

April 20, 2011

MEMORANDUM TO: Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Richard B. Ennis, Senior Project Manager */ra/*
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: HOPE CREEK GENERATING STATION AND SALEM NUCLEAR
GENERATING STATION, UNIT NOS. 1 AND 2, DRAFT REQUEST
FOR ADDITIONAL INFORMATION (TAC NOS. ME4883, ME4884 AND
ME4885)

The attached draft request for information (RAI) was transmitted on April 20, 2011, to Mr. Paul Duke of PSEG Nuclear LLC (PSEG or the licensee). This information was transmitted to facilitate an upcoming conference call in order to clarify the licensee's submittal dated October 14, 2010, for Hope Creek Generating Station and Salem Nuclear Generating Station, Unit Nos. 1 and 2. PSEG's submittal requested Nuclear Regulatory Commission (NRC) staff approval of a revised emergency action level scheme based on Nuclear Energy Institute (NEI) 99-01, Revision 5, "Methodology for Development of Emergency Action Levels."

This memorandum and the attachment do not convey or represent an NRC staff position regarding the licensee's submittal.

Docket Nos. 50-354, 50-272 and 50-311

Attachment: Draft RAI

April 20, 2011

MEMORANDUM TO: Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Richard B. Ennis, Senior Project Manager /ra/
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: HOPE CREEK GENERATING STATION AND SALEM NUCLEAR
GENERATING STATION, UNIT NOS. 1 AND 2, DRAFT REQUEST
FOR ADDITIONAL INFORMATION (TAC NOS. ME4883, ME4884 AND
ME4885)

The attached draft request for information (RAI) was transmitted on April 20, 2011, to Mr. Paul Duke of PSEG Nuclear LLC (PSEG or the licensee). This information was transmitted to facilitate an upcoming conference call in order to clarify the licensee's submittal dated October 14, 2010, for Hope Creek Generating Station and Salem Nuclear Generating Station, Unit Nos. 1 and 2. PSEG's submittal requested Nuclear Regulatory Commission (NRC) staff approval of a revised emergency action level scheme based on Nuclear Energy Institute (NEI) 99-01, Revision 5, "Methodology for Development of Emergency Action Levels."

This memorandum and the attachment do not convey or represent an NRC staff position regarding the licensee's submittals.

Docket Nos. 50-354, 50-272 and 50-311

Attachment: Draft RAI

DISTRIBUTION

PUBLIC

LPL1-2 R/F

RidsNrrDorlLpl1-2 Resource

RidsNrrDorlDpr Resource

RidsNrrPMSalem Resource

D. Johnson, NSIR/DPR

ACCESSION NO.: ML111110886

OFFICE	PDI-2/PM
NAME	REnnis
DATE	4/20/11

OFFICIAL RECORD COPY

DRAFT REQUEST FOR ADDITIONAL INFORMATION

HOPE CREEK GENERATING STATION

AND

SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

EMERGENCY ACTION LEVEL SCHEME CHANGE TO NEI 99-01, REVISION 5

DOCKET NOS. 50-354, 50-272, AND 50-311

By letter dated October 14, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No.: ML110050378), PSEG Nuclear LLC (PSEG or the licensee), requested prior approval of a revised emergency action level (EAL) scheme for Hope Creek Generating Station (HCGS) and Salem Nuclear Generating Station, Unit Nos. 1 and 2 (Salem).

PSEG's letter stated that the current HCGS and Salem EAL schemes are based on generic development guidance from NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," Revision 2, dated January 1992, (ADAMS Accession No. ML041120174). Since 1992, numerous enhancements and clarification efforts have been made to the generic EAL development guidance resulting in the latest document, Nuclear Energy Institute (NEI) 99-01, Revision 5, "Methodology for Development of Emergency Action Levels," (ADAMS Accession No. ML080450149), which was found to be acceptable for use as generic EAL development guidance by the Nuclear Regulatory Commission (NRC) staff by letter dated February 22, 2008 (ADAMS Accession No. ML080430535).

The EAL schemes proposed by PSEG were developed using the generic development guidance from NEI 99-01, Revision 5, with numerous differences and deviations based upon design criteria applicable to each site, as well as licensee preferences for terminology, format, and other licensee desired modifications to the generic EAL scheme provided in NEI 99-01, Revision 5.

The NRC staff has reviewed the information the licensee provided and would like to discuss the following issues to clarify your submittal. Unless specifically stated otherwise, each request for additional information (RAI) question is applicable to both Salem and HCGS.

1. The section of the submittal titled "Event Classification Guide (ECG) Use" is unique to the typical licensee EAL document. Based on this, the NRC staff needs the following information to support the technical review:

- a. Step 1, EC [Emergency Coordinator] Judgment

As proposed, an event would be classified if the Initiating Condition (IC) is met but the related EAL is not. An EAL declaration is based upon a combination of exceeding the IC, related EALs, and being in the applicable Operating Mode. All three must be satisfied to warrant an EAL declaration. ICs are not written as thresholds, per se, but are intended to provide a one-line description of the particular event, which coupled with the detailed EAL thresholds, corresponding

notes, and the applicable Operating Mode, lead to an informed and timely EAL declaration. Please provide additional information to support this deviation, or revise this section to align with the generic EAL scheme development guidance.

b. Step 2.2, Duration Time Exceeded

Please explain the following:

- What effect not knowing the actual start time has on the declaration timing?
- Why the assessment time is not considered complete when the duration portion of the applicable EAL is considered satisfied?

Please provide additional information to support this deviation, or revise this section to align with the generic EAL scheme development guidance.

c. Step 3, Implementing Actions

The note that corresponds to this particular step does not limit the time considered acceptable for confirming actual plant conditions. Please explain why the note does not also state that this confirmation should be within the 15-minute assessment window or as specifically addressed in the particular EAL, or revise this section to align with the generic EAL scheme development guidance.

d. Step 4, Classification

The note stating that the EC should classify and declare an emergency if the EC determines that the EAL will be exceeded within 2-hours is conservative and may lead to event declarations that are ultimately retracted. Where EAL timeframes apply, they are already adequately addressed in the specific EAL. All other EALs should be classified based upon exceeding the specific EAL threshold(s) as written. There are already EALs in place for EC Judgment based classifications. Please provide additional justification to support this deviation or revise accordingly. *[Related to the response to this RAI is the corresponding definition of 'imminent' from Attachment 3. Based upon the response to this RAI, this definition may need to be revised.]*

e. Step 7, NRC Communications During An Emergency Guidance

This step does not completely address the requirements for NRC communications in 10 CFR 50.72 and discussed in NRC Information Notice (IN) No. 87-58, "Continuous Communications Following Emergency Notifications." Please revise this step or explain why it does not address that: (1) the NRC notification is to be immediately after notification of State and local agencies and not later than one hour after the licensee declaration as required by 10 CFR 50.72(a)(3); and (2) the licensee must maintain an open, continuous communication channel with the NRC Operations Center, during the duration of the event, upon request by the NRC.

2. EAL RU1.1 and RU1.2: Each EAL refers to the exact same table, for the exact same time duration, and with the same Note being applicable. The only difference would be the incorporation of the Basis information for each EAL. Please explain the rationale for not combining these EALs in the site-specific EAL development method chosen by PSEG to aid in reducing reader burden and possibly improve the timeliness of the declaration.
3. EAL RA1.1 and RA1.2: Each EAL refers to the exact same table, for the exact same time duration, and with the same Note being applicable. The only difference would be the incorporation of the Basis information for each EAL. Please explain the rationale for not combining these EALs in the site-specific EAL development method chosen by PSEG to aid in reducing reader burden and possibly improve the timeliness of the declaration.
4. EAL RS1.3 and RG1.3: Please explain why the timing note is not applicable to these EALs. Please provide additional information to support this deviation, or revise this section to align with the generic EAL scheme development guidance.
5. EAL RA3.1 [HCGS]: Please explain if HCGS has a security area that must be staffed to ensure access to vital areas, through applicable security doors and/or barriers, to operate or monitor systems required to maintain plant safety functions. If HCGS has such an area, please revise this EAL to add this area or provide justification for this area not being included.
6. EAL RU2.1 [Salem]: The EAL Wallboard merely specifies "Temporary ARM," requiring the user to reference the EAL Technical Basis Document (EALTBDD) to determine that this refers only to those area radiation monitors located on the 130' elevation of the Containment or Fuel Handling Building. Based upon lessons learned, information contained in the Basis section of the EAL, that directly relates to the timing of an EAL or supports bounding the area or issue of concern, are brought to the actual EAL Threshold part of the document to ensure that this note gets incorporated on the EAL Wallboard for timely consideration by EAL decision makers. Please explain why specific reference to the Temporary ARM on 130' elevation of the Containment or Fuel Handling Building is not included on the EAL Wallboard to facilitate clarity and timely classification by EAL decision-makers, or revise accordingly.
7. EAL HU1.1: Please explain, in detail, the timeliness of this EAL assessment, specifically how long it takes to determine if the SMA-3 event Indicator is white. If this indicator is not in the Control Room, please include in explanation how long does it take to determine and is the staff available (and qualified) to make this determination.
8. EAL HU1.1 and HA1.1: Please explain how the relationship table relating Acceleration (in g) to a Richter Scale Magnitude was derived, or provide the source for this information.
9. EAL HU1.4 and HA1.4 [HCGS]:
 - a. Explain the effect that the licensee's adding of a "visual observation" requirement has on the timing of the classification, since the receipt of the applicable alarm is typically what triggers the assessment start time.

- b. The listed areas in Table H-1 are not similar to other licensees of the same design. Please explain in greater detail how these areas were derived consistent with the generic EAL scheme development guidance.
 - c. The Basis information states that flooding of an area can be a direct result of a planned evolution and as such does not warrant classification. Please provide examples of planned evolutions justifying this statement that would result in flooding: greater than the Maximum Normal Floor Levels referenced in EOP 103/104, the SSWS Pump Room Flooded setpoint, or greater than two inches of water in the listed areas.
10. EAL HU1.5: Please explain why the instrument(s) or methods available for determining river level are not documented in the EAL to ensure the ability for timely and accurate classification, or revise the document to include this information.
 11. EAL HA1.1 [Salem]: Please explain, in detail, the timeliness of this EAL assessment, specifically how long it takes to determine if the HCGS Operating Basis Earthquake (OBE) Seismic Switch has been actuated. If this indicator is not available in the Control Room, explain how long does it take to determine and is the staff available (and qualified) to make this determination. In addition, explain how Salem will maintain awareness of changes made to the HCGS Emergency Plan that impact this particular EAL.
 12. EAL HA1.1 [HCGS]: Please clarify whether the amber alarm light on the Seismic Switch Power Supply Drawer Panel 10C673 is located in the Control Room, and if not, how long does it take to determine and is the staff available (and qualified) to make this determination.
 13. EAL HA1.2: The format of this EAL can reasonably lead to a misunderstanding of the logic. Specifically, the format can lead to the idea that the EAL is based upon: (1) a tornado touching down, or (2) a combination of high average wind speed and degraded performance/visible damage indication. Per the generic EAL scheme development guidance, this EAL is based upon either a tornado touching down or high average wind speed, and then either of the degraded performance/visible damage criteria to be satisfied. Please explain the rationale for this format, or revise to eliminate the potential for misunderstanding the applicable logic for this EAL.
 14. EAL HA1.6:
 - a. Please explain why there is not an Alert EAL for River Level or revise accordingly to add an EAL for River Level applicable at the Alert classification level.
 - b. Please explain why a statement was added to the Basis that excludes some crashes, since the EAL is based upon contact and indications of degraded performance or visible damage. Please provide justification for this deviation and the effect it has on the timing of the classification, or revise this EAL to align with the generic EAL scheme development guidance.

15. EAL HU2.1: Please explain why a deviation to the assessment start time is necessary for a single fire or smoke detector alarm as indicated in EAL TBD b.2, or revise this EAL to align with the generic EAL scheme development guidance.
16. EAL HA2.1: Please explain why a timing requirement was added for this EAL. The justification provided for adding a timing requirement to this EAL is not of sufficient detail and erroneously assumes that the timing basis for EAL HU2 is applicable to this EAL. In addition, the necessary requirement for assessing for visible damage or degraded performance is not incorporated in this EAL (and HA2.2). Please provide further justification for these deviations, or revise this EAL to align with the generic EAL scheme development guidance.
17. EAL SA1.1: Please explain why this EAL is based on the availability of power sources when EALs SU1.1, SS1.1, and SG1.1 are based upon power to the 4KV Vital Buses, or revise this EAL for consistency within the generic EAL scheme development guidance.
18. EAL SS2.1 [Salem]: A caveat was added to the EAL to confirm the loss of control of safety-related equipment from the Control Room. Please revise this EAL to align with the generic EAL scheme development guidance or explain reasoning for: (1) additional caveat; (2) how this is confirmed; (3) the location(s) from which this confirmation occurs, (4) the effect this has on EAL classification, and (5) the personnel on shift qualified and available to perform this confirmation.
19. EAL SU3.1 [HCGS]: Startup mode is not listed as an applicable operating mode for this EAL. Please provide justification for this deviation, or revise accordingly to align with the generic EAL scheme development guidance.
20. EAL SS3.1 [HCGS]: Please explain why the information related to this EAL being necessary due to the gross failure of RPS is not included in this EAL, or revise this EAL to align with the generic EAL scheme development guidance.
21. EAL SG3.1 [Salem]: The EAL Basis information states that a successful remote reactor trip will require classification under this EAL. The intent of this EAL is based upon the reactor not being shutdown (i.e., no actions from within the Control Room or anywhere else are successful in shutting down the reactor, and there are indications of challenges to core cooling and heat removal as a result). Please explain why this statement was added to the EAL, or revise this EAL to align with the generic EAL scheme development guidance.
22. EAL SU7.1 [HCGS]: Please explain in more detail why a 90-minute sampling criteria was added to the basis, or revise this EAL to align with the generic EAL scheme development guidance.
23. EAL SU7.2 [HCGS]: A statement related to excluding this EAL based upon normal plant response was added to the Basis rather than just adding 'unplanned' to the actual EAL. Please explain the rationale for adding this statement, or revise this EAL to align with the generic EAL scheme development guidance.

24. EAL SU8.1 [HCGS]: Ten (10) minute and 24-hour average criterion were added to this EAL. Please explain in more detail why these criteria were added, or revise this EAL to align with the generic EAL scheme development guidance.
25. Fission Barrier Matrix:
 - a. Please explain why PSEG is not using the standard method of determining the appropriate classification level based upon indications of loss/potential loss of each fission barrier, or revise these EALs to align with the generic EAL scheme development guidance.
 - b. The current EAL scheme (based upon NUMARC/NESP-007) has several “other” site-specific indicators. However, no “other” site-specific indicators have been developed for the proposed Fission Barrier Matrix based on NEI 99-01, Revision 5, even though the NUMARC/NESP-007 matrix is very similar. Please explain the reasoning for excluding “other” site-specific indicators, or revise this EAL to align with the generic EAL scheme development guidance.
 - c. [HCGS] The RCS Barrier, Loss #4, from the generic EAL development guidance, is needed in this matrix to ensure it is an input into the logic determination for the appropriate classification. If the plant design is such that incorporation of the threshold is impossible, then the guidance states that development of another indicator of RCL loss, above what is already in place, is required. Please explain how this indicator, or removal thereof, effects the logic progression of fission barrier classification.
26. EAL CU1.1: Please explain why this EAL is based on the availability of power sources when EAL CA1.1 is based upon power to the 4KV Vital Buses, or revise this EAL for consistency within the generic EAL scheme development guidance.
27. EAL CU2.1 [Salem]: A caveat was added to the EAL to confirm the loss of control of safety-related equipment from the Control Room. Please revise this EAL to align with the generic EAL scheme development guidance or explain reasoning for: (1) additional caveat; (2) how this is confirmed; (3) the location(s) from which this confirmation occurs, (4) the effect this has on EAL classification, and (5) the personnel on shift qualified and available to perform this confirmation.
28. EAL CS3.2 and CG3.2 [HCGS]: Please explain why an alternative threshold cannot be determined to replace the expected site-specific radiation monitor threshold that cannot be implemented, or revise this EAL to align with the generic EAL scheme development guidance.