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10 CFR 50.4  
10 CFR 52.79

December 19, 2008

UN#08-087

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016  
Submittal of Response to Request for Additional Information  
for the Calvert Cliffs Nuclear Power Plant, Unit 3  
RAI No. 30, Revision 0, Question 13.03-2 – Emergency Planning

- References:
- 1) John Rycyna (NRC) to George Wrobel (UniStar), "RAI No 30 ORLT 1135.doc," email dated November 5, 2008
  - 2) Christopher G. Miller (NRC) to Alan Nelson (NEI), "U.S. Nuclear Regulatory Commission Review of Emergency Action Levels for New Reactor Applications," dated December 2, 2008

The purpose of this letter is to respond to the request for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear, dated November 5, 2008 (Reference 1). The RAI addresses the Emergency Action Levels, as discussed in the Emergency Plan Annex of the Final Safety Analysis Report, as submitted in Part 5 of the CCNPP Unit 3 Combined License Application (COLA).

The enclosure provides the response to RAI No. 30, Revision 0, Question 13.03-2. Please note that as discussed in the enclosed response, CCNPP3 will address Option 2 of the NRC letter to Mr. Alan Nelson of NEI dated December 2, 2008, U.S. Nuclear Regulatory Commission Review of Emergency Action Levels for New Reactor Applications (Reference 2), in lieu of responding to each Site of Question 13.03-2.

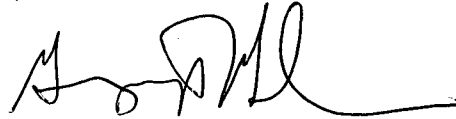
DOT 9  
NRD

The enclosure provides our response to RAI No. 30, which includes revised COLA content. A Licensing Basis Document Change Request has been initiated to incorporate this change into a future revision of the COLA. There are no new regulatory commitments in this correspondence.

If there are any questions regarding this transmittal, please contact me at (410) 470-4205 or Mr. George Wrobel at (585) 771-3535.

*I declare under penalty of perjury that the foregoing is true and correct.*

Executed on December 19, 2008

A handwritten signature in black ink, appearing to read 'Greg Gibson', with a long horizontal flourish extending to the right.

Greg Gibson

Enclosure: Response to NRC Request for Additional Information, RAI No. 30, Revision 0,  
Question 13.03-2

cc: U.S. NRC Region I  
U.S. NRC Resident Inspector, Calvert Cliffs Nuclear Power Plant, Units 1 and 2  
NRC Environmental Project Manager, U.S. EPR Combined License Application  
NRC Project Manager, U.S. EPR Combined License Application  
NRC Project Manager, U.S. EPR Design Certification Application (w/o enclosure)

**Enclosure**

**Response to NRC Request for Additional Information, RAI No. 30, Revision 0,  
Question 13.03-2**

**December 19, 2008**

**RAI No. 30, Revision 0**

**Question 13.03-2**

**SITE 1.**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

As used in the following questions, the terms "difference and deviation" in an Emergency Action Level (EAL) are as defined in RIS 2003-18, Sup 1 "Use of Nuclear Energy Institute (NEI) 99-01, 'Methodology for Development of Emergency Action Levels' dated July 13, 2004.

In Part 5 of the Emergency Plan, Enclosure A of the Calvert Cliffs Nuclear Power Plant Unit 3 (CCNPP3) Combined License (COL) application in the section titled "2.0 Discussion" the applicants state:

"An initial set of Emergency Action Levels (EALs) for the {Calvert Cliffs Nuclear PowerPlant (CCNPP) Unit 3}, a U.S. Evolutionary Power Reactor (U.S. EPR) has been developed. This initial set of EALs is based on NEI 99-01 Rev 5, with appropriate changes added to include plant design characteristics unique to the U.S. EPR. The intent of this initial set of {CCNPP Unit 3} EALs is to provide consistent emergency classifications internally and between the U.S. EPR plants to the greatest extent possible, limited only by plant specific design or location."

The CCNPP3 definitions of "LARGE AIRCRAFT" and "NORMAL LEVELS" (as shown in Enclosure C on page 7) are not included in NEI 99-01 Rev 5 "Methodology for Development of Emergency Action Levels" dated February 2008. "Airliner" is the approved term in NEI 99-01 Rev 5. The NSIR staff has determined that the proposed definition of LARGE AIRCRAFT should not appear in a publicly available document such as an emergency plan. Instead, the emergency plan should reference the security plan (not publicly available) for a definition of airliner. Specific definitions for large or small aircraft are included in Safeguards Advisory (SA-05-02). Remove the definition of "LARGE AIRCRAFT" and "NORMAL LEVELS" or explain why this deviation is required by the EPR design or the plant specific design or location.

**SITE 2.**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

Some definitions, such as "VALID" that are part of NEI 99-01 Rev 5 are not included in CCNPP3 EALs. Incorporate the language of NEI 99-01 Rev 5 or explain why these deviations are required by the EPR design or the plant specific design or location.

**SITE 3.**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR

50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

The CCNPP3 EAL technical basis manual, Enclosure C, page 4 does not follow NEI 99-01 Rev 5 section 3.9 "Emergency Action Levels." Incorporate the language of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S.EPR design or the plant specific design or location.

**SITE 4.**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

The definition of SIGNIFICANT TRANSIENT specifies a threshold of 50% power. Explain the basis for this value. Additionally, thermal power oscillations are not part of this definition. Either include thermal power oscillations in the definition or explain why thermal power oscillations are not included.

**SITE 5.**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

CCNPP3 EALS are missing calculated or reference values that must be included before the EALs are usable. When will these values be finalized, how will they be validated, and how will you assure that these values are entered into the EP? A list of missing or calculated values to be provided includes FC2 containment rad graph, FC4 RCS level and calculated clad temperature, FC7 site specific value, RC2(L)1, RC5 clad temperature, CT2 Graph CT2(PL)1, CT3 clad temperature and RCS level, RG1 site specific value/wording, RA1 value for RA1.1, RU1 value for RU1.1, RU1 site specific EAL#1 value/wording, RU2 values for RU2.1a(b1) and RU2.1a(b2) and site specific EAL#1 value/wording, SG3 calculated clad temperature, SU9 value for SU9.1, CG7 value for CG7.2a(b1), CS7 values for CS7.1.b, and CS7.3.b(b)1, and CA7 value for CA7.1.

**SITE 6.**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

CCNPP3 EAL FC3 contains a Potential Loss Threshold 1 "This value typically corresponds to the temperature reading that indicates core cooling ORANGE for plants with CSFST [Critical Safety Function Status Tree], which is usually about 700°F to 900°F." Explain what conditions constitute "ORANGE." In accordance with NEI 99-01 Rev 5, add additional conditions equivalent to the phrase "or heat sink RED be added" or explain why this additional entry condition is unnecessary.

SITE 7.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For FC7, does 5% fuel clad damage correspond to 300  $\mu\text{Ci/gm}$ ? If not, explain what the corresponding activity level is for 5% fuel clad damage.

SITE 8.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For FC10, explain why are there no fuel clad thresholds based upon core exit temperatures to be consistent with NEI 99-01 Rev 5 FC3?

SITE 9.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For RC5, why is "Potential Loss" defined differently than in NEI 99-01 Rev 5? Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 10.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

We were unable to identify where the fission product barrier (FBs) for RC1A and RC1B from NEI 99-01 Rev 5 were identified in the CCNPP3 EALs. Identify where these FBs were included or explain why they do not need to be included.

SITE 11.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

CT8 deviates from NEI 99-01 Rev 5 in terminology (unplanned vs. unexplained) and in number of criteria (2 criteria vs. 6). Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 12.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

Throughout the document the non-standard terminology of "mRem" is used instead of

"mrem." Incorporate the standard terminology or explain why this deviation is required by the U.S. EPR design or the plant specific design or location.

SITE 13.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

RG1 has a note that is not consistent with NEI 99-01 Rev 5. Incorporate the language of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 14.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

RS1 deviates from NEI 99-01 Rev 5 AS1 in substance of criterion 1. NEI 99-01 Rev 5 provides for more monitors for criterion 1. The notes for this EAL are not consistent with NEI 99-01 Rev 5. Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 15.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

RA1 deviates from NEI 99-01 Rev 5 AA1 in substance of criterion 1. NEI 99-01 Rev 5 provides for more monitors for criterion 1. Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 16.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

RU1 deviates from NEI 99-01 Rev 5 AU1 in substance of criterion 1. NEI 99-01 Rev 5 provides for more monitors for criterion 1. Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 17.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For RA2, what is the technical basis for the criterion ">1000 mR/hr"? Please provide the

correlation/calculation from which this value was derived. If there is no correlation/calculation for this value, please explain why the value is appropriate.

SITE 18.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

RU2 deviates from NEI 99-01 Rev 5 AU2 in that criterion 2 omits the word "VALID." Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 19.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

RA3 provides for measuring a dose rate in the control room or central alarm station, but it does not specify how that dose is to be determined or what instrument is to be used. Specify the instruments to be used or explain why this should not be specified.

SITE 20.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

HA1 deviates from NEI 99-01 Rev 5 HA4 in that it uses the term "LARGE AIRCRAFT" instead of "airliner." The term ISFSI is used without a definition. The justification for using the term "LARGE AIRCRAFT" is that it is the U.S. EPR specific term used for airliner. However, nothing in the U.S. EPR design would necessitate this difference in terminology. Incorporate the language and structure of NEI 99-01 Rev 5.

SITE 21.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

HU1 deviates from NEI 99-01 Rev 5 HU4 in that the notes are not consistent. HU1 states "Security events assessed as HOSTILE ACTIONS are classifiable under HA8, HS4 and HG1." We are unable to locate HA8 and HS4. Are the references to HA8 and HS4 correct? If not, specify the appropriate references and add the note from NEI 99-01 Rev 5.

SITE 22.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For HA2, incorporate fully the note from NEI 99-01 Rev 5 HA5 or explain why this deviation is required by the U.S. EPR design or the plant specific design or location.



SITE 23.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For HA3, the basis states "EALs #2 - #6 These EALs should specify site (U.S. EPR) specific structures or areas that contain safety system, or component and functions required for safe shutdown of the plant. Site specific Safe Shutdown Analysis should be consulted for equipment and plant areas required to establish or maintain safe shutdown." Has the referenced Safe Shutdown Analysis been completed? If not, when will it be completed and how will it be assured prior to it being needed?

SITE 24.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For HA3, the basis site specific EAL #1 states "The U.S. EPR Maximum Probable Earthquake is 0.30g." explain why this value is not in the EAL.

SITE 25.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For HU3, EAL 1.a. states "Seismic event trigger as indicated by PICS seismic monitoring system." Is the data from PICS available in the Main Control Room? Identify how long it takes to obtain the data.

SITE 26.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

In several instances, the basis cited for EALs is generic and not tailored to the specific site. Examples of generic guidance in the "Basis" section that should be site specific include:

- a. HA3 EAL#4
- b. HU3 EAL#1 AND EAL#4

Develop site specific guidance useful to the Calvert Cliffs staff or explain why this should not be done.

SITE 27.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For HU4, EALs 1 and 2 do not conform to NEI 99-01 Rev. 5 HU2. The list for EAL 2 should be longer. Incorporate the language and structure of NEI 99-01 Rev 5 or explain

why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 28.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For HA5, the initiating condition and EAL do not conform to NEI 99-01 Rev. 5 HA3. Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 29.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For SG1, the generic basis states "The hours to restore AC power can be based on a site blackout coping analysis performed in conformance with 10 CFR 50.63 and Regulatory Guide 1.155, "Station Blackout," as available. Appropriate allowance for off-site emergency response including evacuation of surrounding areas should be considered. Although this Initiating Condition (IC) may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response." Explain the basis for the "2 hours" allowed for restoration of at least one emergency bus?

SITE 30.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For SS1, SA1, SU1, SS4, CA1, CU1, CU2, CG7, CS7, CA7, CU7, CU8, CU10 should contain the note from NEI 99-01 Rev. 5 that states "The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time." Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 31.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

SA1 deviates from NEI 99-01 Rev 5 in the initiating condition, EAL 1b, and in the absence of the note. Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 32.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR

50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For SS2, provide specific criteria for your design in the generic basis and justify why voltages selected are appropriate to the design. As written, the basis references 105 VDC when the system is designed for 250 VDC.

SITE 33.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For SG3, incorporate the NEI 99-01 Rev 5 approach to EAL 2c by specifying indications that core cooling is extremely challenged or the heat sink is extremely challenged rather than loss of a system "Loss of all four trains of Emergency Feedwater." If not, justify why this deviation from NEI 99-01 Rev 5 is required by the U.S. EPR design or the plant specific design or location. Additionally be specific to the U.S. EPR design in the basis where it states "The reactor should be considered shutdown when it is producing less heat than the maximum decay heat load for which the safety systems are designed (typically 3 to 5% power)." Incorporate the structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 34.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

SA3 deviates from NEI 99-01 Rev 5 SA2, in that EAL 1.a. should not specify a power. Additionally add the note reading "If manual actions taken at the reactor control console fail to shutdown the reactor, the event would escalate to a Site Area Emergency." Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 35.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

SU5 appears to have an incorrect reference to NEI 99-01 Rev 5 SS2 which should be SU2. Explain why the original reference is correct, or revise the EAL.

SITE 36.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For SU6, the EAL should be specific as to the radios, dedicated offsite alerting system and other listed systems. Change the references to specific systems or explain why this is not appropriate.

SITE 37.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For SU9, is the "coolant sample activity > 1.0  $\mu\text{Ci/gm}$  dose equivalent I-131" an approved technical specification value? Explain the basis for the value.

SITE 38.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

CU1 deviates from NEI 99-01 Rev 5 CU3 in the initiating condition, the EAL and the absence of a note. Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

SITE 39.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For CU2, describe the analysis used to justify the value of "<210 VDC" add the appropriate note, and provide specific guidance in the basis section.

SITE 40.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For CU6, provide specific guidance in the basis section.

SITE 41

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For CG7, site specific guidance, provide an appropriate discussion for EAL #1 that is useful for the U.S. EPR in light of the fact that "Top of Active Fuel (TOAF) cannot be read by installed level instrumentation in cold modes. {TOAF corresponds to plant elevation 96.0 feet (29.3 meters)}"

SITE 42.

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For CS7, describe what instrument would be used to measure "RPV level < {96.0 feet

**(29.3 meters)}** (top of active fuel)." Also, be more specific in the guidance in the generic basis for EAL#1. The site specific basis provided for EAL #1 states "The lowest indicated reactor water level is the bottom of the reactor coolant hot legs {(Plant Elevation +101.9 feet (31.1 meters))}. A location 6" below the reactor coolant system hot legs would be {101.4 feet (30.9 meters)}." Explain why this is not included in the EAL.

**SITE 43.**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

For CU7 and CU8, explain what procedure is referenced in the EAL.

**SITE 44.**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

CA10 deviates from NEI 99-01 Rev 5 CA4 in the structure and language of EALs 1 and 2. Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

**SITE 45.**

Basis: 10 CFR 52.79(a)(21), 10 CFR 50.47(b)(4); Section IV.B of Appendix E to 10 CFR 50; NUREG-0654, FEMA-REP-1, Rev. 1, November 1980: Criterion II.D; SRP (NUREG-0800) CH 13.3.

CU10 deviates from NEI 99-01 Rev 5 CU4 in the structure and language of the initiating condition. Incorporate the language and structure of NEI 99-01 Rev 5 or explain why these deviations are required by the U.S. EPR design or the plant specific design or location.

## **Response**

As identified in RAI #30, the Calvert Cliffs Nuclear Power Plant Unit 3 Emergency Action Level (EAL) Technical Bases Manual for the U.S. EPR does not address certain aspects of the endorsed EAL scheme. Specifically, several EAL threshold values cannot be derived until actual as-built information is available. As such, CCNPP3 will revise the Calvert Cliffs Nuclear Power Plant Unit 3 Emergency Response Plan Annex and withdraw the submitted Calvert Cliffs Nuclear Power Plant Unit 3 EAL Technical Bases Manual in order to utilize Option 2 of the NRC letter to Mr. Alan Nelson of NEI dated 12/02/08, U.S. Nuclear Regulatory Commission Review of Emergency Action Levels for New Reactor Applications. The following discussions are provided in lieu of responses to each Site of Question 13.03-2.

Option 2 of the NRC letter to NEI requires submittal of emergency plan Section D, "Emergency Classification System," which addresses the following four critical elements of an EAL scheme:

1. Applicant proposes an overview of its EAL scheme including defining the four emergency classification levels, (i.e., Notification of Unusual Event, Alert, Site Area Emergency, and

General Emergency), as stated in NEI 99-01, Revision 5, with a general list of licensee actions at each emergency classification level.

**UniStar Response**

Section D: *Emergency Classification System*, of the submitted Calvert Cliffs Nuclear Power Plant Unit 3 Emergency Response Plan contains this general information.

2. Applicant proposes to develop the remainder of its EAL scheme by using a specified NRC endorsed guidance document. In the development of its EALs, the proposed EALs should be developed with few or no deviations or differences, other than those attributable to the specific reactor design.

**UniStar Response**

When design information for the threshold values becomes available, the Calvert Cliffs Nuclear Power Plant Unit 3 EAL Technical Bases Manual will be developed using the most currently NRC endorsed NEI EAL scheme with the exception of any deviations required for U.S. EPR or site-specific considerations.

3. Applicant proposes a Licensing Condition (LC) that the applicant will create a fully developed set of EALs in accordance with the specified guidance document. These fully developed EALs must be submitted to the NRC for confirmation at least 180 days prior to fuel load.

**UniStar Response**

Part 10 of the current {CCNPP3} application states:

8. *EMERGENCY ACTION LEVELS:*

*The {CCNPP Unit 3} Emergency Action Levels (EALs) and the associated Technical Bases Manual contains bracketed values requiring plant specific values to be provided that can not be determined until after the COL is issued. These bracketed values are associated with certain site specific values and detailed design information, such as setpoints and instrument numbers. In most cases, this information is necessary to determine EAL thresholds.*

*PROPOSED LICENSE CONDITION:*

*{Constellation Generation Group} and UniStar Nuclear Operating Services shall submit the plant specific values to the NRC for approval in order to address the remaining bracketed values in the {CCNPP Unit 3} EALs and associated Technical Bases Manual as identified below. These plant specific values shall be submitted to the NRC within 2 years of scheduled date for initial fuel load.*

The above License Condition will be revised in accordance with the NRC letter to NEI as follows:

*{Calvert Cliffs 3 Nuclear Project} and UniStar Nuclear Operating Services shall submit a fully developed set of U.S. EPR EALs to the NRC for approval in accordance with the most currently NRC endorsed NEI EAL scheme. These fully developed EALs shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load.*

4. The EALs must be kept in a document controlled by 10 CFR 50.54(q), such as the emergency plan; or a lower tier document, such as the emergency plan implementing

procedures.

**UniStar Response**

Section 3.3 of the Calvert Cliffs Nuclear Power Plant Unit 3 Emergency Response Plan Annex addresses that the EALs are contained in an Emergency Action Level Technical Basis Document. Revision of the Technical Basis Document is controlled the same way as the CCNPP Unit 3 Emergency Plan. It requires the same level of record management document review and approval including an evaluation review in accordance with §50.54(q).

**FSAR Impact**

The CCNPP Unit 3 FSAR will be updated to incorporate the response to this RAI question, as shown on the following page markup for the Emergency Response Plan Annex in a future COLA revision.

**FSAR Emergency Response Plan Annex – Affected Pages Markup**

### **Section 3: Classification of Emergencies**

Section D of the {CCNPP Unit 3} Emergency Plan describes the classification of emergencies into four levels of Emergency Class. They are the UNUSUAL EVENT, ALERT, SITE AREA EMERGENCY, and GENERAL EMERGENCY. These classification levels are entered by meeting the criteria of Emergency Action Levels (EALs) provided in this section of the U.S. EPR Annex.

#### **3.1 Emergency Action Levels (EALs)**

An Emergency Action Level scheme based on ~~Revision 5 of NEI 99-01, "Methodology for Development of Emergency Action Levels," currently under review by the Nuclear Regulatory Commission~~ is used for {CCNPP Unit 3}. Specific items not applicable to the U.S. EPR design are identified and alternate initiating conditions used as appropriate. Table 3-1, Emergency Action Level Initiating Conditions, provides a list of conditions considered for classification.

Emergency Action Level Threshold Values for each of the Initiating Conditions are provided in an EAL Technical Basis Document with appropriate basis and references.

An emergency is classified by assessing plant conditions and comparing abnormal conditions to Initiating Conditions and Threshold Values for each Emergency Action Level. Individuals responsible for the classification of events will refer to the Initiating Condition and Threshold Values in an Emergency Plan Implementing Procedure (EPIP). This EPIP contains Initiating Conditions, EAL Threshold Values, Mode Applicability Designators, appropriate EAL numbering system, and additional guidance necessary to classify events.

The EALs are set up in Recognition Categories. The first relates to Abnormal Radiological Conditions / Abnormal Radiological Effluent Releases. The second relates to Fission Product Barrier Degradation. The third relates to Hot Condition System Malfunctions. The fourth relates to Hazards and Other Conditions. The fifth related to Cold Shutdown System Malfunctions.

Emergency Action Levels are the measurable, observable detailed conditions that must be met in order to classify the event. Classification is not to be made without referencing, comparing and satisfying the Threshold Values specified in the Emergency Action Levels.

Mode Applicability provides the unit conditions when the Emergency Action Levels represent a threat. The Basis contains explanations and justification for including the Initiating Condition and Emergency Action Level.



A list of definitions is provided as part of this document for terms having specific meaning to the Emergency Action Levels. Site specific definitions are provided for terms with the intent to be used for a particular Initiating Condition/Threshold Value and may not be applicable to other uses of that term at other sites, the Emergency Plan or procedures.

An EAL Technical Basis Document provides references to documents which were used to develop the EAL Threshold Values.

References to the {Emergency Director} means the person in Command and Control as defined in the Emergency Plan. Classification of emergencies is a non-delegable responsibility of the {Emergency Director}.

Classifications are based on evaluation of the U.S. EPR Unit condition. All classifications are to be based upon valid indications, reports or conditions. Indications, reports or conditions are considered valid when they are verified by (1) an instrument channel check, or (2) indications on related or redundant indications, or (3) by direct observation by plant personnel, such that doubt related to the indication's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

EALs are for unplanned events. Planned evolutions involve preplanning to address the limitations imposed by the condition, the performance of required surveillance testing, and the implementation of specific controls prior to knowingly entering the condition in accordance with the specific requirements of the site's Technical Specifications. Activities which cause the site to operate beyond that allowed by the site's Technical Specifications, planned or unplanned, may result in an EAL threshold being met or exceeded. Planned evolutions to test, manipulate, repair, perform maintenance or modifications to systems and equipment that result in an EAL value being met or exceeded are not subject to classification and activation requirements as long as the evolution proceeds as planned and is within the operational limitations imposed by the specific operating license. However, these conditions may be subject to the reporting requirements of 10 CFR 50.72.

When two or more Emergency Action Levels are determined, declaration will be made on the highest classification level for the unit. {When all station units are affected, the highest classification for the Station will be used for notification purposes and specific units' classification levels will be noted}.

Excessive RCS leakage greater than Technical Specification limits are utilized to indicate potential pipe cracks that may propagate to an extent threatening Fuel Clad, RCS and containment integrity. This EAL, for Cold Shutdown and Refueling, will be based on RCS leakage limits that are applicable during the operational modes unless other mode specific limits have been established.

#### 10. Heat Sink

Loss of the ability to remove decay heat could lead to fuel clad degradation.

### 3.3 Maintenance of Emergency Action Levels

The details of EAL development are documented in an Emergency Action Level Technical Basis Document. Revision of the Technical Basis Document is controlled the same way as the {CCNPP Unit 3} Emergency Plan. It requires, requiring the same level of record management document reviews including an evaluation a review in accordance with §50.54(q).

**Table 3-1, Emergency Action Levels**

**[TBD]**

**[Existing Table Has Been Deleted]**





