Greg Gibson
Vice President, Regulatory Affairs

750 East Pratt Street, Suite 1600
Baltimore, Maryland 21202

UniStar
NUCLEAR ENERGY

10 CFR 50.4
10 CFR 52.79

January 4, 2010

UN#10-001

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

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Response to Request for Additional Information for the
Calvert Cliffs Nuclear Power Plant, Unit 3,
RAI No. 61, Reliability Assurance Program
RAI No. 194, Reliability Assurance Program

References:
1) John Rycyna (NRC) to Robert Poche (UniStar Nuclear Energy), "RAI No 61 SPLA 1843.doc (PUBLIC)" email dated February 17, 2009

2) Surinder Arora (NRC) to Robert Poche (UniStar Nuclear Energy), "FINAL RAI No 194 SPLA 3932" email dated December 2, 2009

3) UniStar Nuclear Energy Letter UN#09-292, from Greg Gibson to Document Control Desk, U.S. NRC, Response to RAI No. 61, Reliability Assurance Program (RAP), dated June 30, 2009

The purpose of this letter is to respond to the requests for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated February 17, 2009 (Reference 1) and December 2, 2009 (Reference 2). These RAIs address the Reliability Assurance Program (RAP), as discussed in Section 17.4 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 6.

D096
NRO

Reference 3 provided the initial response to RAI No. 61, Question 17.04-1. The enclosure provides an updated response to RAI No. 61, Question 17.04-1 and a response to RAI No. 194, Question 17.04-4, and includes revised COLA content. A Licensing Basis Document Change Request has been initiated to incorporate these changes into a future revision of the COLA.

UniStar Nuclear Energy requires additional time to finalize the response to RAI No. 194, Question 17.04-3. A response to this question will be provided to the NRC by February 15, 2010.

Our response does not include any new regulatory commitments. This letter does not contain any sensitive or proprietary information.

If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Michael J. Yox at (410) 495-2436.

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

Executed on January 4, 2010

Greg Gibson

Enclosure: Updated Response to NRC Request for Additional Information RAI No. 61, Question 17.04-1, Reliability Assurance Program, and Response to RAI No. 194, Question 17.04-4, Reliability Assurance Program, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Laura Quinn, NRC Environmental Project Manager, U.S. EPR COL Application
Getachew Tesfaye, NRC Project Manager, U.S. EPR DC Application (w/o enclosure)
Loren Plisco, Deputy Regional Administrator, NRC Region II (w/o enclosure)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
U.S. NRC Region I Office

GTG/RDS/mdf

Enclosure

Updated Response to NRC Request for Additional Information
RAI No. 61, Question 17.04-1, Reliability Assurance Program, and
Response to RAI No. 194, Question 17.04-4, Reliability Assurance Program,
Calvert Cliffs Nuclear Power Plant, Unit 3

RAI No. 61

Question 17.04-1

In chapter 17.4 of the applicant's FSAR, the list of site-specific SSCs within the scope of the reliability assurance program (RAP) does not appear to have been updated in light of the SSCs identified by AREVA in its response to RAI 21 in the US EPR design certification process. Please modify the FSAR accordingly, or justify an alternative.

Response Update

The response to U.S. EPR Design Certification Application RAI No. 226, Question 17.4-16[1] updated U.S. EPR Tier 2 FSAR, Section 17.4 to include the revised probabilistic risk assessment (PRA) input initially provided in the AREVA response to U.S. EPR Design Certification Application RAI No. 21, Question 17.04-3[2]. The revised PRA input is included in U.S. EPR FSAR Tier 2, Table 17.4-1.

Additionally, the response to Design Certification Application RAI No. 226, Question 17.4-16[1] updated U.S. EPR FSAR Tier 2, Section 17.4 to include a deterministic list of systems, structures and components (SSC) at a system and structure level. This list identifies the U.S. EPR scope systems and structures determined to be within the scope of the RAP, consistent with the AREVA response to U.S. EPR Design Certification Application RAI No. 21, Question 17.04-3[2]. This new table is provided in U.S. EPR FSAR Tier 2 as Table 17.4-2. U.S. EPR FSAR Tier 2, Table 17.4-2 includes the systems and structures determined by the PRA and the systems determined by the expert panel described in the response to U.S. EPR Design Certification Application RAI No. 21, Question 17.04-3[2]. The new U.S. EPR FSAR Tier 2 tables (Tables 17.4-1 and 17.4-2) are incorporated by reference into the CCNPP Unit 3 COLA FSAR.

Site specific systems and structures were qualitatively evaluated for inclusion in the RAP based on deterministic criteria similar to that used by the expert panel process described in COLA FSAR Section 17.4.4.1. These criteria include, but were not limited to:

- A contribution to the initiators
- An implicit contribution to the core damage frequency (CDF)
- An implicit contribution to the large release fraction (LRF)
- A contribution to seismic margin analysis, performance history/operating experience of the component
- Technical Specifications considerations for the component
- Detection of component failures
- The effect of component failure on the other systems

As a result of this qualitative evaluation, the new COLA FSAR Table 17.4-1 will provide a list of plant specific systems and structures to be included within the RAP.

---

1 AREVA NP Response to U.S. EPR Design Certification Application RAI No. 226, FSAR Ch 17, Supplement 1, dated 7/24/09 (ML092050316)

2 AREVA NP Response to U.S. EPR Design Certification Application RAI No. 21, FSAR Ch 17, dated 8/8/08 (ML082240716)

COLA Impact

COLA FSAR Tables 17.4-1 through 17.4-3 will be replaced with a new Table 17.4-1, and FSAR Sections 17.4.2 and 17.4.4.1.4.1 will be updated as follows in a future COLA revision:

17.4.2 RELIABILITY ASSURANCE PROGRAM IMPLEMENTATION

The U.S. EPR FSAR includes the following COL Item in Section 17.4.2:

> A COL applicant that references the U.S. EPR design certification will identify the site specific SSC within the scope of the RAP.

This COL Item is addressed as follows:

Based on a review of site-specific information, the design certification probabilistic risk assessment (PRA) is bounding and representative of the U.S. EPR plant proposed at the {CCNPP} site. It is concluded that the U.S. EPR design-specific PRA model can be used, without modification, as the plant-specific PRA. This is based on the plant-specific features being conservatively modeled in the design-specific U.S. EPR PRA. Site and plant parameters that could influence the PRA results are addressed in the evaluation and it is determined that the design-PRA: (1) bounds or sufficiently captures site and plant parameters; and (2) the site and plant parameters do not have a significant impact on the PRA results and insights. Therefore, no changes to the design-specific internal events PRA are necessary when considering specific site and plant parameters.

Based on the above evaluation, no additional components related to the site are identified by the PRA for the site-specific RAP scope. Accordingly, the SSC identified by the PRA for consideration to be within the RAP during the design certification process are the same SSC for consideration within the plant-specific RAP scope.

U.S. EPR FSAR Tier 2, Table 17.4-1 specifies the SSC identified by the PRA for consideration within the scope of RAP.

For systems and structures within the design certification scope, deterministic insights in the risk-significant SSC determination process are incorporated by using an expert panel. A list of systems and structures within the design certification scope and the bases to be included within the RAP program are provided in U.S. EPR FSAR Tier 2, Table 17.4-2.

Site specific systems and structures were qualitatively evaluated based on deterministic criteria including but not limited to:

- A contribution to the initiators
- An implicit contribution to the CDF
- An implicit contribution to the LRF

- A contribution to seismic margin analysis, performance history/operating experience of the component
- Technical Specifications considerations for the component
- Detection of component failures
- The effect of component failure on the other systems

As a result of this qualitative evaluation Table ~~17.4-3~~ 17.4-1 provides a list of plant specific systems and structures to be included within the RAP.

17.4.4 RELIABILITY ASSURANCE PROGRAM INFORMATION NEEDED IN A COL APPLICATION

17.4.4.1 Identification of Site-Specific SSCs for D-RAP

17.4.4.1.4.1 PRA Risk Ranking

A component's risk determination is based upon its impact on the results of the PRA. Both core damage frequency (CDF) and containment response to a core damaging event, including large release frequency (LRF) are calculated. The PRA models internal initiating events at full power and low power shutdown, and also accounts for the risk associated with external events. The PRA risk categorization of a component is based upon its Fussell-Vessely (FV) importance, which is the fraction of the CDF and LRF to which failure of the component contributes, and its risk achievement worth (RAW), which is the factor by which the CDF and LRF would increase if it were assumed that the component is guaranteed to fail~~, and its common cause failures (CCF) RAW, which is the factor by which CDF would increase if the common cause group probability of failure is set to 1 (common cause failure is assumed to occur)~~. Specifically, PRA risk categorization to identify SSCs is based upon the following:

Table 17.4-1—Site Specific Systems and Structures Included Within RAP

SSC Names	Qualitative Determination for Inclusion Within RAP
STRUCTURES	
UHS Makeup Water Intake Structure	System failure modes may affect multiple trains/systems
UHS Electrical Building	System failure modes may affect multiple trains/systems
Swithchgear Building	System failure modes may affect multiple trains/systems (Station Blackout)
POWER CONVERSION SYSTEMS	
Feedwater Heating System	Contains components important to maintaining system reliability
DISTRIBUTED UTILITIES	
UHS Makeup Water System	Considered in design basis analysis; The system function is considered important in the Safety Analysis Report; A contribution to initiators; Technical Specification considerations
ELECTRICAL SYSTEMS	
Offsite Power System-partial (plant specific scope)	Contains components important to maintaining system reliability; System failure modes may affect multiple trains/systems; Technical Specification considerations
Switchyard	Contains components important to maintaining system reliability; System failure modes may affect multiple trains/systems; Technical Specification considerations

RAI No. 194

Question 17.04-4

(Follow-up to Question 17.04-1 of RAI 61) The staff reviewed the response to Question 17.04-1 and compared it against Table 17.4-2 "Design Certification Scope Systems and Structures Included within RAP" in AREVA's response to Question 17.04-22 of RAI 268 in the U.S. EPR design certification process. The staff found that Table 17.4-2 in the UniStar response, entitled "Design Certification, Scope systems Included within RAP," excludes several systems, i.e., fire water distribution system, sprinkler system, spray deluge system, core melt stabilization system, etc., from the scope of the RAP. Please provide justification for excluding these systems and the differences between the two tables.

Response

The response to RAI No. 61, Question 17.04-1 has been updated. See response to RAI No. 61, Question 17.04-1 in this enclosure.

The identified inconsistency between the U.S. EPR FSAR and the CCNPP Unit 3 COLA FSAR tables for Site Specific Systems and Structures Included Within RAP has been resolved.

COLA Impact

The COLA FSAR will not be revised as a result of this response.