edwin I. Hatch Nuclear Plant, Units 1 and 2; and Vogtle Electric Generating Plant, Units 1 and 2. The proposed changes would revise the emergency action level (EAL) schemes based on the Nuclear Energy Institute (NEI) document NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," November 2012. Additionally, SNC proposed changes to the Farley steam generator relief and safety valve radiation monitors RE-60A, RE-60B, and RE-60C, and the turbine-driven auxiliary feedwater pump steam exhaust radiation monitor RE-60D, due to cited limitations of these monitors. Accordingly, the relevant FNP EAL schemes (RG1, RS1, RA1, and RU1) included with the LAR will reflect this design change.

The U.S. Nuclear Regulatory Commission staff has determined that additional information is needed to complete its review. We request that SNC respond to the enclosed request for additional information within 60 days of the date of this letter.

C. Pierce

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If you have any questions, please contact me at (301) 415-3229 or by e-mail at Michael.Orenak@nrc.gov.

Sincerely,

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

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

Docket Nos. 50-348, 50-364, 50-321, 50-366,
50-424, and 50-425.

Enclosure:
Request for Additional Information

cc w/enclosure: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION
LICENSE AMENDMENT REQUEST RELATED TO
EMERGENCY ACTION LEVEL SCHEME CHANGE
JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2
EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2
VOGTLE ELECTRIC GENERATING STATION, UNITS 1 AND 2
DOCKET NOS. 50-348, 50-364, 50-321, 50-366, 50-424, AND 50-425

By letter dated March 3, 2016 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML16071A108), Southern Nuclear Operating Company, Inc. (SNC, the licensee) requested a change to the emergency action level (EAL) scheme for the Edwin I. Hatch Nuclear Plant (HNP), Units 1 and 2; Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2, and Vogtle Electric Generating Plant (VEGP), Units 1 and 2. The proposed change would revise the EAL scheme based on the Nuclear Energy Institute (NEI) document NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," dated November 21, 2012. NEI 99-01, Revision 6, was endorsed by the U.S. Nuclear Regulatory Commission (NRC) by letter dated March 28, 2013 (ADAMS Accession No. ML13091A209). Additionally, SNC proposes changes to the FNP steam generator relief and safety valve radiation monitors RE-60A, RE-60B, and RE-60C, and the turbine-driven auxiliary feedwater pump steam exhaust radiation monitor RE-60D, due to cited limitations of these monitors. Accordingly, the relevant FNP EALs (RG1, RS1, RA1, and RU1) included with the license amendment request will reflect this design change.

The U.S. Nuclear Regulatory Commission (NRC) staff has determined that additional information is needed to complete the review.

Note: Bracketed information references EAL initiating condition (IC) as listed in NEI 99-01, Revision 6, where nomenclature used in the licensee submittal is different.

Request for Additional Information (RAI) 1

Applicable sites: HNP, FNP, and VEGP

Section 2.4, "Consideration of Mode Changes During Classification," does not address the guidance provided in Section 5.4 of NEI 99-01, Revision 6, which states (in part):

Once a different mode is reached, any new event or condition, not related to the original event or condition, requiring emergency classification should be evaluated against the ICs and EALs applicable to the operating mode at the time of the new event or condition.

Enclosure

The above statement is important to ensure the appropriate and consistent classification of events based on changing operating modes. Please provide justification as to why this key guidance from NEI 99-01, Revision 6, was omitted, or revise the application accordingly.

RAI 2

Applicable sites: HNP, FNP, and VEGP

Section 2.7, "Classification of Short-Lived Events," does not contain the guidance provided in Section 5.7 of NEI 99-01, Revision 6, which states (in part):

If an event occurs that meets or exceeds an EAL, the associated ECL [emergency classification level] must be declared regardless of its continued presence at the time of declaration.

The above statement is important to ensure the appropriate and consistent classification of events. Please provide justification as to why this key guidance from NEI 99-01, Revision 6, was omitted, or revise the application accordingly.

RAI 3

Section 4.3, "Instrumentation Used for EALs," to NEI 99-01, Revision 6, states, in part,

Scheme developers should ensure that specific values used as EAL setpoints are within the calibrated range of the referenced instrumentation, and consider any automatic instrumentation functions that may impact accurate EAL assessment. In addition, EAL setpoint values should not use terms such as "off-scale low" or "off-scale high" since that type of reading may not be readily differentiated from an instrument failure.

a. Applicable sites: HNP, FNP, and VEGP

Please confirm that all setpoints and indications used in the proposed EAL scheme are within the calibrated range(s) of the stated instrumentation and that the resolution of the instrumentation is appropriate for the setpoint/indication.

b. Applicable site: VEGP

For EAL RU2 [AU2], please provide justification that supports the utilization of LSHL-0625 "off scale low," as this reading may not be readily differentiated from an instrument failure, or revise the application accordingly.

c. Applicable site: HNP

For RG1 [AG1], RS1 [AS1], and RA1 [AA1], the instrument numbers are different than what is in the existing EAL scheme (ADAMS Accession No. ML15138A229 (non-public)); Revision 37, April 2015). For example, the existing EAL scheme references monitor 1D11-P005 and 1D11-P006, while the proposed EAL scheme references

monitors 1D11-P601 and 1D11-P007. The existing monitors, 1D11-P005 and 1D11-P006, are specifically referenced on pages 30 and 31 of the proposed Enclosure 3, "Hatch EAL Calculations."

Please clarify which instruments should be used to assess RG1, RS1, and RA1, or revise the application accordingly. This clarification should, at a minimum, enable the NRC staff to verify which instruments will be used to assess EALs RG1 [AG1], RS1 [AS1], and RA1 [AA1], and link those monitors to the provided calculations in Enclosure 3.

d. Applicable sites: VEGP and FNP

- For RG2 [AG2] and RS2 [AS2], Enclosure 4, "Vogtle EAL Verification and Validation Documents" (Version 4, page 3 of 3), provides the bottom of span for spent fuel pool (SFP) level indication as 194 feet and 1/8 inch. The proposed threshold value for RG2 and RS2 is 194 feet.
- For RG2 [AG2] and RS2 [AS2], Enclosure 4, "Farley EAL Verification and Validation Documents" (Version 4, page 3 of 3), provides the bottom of span for spent fuel pool (SFP) level indication as 130 feet and 1½ inches. The proposed threshold value for RG2 and RS2 is 130 feet.

Although the above threshold values are close to the minimum indication value, the provided instrumentation does not appear capable of providing a reading corresponding to the threshold value for EALs RG2 and RS2. As such, it does not appear that a decisionmaker could accurately perform an assessment of EALs RG2 and RS2.

To enable decisionmakers to make an accurate assessment of RG2 and RS2, please provide a threshold value for RG2 and RS2 that is within the calibrated range of the provided SFP level instrumentation, or provide additional justification as to why the currently proposed threshold values are adequate.

e. Applicable site: HNP

The developer notes for Loss and/or Potential Loss 5.A (boiling-water reactor (BWR) containment barrier threshold for Other Indications) of NEI 99-01, Revision 6, state:

Developers should determine if other reliable indicators exist to evaluate the status of this fission product barrier (e.g., review accident analyses described in the site Final Safety Analysis Report, as updated). The goal is to identify any unique or site-specific indications that will promote timely and accurate assessment of barrier status.

Any added thresholds should represent approximately the same relative threat to the barrier as the other thresholds in this column. Basis information for the other thresholds may be used to gauge the relative barrier threat level

The Fission Product Barrier Table, proposed Fuel Clad Barrier Loss 5A, uses Offgas Pre- and Post-Treatment Monitors "Off-Scale High" as a threshold value. The submittal

indicates the detector has a maximum reading of 1×10^6 with a calculated value of 4.82×10^8 (equivalent to 300 $\mu\text{Ci}/\text{gram}$ (gm)).

Please provide additional information on how the Offgas Pre- and Post-Treatment Monitors can be used to provide a timely and accurate assessment of the fuel clad barrier, or revise the application accordingly. (Note: This explanation should provide clarification that the proposed Fuel Clad Loss 5.A would represent approximately the same relative threat as the 300 $\mu\text{Ci}/\text{gm}$ threshold.)

RAI 4

Applicable site: VEGP

For RG1 [AG1], RS1 [AS1], and RA1 [AA1], the RG1 threshold value was changed for radiation monitor RE-12839E from the current EAL scheme (ADAMS Accession No. ML15138A227 (non-public)), page D-31) of 50 $\mu\text{Ci}/\text{cubic centimeter}$ (cc) to a proposed 2.1×10^{-3} $\mu\text{Ci}/\text{cc}$, and the threshold value for RE-12444D was changed from 2.1×10^3 $\mu\text{Ci}/\text{cc}$ to an RE-12444E instrument value of 50 $\mu\text{Ci}/\text{cc}$. The RS1 instrument threshold values were changed in a similar fashion. It appears that the values were transposed.

Please verify that proposed threshold values and instrumentation for EALs RG1, RS1, and RA1 are correct, or revise the application accordingly.

RAI 5

Applicable site: VEGP

For RA2 [AA2] - EAL 2, no setpoint or alarm is provided that is consistent with the NEI 99-01, Revision 6, EAL guidance for a "site-specific listing of radiation monitors, and the associated readings, setpoints, and/or alarms." Please clarify how a timely and accurate assessment can be performed without the associated readings, setpoints and/or alarms, or revise the application accordingly.

RAI 6

Applicable site: VEGP

For RU1 [AU1] - EAL 1, the provided table includes the steam jet air ejector (SJAE) radiation monitor (RE-12839) with thresholds of 2 times the release permit setpoint. The guidance in NEI 99-01, Revision 6, states that effluent monitor reading should be based on limits provided in a "site-specific release controlling document." However, based on an email string starting on Attachment C3, "Calculations for Farley, Hatch, Vogtle 2," page 25 (ADAMS Accession No. ML16071A144 (non-public)), it appears there is normally no release permit (or site-specific release controlling document) for RE-12839.

Please explain how a decisionmaker can determine that the turbine building vent, SJAE (RE-12839) is 2 times the release permit setpoint (or the offsite dose calculation manual (ODCM) limit), when there is no release permit for RE-12839.

RAI 7

Applicable sites: HNP and VEGP

For RU1 [AU1] - EAL 1, NEI 99-01, Revision 6, assessment criteria is based on one of the listed radiation monitors being greater than 2 times the ODCM limits. However, in addition to providing a list of site-specific monitors, the developer notes in NEI 99-01, Revision 6, state:

Radiation monitor readings should reflect values that correspond to a radiological release exceeding 2 times a release control limit.

Please explain how an assessment of this EAL can be performed in a timely and accurate manner without including instrument values that represent 2 times the ODCM limits, or revise accordingly.

RAI 8

Applicable site: VEGP

For EALs CG1 and CS1, the currently approved VEGP EAL scheme (ADAMS Accession No. ML071010426 (non-public)) includes RE-0011 as an indication of core uncover. Please justify why this instrument was not included as a method to determine core uncover for the proposed CG1 and CS1 EALs, or revise the application accordingly.

RAI 9

Applicable site: HNP

NEI 99-01, Revision 6, developers notes associated with CS1 - EAL 3, and CG1 - EAL 2, for "Core uncover is indicated by ANY of the following," state:

As water level in the reactor vessel lowers, the dose rate above the core will increase. Enter a "site-specific radiation monitor" that could be used to detect core uncover and the associated "site-specific value" indicative of core uncover.

For EALs CG1 and CS1, the currently approved Hatch EAL scheme (ADAMS Accession No. ML071010426) lists drywell radiation monitors DWRRM 1(2)D11-K621 A/B as indications of core uncover. Please justify why no radiation monitor, or alternate EAL threshold, was provided for the proposed CG1 or CS1, or revise the application accordingly.

RAI 10

Applicable site: FNP

In NEI 99-01, Revision 6, CG1 - EAL 1 and CS1 - EAL 2 includes the condition, "Reactor vessel/RCS [reactor coolant system] [PWR] [pressurized-water reactor] or RPV [reactor pressure vessel] [BWR] level less than (site-specific level)."

The developer notes further state:

The "site-specific level" should be approximately the top of active fuel. If the availability of on-scale level indication is such that this level value can be determined during some shutdown modes or conditions, but not others, then specify the mode-dependent and/or configuration states during which the level indication is applicable. If the design and operation of water level instrumentation is such that this level value cannot be determined at any time during Cold Shutdown or Refueling modes, then do not include EAL #2 (classification will be accomplished in accordance with EAL #3).

The current EALs for FNP include reactor vessel level indication for "approximately the top of active fuel"; however, the proposed EAL scheme does not provide an indication for the top of active fuel. Although FNP may not have an exact top of active fuel indication, it is acceptable to use an indication that is "approximately the top of active fuel."

Please provide justification as to why FNP does not use Reactor Vessel Level Indication System (RVLIS) on any other level instrument to assess CG1 - EAL 1 and CS1 - EAL 2, or revise the application accordingly.

RAI 11

Applicable sites: HNP and VEGP

In NEI 99-01, Revision 6, the Containment Challenge Table for CG1 includes the condition, "UNPLANNED increase in containment pressure." However, the proposed CG1 Containment Challenge Table C1 and related basis notes contain values for maximum containment pressures based on containment closure/integrity status, which are not consistent with the endorsed guidance.

Please revise the Containment Challenge Table for CG1 to reflect an, "UNPLANNED increase in containment pressure," or provide justification for this difference.

RAI 12

Applicable sites: HNP, FNP, and VEGP

For CA2, the proposed EAL is for the loss of all alternating current (AC) power sources to essential power buses. NEI 99-01 guidance uses the following wording as part of these EALs: "Loss of **ALL** offsite and **ALL** onsite AC power to (site-specific emergency buses)...."

The proposed CA2 contains Table S-1, which provides a list of offsite and onsite AC power sources. This table is referenced in the basis and is not included as part of the EAL threshold. Additionally, the threshold value for CA2 is, "ALL offsite and ALL onsite AC power sources." As such, CA2 is not limited to those sources identified in Table S1. Alternative power sources, such as those used for a mitigation strategy, may be able to power the essential buses. Emergency Preparedness Frequently Asked Question (EPFAQ) 2015-015 (ADAMS Accession No. ML16166A191) provides clarification relative to CA2.

Please explain whether the clarification provided in EPFAQ 2015-015 was used in the development of CA2, or revise the application accordingly.

RAI 13

Section 4.6, "Basis Document," of NEI 99-01, Revision 6, states, in part:

A Basis section should not contain information that could modify the meaning or intent of the associated IC or EAL. Such information should be incorporated within the IC or EAL statements, or as an EAL Note. Information in the Basis should only clarify and inform decision-making for an emergency classification.

a. Applicable site: HNP

For proposed CA6, a wind speed of 35 miles per hour (mph) is included in the basis discussion and not in the EAL threshold value. As provided, the basis section appears to modify the meaning or intent of EAL CA6.

Please revise CA6 to include a wind speed of 35 mph, or provide justification for this difference from the guidance in NEI 99-01, Revision 6.

b. Applicable sites: HNP, FNP, VEGP

Basis discussions for the proposed SA1 and CU2 include references to Table S1 and the proposed SU1 references Table S2. These references could modify the meaning or intent of EALs SA1 and SU2 since the EAL threshold values do not include references to tables S1 or S2, as appropriate.

Please revise EALs SA1, SU1, and CU2 to include reference to Table S1 or Table S2, as appropriate, or provide justification for this difference from the guidance of NEI 99-01, Revision 6.

c. Applicable site: HNP

The proposed Fission Product Barrier Table, Proposed Fuel Clad Barrier Loss 5A, includes the statement that, "Sample results are still needed to establish that the 300 $\mu\text{Ci/gm}$ threshold is being exceeded." This reference appears to modify the proposed Fission Product Barrier Table for the Fuel Clad Barrier Loss 5A.

Please revise the proposed Fission Product Barrier Table for the Fuel Clad Barrier Loss 5A to include the need for sampling, or provide justification for this difference from the guidance of NEI 99-01, Revision 6.

RAI 14

Applicable sites: HNP, FNP, and VEGP

The proposed radiation values for a loss of the fuel clad barrier and RCS barrier, and a potential loss of the containment barrier, have substantially changed from the previously approved EAL scheme (ADAMS Accession No. ML071010426 (non-public)), while the bases for these EALs have not changed.

Please provide justification for this substantial difference from the previously approved EAL scheme, or revise the application accordingly.

RAI 15

Applicable site: VEGP

The Fuel Clad Barrier and RCS Barrier threshold discussions of NEI 99-01, Revision 6, for a PWR contain the following statement:

In accordance with EOPs [*emergency operating procedures*], there may be unusual accident conditions during which operators intentionally reduce the heat removal capability of the steam generators; during these conditions, classification using threshold is not warranted.

The proposed VEGP Fission Product Barrier Table threshold values for Fuel Clad Barrier Potential Loss 2.B and RCS Barrier Potential Loss A.1 do not contain a note indicating that a classification based on a loss of heat sink capability under conditions where operators intentionally reduce heat removal in accordance with the EOPs is not warranted. (Note: The proposed FNP EAL scheme does provide an appropriate note.)

Please revise the VEGP Fission Product Barrier Table threshold values for Fuel Clad Barrier Potential Loss 2.B and RCS Barrier Potential Loss A.1 to include an appropriate note, or provide justification for this difference.

RAI 16

Applicable site: HNP

The Fission Product Barrier Basis discussion for the proposed containment barrier thresholds states, "...within the context of a containment barrier loss or potential loss threshold, a release path to the wetwell is a direct release path." Considering that RCS leakage to the wetwell does not constitute containment leakage, this statement may not be correct. EPFAQ 2015-006 (ADAMS Accession No. ML16012A178, page 32) provides clarification relative to this RAI.

Please justify using leakage to the wetwell in lieu of leakage through the wetwell as a threshold for containment leakage, or revise the application accordingly.

RAI 17

Applicable site: FNP

For Containment on the Fission Product Barrier Table, the developer notes for Loss 4B state, in part:

Increases in sump, temperature, pressure, flow and/or radiation level readings outside of the containment may indicate that the RCS mass is being lost outside of containment...

However, the proposed Containment Barrier Loss B is limited to radiation monitoring instrumentation.

Please provide justification for limiting assessment of Containment Barrier Loss 4B to radiation monitoring instrumentation, or revise the application accordingly.

RAI 18

Applicable site: FNP

The proposed Containment Barrier Potential Loss B on the Fission Product Barrier Table for FNP provides a hydrogen concentration of greater than 5.5 percent as a threshold value. However, the developer notes in NEI 99-01, Revision 6, for Potential Loss 4B state, in part:

The existence of an explosive mixture means, at a minimum, that the containment atmospheric hydrogen concentration is sufficient to support a hydrogen burn (i.e., at the lower deflagration limit).

The proposed FNP CG1 uses 6 percent as a containment challenge condition, while the proposed CG1 and Fission Product Barrier Proposed Containment Barrier Potential Loss B for VEGP provides a hydrogen concentration of greater than 6 percent as threshold values.

Please provide further clarification for using 5.5 percent hydrogen concentration as a threshold value for Containment Barrier Potential Loss B, or revise accordingly.

RAI 19

Applicable sites: FNP and VEGP

The developer notes in NEI 99-01, Revision 6, for the PWR Containment Barrier Threshold state, in part:

Enter the site-specific pressure setpoint value that actuates containment pressure control systems (e.g., containment spray). Also enter the site-specific

containment pressure control system/equipment that should be operating per design if the containment pressure setpoint is reached.

The proposed Containment Barrier Potential Loss C.1 on the Fission Product Barrier Table uses a containment critical safety function (CSF) status of orange as a threshold value. Based on a review of the verification and validation (Version 16, page 8 of 8 for FNP and Version 16, page 4 of 4 for VEGP), there is no direct tie to a containment pressure condition that would actuate the containment pressure control systems at a containment CSF status of orange.

Please revise Containment Barrier Potential Loss C.1 for FNP and VEGP to include a site-specific pressure setpoint value that actuates containment pressure control systems, or provide justification for this difference.

RAI 20

Applicable sites: HNP, FNP, and VEGP

HG1, EPFAQ 2015-13 (ADAMS Accession No. ML16166A366), which was recently issued, provides clarification that could be used, if deemed appropriate, to meet the intent of HG1.

Please consider EPFAQ 2015-13 and revise EAL HG1, if deemed appropriate, to reflect the latest staff clarification of NEI 99-01, Revision 6, guidelines.

RAI 21

NEI 99-01, Revision 6, guidance for HG1, HS1, HA1, and HU1, specifically identifies "site-specific security shift supervision" to report the occurrence of a hostile action. Additionally, the provided basis discussion states, "Timely and accurate communications between Security Shift Supervision and the Control Room is essential for proper classification of a security-related event."

a. Applicable site: HNP

The proposed wording of HG1, HS1, HA1, and HU1 allows for a "designee" to report the occurrence of a hostile action.

Please revise HG1, HS1, HA1, and HU1, to remove "or designee," or provide a justification for this difference.

b. Applicable site: FNP

The proposed wording to HG1, HS1, HA1, and HU1 does not contain the reference to "site-specific security shift supervision" as provided by NEI 99-01, Revision 6.

Please revise EALs HG1, HS1, HA1, and HU1 to specifically reference the site-specific term for security shift supervision, or provide a justification for this difference.

RAI 22

Applicable sites: FNP and VEGP

The proposed basis for EALs HS1 and HA1 includes the statement:

This IC does not apply to a HOSTILE ACTION directed at an ISFSI [independent spent fuel storage installation] PROTECTED AREA located outside the plant PROTECTED AREA.

The proposed basis for EAL HU4 includes the statement:

This basis extends to a FIRE occurring within the PROTECTED AREA of an ISFSI located outside the plant PROTECTED AREA.

To avoid confusion and possible misclassification of an event, please remove all of the information associated with statements regarding an ISFSI that is not located in the protected area, since the ISFSIs at FNP and VEGP are currently located inside the protected area, or explain why reference to ISFSI location should be retained.

RAI 23

Applicable site: VEGP

The NRC staff reviewed the VEGP EAL verification and validation document for HU2 and could not determine if the provided alarm would indicate that a seismic event occurred with an acceleration of 0.12 grams (g) or greater had occurred.

Please provide additional justification that on-shift personnel can determine if a seismic event of greater than 0.12 g acceleration, as indicated by the Seismic Monitoring System, has occurred within 15 minutes of the event, or provide an alternate method to assess seismic events as provided by NEI 99-01, Revision 6.

RAI 24

Applicable site: FNP

The developer notes for EAL HU4 include the following:

The "site-specific list of plant rooms or areas" should specify those rooms or areas that contain SAFETY SYSTEM equipment.

For HU4, the currently approved FNP EAL scheme (ADAMS Accession No. ML071010426 (non-public)) includes the refueling water storage tank (RWST) and the condensate storage tank (CST) rooms or areas on the table provided for a fire within the protected area. However, the RWST and CST rooms or areas are not included in the proposed FNP EAL set.

Please clarify whether these rooms or areas contain safety system equipment, and if so, explain why the RWST and the CST were removed from Table H2, or revise the application accordingly.

RAI 25

Applicable site: VEGP

For SS5, VEGP uses the heat sink CSF red condition as a threshold value but does not contain a note about not needing a heat sink under conditions where operators intentionally reduce heat removal in accordance with EOPs, as discussed in RAI-15. (Note: The proposed FNP EAL scheme does provide an appropriate note.)

Please revise SS5 to add a note indicating that a classification based on a heat sink CSF red condition as a threshold value would not be appropriate if operators intentionally reduce heat removal in accordance with EOPs, or provide justification for not including a note.

RAI 26

Applicable sites: FNP and VEGP

Proposed SA2 and SU2 contain "RCS level" as a listed parameter. Developer notes in NEI 99-01, Revision 6, state:

Developers may specify either pressurizer or reactor vessel level in the PWR parameter column entry for RCS Level.

The proposed SA2 and SU2 do not specify which RCS level instrument to use. Depending on the nature of the transient, pressurizer level indication may, or may not, provide an accurate assessment of core conditions.

Please provide justification for not using RVLIS to determine RCS level for EALs SA2 and SU2 for FNP and VEGP, or revise the application accordingly.

RAI 27

The NEI 99-01, Revision 6, basis for SA2 and SU2 includes the following:

This EAL is focused on a selected subset of plant parameters associated with the key safety functions of reactivity control, core cooling [*PWR*] / RPV level [*BWR*] and RCS heat removal.

a. Applicable site: FNP

The proposed SA2 and SU2 include steam generator auxiliary or emergency feedwater flow taken generically from NEI 99-01, Revision 6.

Please provide site-specific terminology for this parameter (either steam generator auxiliary or emergency feedwater flow, but not typically both), or justify using the proposed wording.

b. Applicable site: VEGP

The proposed SA2 and SU2 include main feedwater as a plant parameter to monitor in addition to auxiliary feedwater flow.

Please clarify whether main feedwater flow indication can provide an accurate measurement of total available feedwater to the steam generators following a reactor trip, or revise the application accordingly.

RAI 28

Applicable site: VEGP

The NEI 99-01, Revision 6, basis for SU7 states:

EAL #2 addresses a condition where containment pressure is greater than the setpoint at which containment energy (heat) removal systems are designed to automatically actuate, and less than one full train of equipment is capable of operating per design.

The proposed VEGP EAL SU7 (2) uses "containment pressure greater than 52 psig [pounds per square inch gauge]" as a threshold value.

Please revise EAL SU7 (2) to use the containment spray actuation setpoint as a threshold value, or justify this difference.

RAI 29

Applicable site: FNP

SNC is proposing changes to RG1 [AG1], RS1 [AS1], RA1 [AA1], and RU1 [AU1]. The licensee is requesting the EAL change to support relocation of safety valve monitoring system radiation monitors RE-60A, RE-60B, and RE-60C, and the removal of Turbine Driven Auxiliary Feedwater Pump Steam Exhaust Monitoring System radiation monitor RE-60D. However, the license amendment request (ADAMS Accession No. ML16071A110) does not provide specific information regarding the location changes of RE-60A, RE-60B, and RE-60C.

- a. The application states that the RE-60 series radiation monitors provide post-accident effluent monitoring in compliance with Regulatory Guide 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants.: Please provide justification that the replacement monitors will reliably continue to provide an indication of steam generator tube leakage (SGTR) and support offsite dose assessment for conditions such as an open code safety, SGTR, Terry turbine operation, or open atmospheric relief valve.
- b. Considering the safety evaluation will only address proposed EAL scheme changes, please clarify what process is being used to document and approve the replacement and relocation for the RE-60 series radiation monitor.

- c. Please provide an explanation of how the transition from the current RE-60 series radiation monitor configuration to the new RE-60 series radiation monitor configuration will occur without impacting the ability to assess either the current or proposed EALs, as appropriate. If this explanation includes a transition to the new monitors subsequent to implementation of the proposed EAL scheme, please provide the relevant EALs in the pre-equipment change status for NRC review and approval.
- d. Section 4.1, Precaution 5 of NMP-EP-104, "Dose Assessment" (ADAMS Accession No. ML15022A223 (non-public)) states:

(**FARLEY**) IF R[E]-60 A, B, OR C are used for dose assessment when an emergency release has not been indicated on these instruments, there is a possibility that a false high TEDE AND Thyroid CDE could be calculated causing an unnecessary Site Area Emergency OR General Emergency declaration.

Please explain how the proposed RE-60 series radiation monitor changes will address this precaution.

- e. The application provides the following statement:

In accord with a proposed plant modification, SNC proposes to revise the Farley EAL thresholds for Initiating Conditions (ICs) in RG1, RS1, RA1, and RUI. Due to limitations of the monitors and obsolescence, SNC proposes a design change to remove Steam Generator Relief & Safety Valve Monitoring System radiation monitors RE-60A, RE-60B, and RE-60C and relocate the three new radiation monitors adjacent to the main steam lines inside the Main Steam Valve Room. In addition, the Turbine Driven Auxiliary Feedwater Pump Steam Exhaust Monitoring System radiation monitor RE-60D will be removed. Consequently, the removal of all four radiation monitors will be reflected in the referenced EAL ICs.

The NRC staff could not determine how, or if, the proposed RE-60 series radiation monitors address "limitations of the monitors" or are equivalent to or better than the current RE-60 series monitors. Please provide clarification on how the proposed RE-60 series radiation monitors will provide the ability to assess a SGTR and support the performance of off-site dose assessments in a manner that is as good as or better than the existing RE-60 series radiation monitors.

C. Pierce

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If you have any questions, please contact me at (301) 415-3229 or by e-mail at Michael.Orenak@nrc.gov.

Sincerely,

/RA/

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

Docket Nos. 50-348, 50-364, 50-321, 50-366,
50-424, and 50-425.

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