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10 CFR 50.4
10 CFR 52.79

April 6, 2010

UN#10-091

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. 45, Instrumentation and Control Systems Important to Safety; and
RAI No. 66, Post Accident Monitoring Variables

Reference: UniStar Nuclear Energy Letter UN#09-345, from Greg Gibson to Document
Control Desk, U.S. NRC, Response to RAI No. 45, Instrumentation and Control
Systems Important to Safety; and RAI No. 66, Post Accident Monitoring
Variables, dated August 14, 2009

The purpose of this letter is to provide updated and supplemental information for the response to Request for Additional Information (RAI) 45 and RAI 66. RAI 45 addresses the Instrumentation and Control Systems Important to Safety, as discussed in Section 7.4 of the Final Safety Analysis Report (FSAR), and RAI 66 addresses Post Accident Monitoring Variables, as discussed in Section 7.5 of the FSAR, as submitted in Part 2 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 6.

The referenced letter provided the initial response to RAI 45, Question 07.01-A Appendix-1, and RAI 66, Question 07.01-A Appendix-2. The enclosure provides an update of the information previously provided and supplemental information pertaining to Technical Specifications. The responses to these RAIs include revised COLA content. A Licensing Basis Document Change Request has been initiated to incorporate these changes into a future revision of the COLA.

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Our responses do 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. Wayne A. Massie at (410) 470-5503.

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

Executed on April 6, 2010



Greg Gibson

Enclosure: Response to NRC Request for Additional Information, RAI No. 45, Instrumentation and Control Systems Important to Safety, and RAI No. 66, Post Accident Monitoring Variables, 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

**Response Summary for Request for Additional Information
RAI No. 45, Instrumentation and Control Systems Important to Safety, and
RAI No. 66, Post Accident Monitoring Variables,
Calvert Cliffs Nuclear Power Plant Unit 3**

RAI No 45

Question 07.01-A Appendix-1

Describe the associated component control and indication necessary for safe shutdown as related to the ultimate heat sink (UHS).

10 CFR Part 50, Appendix A, General Design Criteria for Nuclear Power Plants (GDC) 44 is discussed as one of the acceptance criteria in Standard Review Plan (SRP) Appendix 7.1-A. GDC 44 states in part, "A system to transfer heat from structures, systems, and components important to safety, to an ultimate heat sink shall be provided...." Section 7.4 of the SRP references the acceptance criteria of Appendix 7.1-A as providing acceptance criteria to evaluate component control for safe shutdown. Describe the associated component control and indication necessary for safe shutdown as related to the UHS.

Response

Essential Service Water System (ESWS) Cooling Tower Basin Level was added as a post accident monitoring (PAM) variable in response to RAI 45, Question 07.01-A Appendix-1¹. In response to U.S. EPR RAI 110, Question 16-212², AREVA provided an updated Table 7.5-1 to the staff that included the following requirements for each PAM variable: range, minimum number of channels, duration, safety class, environmental quality, seismic qualification, and Regulatory Guide 1.97 analysis variable type designation. Therefore, the site-specific PAM variable information that supplements U.S. EPR FSAR Table 7.5-1 is being updated to provide the same level of detail. The addition of ESWS (UHS) Cooling Tower Basin Level instrumentation is also reflected in FSAR Tables 3.10-1 and 3.11-1.

The Generic Technical Specification Bases, as revised by the U.S. EPR response to RAI 110, Question 16-212², specifies that Technical Specifications (TS) Table 3.3.2-1 shall list all Type A, B, and C variables identified by the site-specific Regulatory Guide 1.97 analyses. As such, ESWS Cooling Tower Basin Level has been designated as a Type A variable and is being added to TS Table 3.3.2-1.

COLA Impact

COLA updates for this response are included in the response to RAI No. 66, Question 07.01-A Appendix-2.

¹ UniStar Nuclear Energy Letter UN#09-345, from G. Gibson to Document Control Desk, U.S. NRC, Response to RAI 45 and RAI 66, dated August 14, 2009.

² AREVA NP email from L. Duncan to G. Tesfaye, U.S. NRC, Response to U.S. EPR Design Certification Application RAI 110, FSAR Ch. 16, Supplement 4, dated February 11, 2010.

RAI No 66

Question 07.01-A Appendix-2

Describe site-specific post-accident monitoring (PAM) variables related to the ultimate heat sink (UHS), meteorological, and radiation monitoring.

10 CFR 50.34(f)(2)(xvii) requires, in part, continuous sampling of radioactive iodines and particulates in gaseous effluents from all potential accident release points, and for onsite capability to analyze and measure these samples. Additionally, 10 CFR Part 50, Appendix A, General Design Criteria (GDC) 13 requires, in part, that instrumentation be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions. Regulatory Guide 1.97, Revision 4, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants," provides a basis for evaluating conformance to GDC 13. Regulatory Guide 1.97 endorses IEEE Std. 497-2002, "IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations" which addresses selecting and categorizing post accident monitoring variables. The staff could not identify where the COL application addressed certain site-specific PAM related instruments such as those related to radiation monitoring, the UHS, and meteorological monitoring.

Response

The description of the post-accident monitoring (PAM) variables related to radiation monitoring is provided in Table 7.5-1 of the U.S. EPR FSAR. No additional site-specific radiation monitoring PAM variables are required. Meteorological variables measuring wind speed (10 and 60 meters), wind direction (10 and 60 meters), and vertical air temperature difference (between 10 and 60 meters) were added as PAM variables in response to RAI 66, Question 07.01-A Appendix-2¹.

In response to U.S. EPR RAI 110, Question 16-212², AREVA provided an updated Table 7.5-1 to the staff that included the following requirements for each PAM variable: range, minimum number of channels, duration, safety class, environmental quality, seismic qualification, and Regulatory Guide 1.97 analysis variable type designation. Therefore, the site-specific PAM variable information that supplements U.S. EPR FSAR Table 7.5-1 is being updated to provide the same level of detail.

The Generic Technical Specification Bases, as revised by the U.S. EPR response to RAI 110, Question 16-212², specifies that Technical Specifications (TS) Table 3.3.2-1 shall list all Type A, B, and C variables identified by the site-specific Regulatory Guide 1.97 analyses. Although the meteorological variables identified above supplement U.S. EPR FSAR Table 7.5-1, these variables have been designated as Type E, and will not be included in TS Table 3.3.2-1.

COLA Impact

FSAR Table 3.10-1 is being updated with the addition of the ESWS (UHS) Tower Basin Level Indicators as follows:

Table 3.10-1 - {List of Seismically and Dynamically Qualified Mechanical and Electrical Equipment}

Name Tag (Equipment Description)	Tag Number	Local Area KKS ID (Room Location)	EQ Environment (Note 1)	Radiation Environment Zone (Note 2)	EQ Designated Function (Note 3)	Safety Class (Note 4)	EQ Program Designation (Note 5)
Essential Service Water System (ESWS)							
<u>UHS Tower Basin Level Indicator</u>	<u>30PEB10CL001</u>	<u>31URB01003</u>	<u>M</u>	<u>M</u>	<u>ES PAM SI</u>	<u>S 1E EMC</u>	<u>Y(5) Y(6)</u>
<u>UHS Tower Basin Level Indicator</u>	<u>30PEB20CL001</u>	<u>32URB01003</u>	<u>M</u>	<u>M</u>	<u>ES PAM SI</u>	<u>S 1E EMC</u>	<u>Y(5) Y(6)</u>
<u>UHS Tower Basin Level Indicator</u>	<u>30PEB30CL001</u>	<u>33URB01003</u>	<u>M</u>	<u>M</u>	<u>ES PAM SI</u>	<u>S 1E EMC</u>	<u>Y(5) Y(6)</u>
<u>UHS Tower Basin Level Indicator</u>	<u>30PEB40CL001</u>	<u>34URB01003</u>	<u>M</u>	<u>M</u>	<u>ES PAM SI</u>	<u>S 1E EMC</u>	<u>Y(5) Y(6)</u>

FSAR Table 3.11-1 is being updated with the addition of the ESWS (UHS) Tower Basin Level Indicators as follows:

Table 3.11-1 - {Site-Specific Environmentally Qualified Electrical/I&C Equipment}

Name Tag (Equipment Description)	Tag Number	Local Area KKS ID (Room Location)	EQ Environment (Note 1)	Radiation Environment Zone (Note 2)	EQ Designated Function (Note 3)	Safety Class (Note 4)	EQ Program Designation (Note 5)
Essential Service Water System (ESWS)							
<u>UHS Tower Basin Level Indicator</u>	<u>30PEB10CL001</u>	<u>31URB01003</u>	<u>M</u>	<u>M</u>	<u>ES PAM SI</u>	<u>S 1E EMC</u>	<u>Y(5) Y(6)</u>
<u>UHS Tower Basin Level Indicator</u>	<u>30PEB20CL001</u>	<u>32URB01003</u>	<u>M</u>	<u>M</u>	<u>ES PAM SI</u>	<u>S 1E EMC</u>	<u>Y(5) Y(6)</u>
<u>UHS Tower Basin Level Indicator</u>	<u>30PEB30CL001</u>	<u>33URB01003</u>	<u>M</u>	<u>M</u>	<u>ES PAM SI</u>	<u>S 1E EMC</u>	<u>Y(5) Y(6)</u>
<u>UHS Tower Basin Level Indicator</u>	<u>30PEB40CL001</u>	<u>34URB01003</u>	<u>M</u>	<u>M</u>	<u>ES PAM SI</u>	<u>S 1E EMC</u>	<u>Y(5) Y(6)</u>

FSAR Section 7.5 is being updated as follows:

7.5 INFORMATION SYSTEMS IMPORTANT TO SAFETY

This section of the U.S. EPR FSAR is incorporated by reference {with the following supplements}.

{Site-specific Post-Accident Monitoring Variables are specified in Table 7.5-1. This information supplements U.S. EPR FSAR Table 7.5-1 of the U.S. EPR FSAR is supplemented with the following CCNPP Unit 3 site-specific Post-Accident Monitoring Variables.}

- ◆ ~~ESWS Cooling Tower Basin Level~~
- ◆ ~~Meteorological Monitoring System Wind Speed – 10 meters~~
- ◆ ~~Meteorological Monitoring System Wind Speed – 60 meters~~
- ◆ ~~Meteorological Monitoring System Wind Direction – 10 meters~~
- ◆ ~~Meteorological Monitoring System Wind Direction – 60 meters~~
- ◆ ~~Meteorological Monitoring System Vertical Temperature Difference – between 10 and 60 meters}~~

FSAR Section 7.5 is being updated with the addition of Table 7.5-1 as follows:

Table 7.5-1 – {Initial Inventory of Post-Accident Monitoring Variables}

No.	Variable	Range	Minimum Channels Required	Duration	Safety Class	EQ per IEEE Std. 323-1974	Seismic Qualification	Type					
								A	B	C	D	E	
1	ESWS Cooling Tower Basin Level	9' to 26'	1 per UHS division during operation of the UHS Makeup Water System	27 days	S	No	I	X					
2	Meteorological Monitoring System Wind Speed – 10 meters	0-100 mph	1	30 days	NS	No	NSC						X
3	Meteorological Monitoring System Wind Speed – 60 meters	0-100 mph	1	30 days	NS	No	NSC						X
4	Meteorological Monitoring System Wind Direction – 10 meters	0° to 360°	1	30 days	NS	No	NSC						X
5	Meteorological Monitoring System Wind Direction – 60 meters	0° to 360°	1	30 days	NS	No	NSC						X
6	Meteorological Monitoring System Vertical Temperature Difference – between 10 and 60 meters	-50°C to +50°C	1	30 days	NS	No	NSC						X

COLA Part 4 will be updated as follows:

SITE SPECIFIC CHANGES

{These changes are unique to Calvert Cliffs Nuclear Power Plant Unit 3.

3 LCO 3.3.2 POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

Generic Technical Specifications:

TS Table 3.3.2-1, "Post Accident Monitoring Instrumentation," provides the post accident monitoring (PAM) variables identified by the unit specific Regulatory Guide 1.97 analyses that meet the definition of Type A, B and C variables.

Plant Specific Technical Specifications:

The CCNPP Unit 3 TS Table 3.3.2-1, "Post Accident Monitoring Instrumentation," is revised to provide plant specific information. The following text is inserted:

<u>FUNCTION</u>	<u>REQUIRED DIVISIONS</u>	<u>CONDITION REFERENCED FROM REQUIRED ACTION D.1</u>
<u>19. Essential Service Water System Cooling Tower Basin Level</u>	<u>2</u>	<u>E</u>

Justification:

Adding the PAM variable, "Essential Service Water System Cooling Tower Basin Level," to TS Table 3.3.2-1, "Post Accident Monitoring Instrumentation," ensures proper instrument calibration frequency.

4 BASES 3.3.2 POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

Generic Technical Specifications:

- a. TS Bases 3.3.2, "Post Accident Monitoring Instrumentation," provides the post accident monitoring (PAM) variables identified by the unit specific Regulatory Guide 1.97 analyses that meet the definition of Type A, B and C variables.
- b. TS bases 3.3.2, "Post Accident Monitoring Instrumentation," includes a Reviewer's Note in the Background section that states, "Table 3.3.2-1 provides a list of variables identified by the unit specific Regulatory Guide 1.97 analyses. Table 3.3.2-1 in unit specific Technical Specifications (TS) shall list all Type A, B and C variables identified by the unit specific Regulatory Guide 1.97 analyses, as amended by the NRC's Safety Evaluation Report (SER).

Plant Specific Technical Specifications:

- a. The CCNPP Unit 3 Bases 3.3.2, "Post Accident Monitoring Instrumentation," is revised, in the LCO section, to provide plant specific information. The following text is inserted:

"19. Essential Service Water System (ESWS) Cooling Tower Basin Level

The ESW System is vital for all phases of plant operation and is designed to provide cooling water during normal operation and under accident conditions to ensure safe operation and maintain orderly shutdown of the plant. ESWS Cooling Tower Basin Level is a key parameter used to indicate proper level of cooling water during operation of the Ultimate Heat Sink Makeup System after a DBA event.

There are four ESWS Cooling Tower Basin Levels (1 per UHS train during operation of the UHS Makeup Water System) provided with a range that envelopes 9' to 26'}."

- b. TS Bases 3.3.2, "Post Accident Monitoring Instrumentation," is revised to remove the Reviewer's Note from the Background section.