Mark T. Finley
Senior Vice President, Regulatory Affairs & Engineering

750 East Pratt Street, Suite 1600
Baltimore, Maryland 21202

UniStar
NUCLEAR ENERGY

10 CFR 50.4
10 CFR 52.79

June 20, 2012

UN#12-053

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 349, Liquid Waste Management System,
RAI 350, Gaseous Waste Management System

References:
1) Surinder Arora (NRC) to Paul Infanger (UniStar Nuclear Energy), "CCNPP3 - Final RAI 349 RPAC 6486," dated May 22, 2012

2) Surinder Arora (NRC) to Paul Infanger (UniStar Nuclear Energy), "CCNPP3 - Final RAI 350 RPAC 6487," dated May 22, 2012

3) UniStar Nuclear Energy Letter UN#11-090, from Greg Gibson to Document Control Desk, U.S. NRC, Submittal of Response to RAI 290, Liquid Waste Management System, and RAI 291, Gaseous Waste Management System, dated March 16, 2011

The purpose of this letter is to respond to the two requests for additional information (RAIs) identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated May 22, 2012 (References 1 and 2). RAI 349 addresses the Liquid Waste Management System as discussed in Section 11.2.3.5 of the Final Safety Analysis Report (FSAR), and RAI 350 addresses the Gaseous Waste Management System as discussed in Section 11.3.3.4 of the FSAR, as submitted in the CCNPP Unit 3 COLA Revision 8.

DO96
NRO

Enclosure 1 provides our responses to RAI No. 349, Question 11.02-7 and RAI 350, Question 11.03-4 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.

This response to RAI No. 349, Question 11.02-7 includes a change to FSAR Section 11.2.3.5, "Maximum Release Concentrations" and the response to RAI 350, Question 11.03-4 includes a change to FSAR Table 11.3-2, "Gaseous Pathway Parameters." Both FSAR Section 11.2.3.5 and FSAR Table 11.3-2 had been previously revised as a result of the RAI 290 and RAI 291 response (Reference 3). The changes to FSAR Section 11.2.3.5 and FSAR Table 11.3-2 in the RAI No. 349, Question 11.02-7 and RAI 350, Question 11.03-4 response are being made to be consistent with the intent of the original RAI 290 and RAI 291 response (Reference 3).

Enclosure 2 provides a table of changes to the CCNPP Unit 3 COLA associated with the RAI 349 and RAI 350 responses.

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) 369-1907 or Mr. Wayne A. Massie at (410) 369-1910.

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

Executed on June 20, 2012

Mark T. Finley

Enclosures: 1) Response to NRC Request for Additional Information (RAI) No. 349, Question 11.02-7, Liquid Waste Management System, and RAI No. 350, Question 11.03-4, Gaseous Waste Management System, Calvert Cliffs Nuclear Power Plant, Unit 3

2) Table of Changes to CCNPP Unit 3 COLA Associated with the Response to RAI No. 349 and RAI No. 350, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Laura Quinn-Willingham, NRC Environmental Project Manager, U.S. EPR COL Application
Getachew Tesfaye, NRC Project Manager, U.S. EPR DC Application, (w/o enclosures)
Patricia Holahan, Acting Deputy Regional Administrator, NRC Region II, (w/o enclosures)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2,
David Lew, Deputy Regional Administrator, NRC Region I (w/o enclosures)

Enclosure 1

Response to NRC Request for Additional Information (RAI) No. 349, Question 11.02-7, Liquid Waste Management System, and RAI No. 350, Question 11.03-4, Gaseous Waste Management System, Calvert Cliffs Nuclear Power Plant, Unit 3

RAI No. 349

NRC Question 11.02-7

Supplemental question to the response of RAI 290, Question 11.02-5

In the March 16, 2011 response to RAI 290, Question 11.02-5, the applicant proposed a revision to FSAR, Tier 2, Section 11.2.3.5 describing various adjustments in scaling up coolant concentrations from design basis to expected failed fuel concentrations. A review of FSAR, Tier 2, Revision 8, indicates that one FSAR value is inconsistent with the value presented in the response dated March 16, 2011 (Letter UN#11-090). The value proposed in the March 16, 2011 response is "1.0E-05 uCi/ml." However, the value presented in FSAR Revision 8, Section 11.2.3.5, p.11-7, is instead "1.0E 05 uCi/ml." The applicant is requested to review and correct the inconsistency for the noted concentrations between the proposed RAI response of March 16, 2011 against that given in Revision 8 of the FSAR.

Response

A Licensing Basis Document Change Request (LBDCR) was processed to implement the Combined License Application (COLA) changes associated with the request for additional information (RAI) 290 and RAI 291 responses[1]. The original RAI 290 and RAI 291 LBDCR was written correctly. However, the revised text was not implemented correctly in FSAR Section 11.2.3.5, "Maximum Release Concentrations." A new LBDCR, for the RAI 349 and RAI 350 responses, has been processed to make the required correction to FSAR Section 11.2.3.5. The condition regarding the incorrect processing of the original RAI 290 and RAI 291 LBDCR has been entered into the UniStar Nuclear Energy (UNE) corrective action program for disposition.

The Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 FSAR Section 11.2.3.5, as reflected in COLA Revision 8, is being corrected to reflect the RAI 290 and RAI 291 response[1].

COLA Impact (Excerpted from RAI 290 and RAI 291 response[1])

FSAR Section 11.2.3.5 is being revised as follows:

11.2.3.5 Maximum Release Concentrations

...

Average liquid effluent concentrations for each radionuclide based on design basis conditions (one percent failed fuel fraction) have also been determined and compared to the limiting value for that radionuclide specified in 10 CFR Part 20, Appendix B, Table 2. The expected release concentrations were upwardly adjusted by a multiplication factor that represents the ratio of design basis fuel failure primary coolant activity to expected fuel failure primary coolant activity. (Note: For calculated multiplication factors less than 1, a value of 1 was conservatively used. For primary coolant activities reported by GALE that were less than ~~1.0E-05~~1.0E-05 µCi/ml (and therefore displayed by GALE as zero), a conservative value of 1,000 was used for the multiplication factor.) Table 11.2-8 presents

[1] UniStar Nuclear Energy Letter UN#11-090, from Greg Gibson to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 290, Liquid Waste Management System, and RAI 291, Gaseous Waste Management System, dated October 3, 2011

the results of this comparison. For the annual average radionuclide release concentrations for design basis releases, the sum of the fractions of the effluent concentration limits is 0.21, which is below the allowable value of 1.0.}

RAI No. 350

NRC Question 11.03-4

Supplemental question to the response of RAI 291, Question 11.03-3

In the March 16, 2011 response to RAI 291, Question 11.03-3, the applicant proposed a revision to FSAR, Tier 2, Section 11.3.3.4 and Table 11.3-2 describing the basis of the applied atmospheric dispersion and deposition parameters. The description consists of footnotes (No. 2, 3 and 4) and data from FSAR Tier 2, Sections 2.3.5 and 11.3. A review of FSAR, Tier 2, Revision 8, Table 11.3-2 indicates that table citations, as sources of information, are inconsistent with the information presented in the response of March 16, 2011 (Letter UN#11-090). The following examples are illustrative of such inconsistencies:

1. The proposed revision to FSAR Table 11.3-2 states that the values for atmospheric dispersion parameters are from FSAR Table 11.3-10, while FSAR, Rev. 8, Table 11.3-2 instead states that the values are from FSAR Table 2.3-83. Also, the staff notes that some of the dispersion parameters given in FSAR Table 2.3-83 are different than those presented in FSAR, Rev. 8, Table 11.3-10. Differences were noted for the ENE Sector at 2, 3, 4, and 5 miles; E Sector at 2 miles; WNW Sector at 1 mile; and NW Sector at 1 mile.

2. FSAR Table 11.3-2, Footnotes No. 2, 3 and 4 refer to FSAR Section 2.3.5 tables that have no relevance to the entries in FSAR Table 11.3-2. For example, FSAR Table 2.3-91 is cited as a source of data for atmospheric dispersion parameters (X/Q), but FSAR Table 2.3-91 presents information for atmospheric deposition parameters (D/Q). Similarly, FSAR Table 2.3-90 is cited as a source of data for atmospheric dispersion parameters (X/Q) within 50 miles, but FSAR Table 2.3-90 presents information for atmospheric dispersion parameters (X/Q) for the site boundary, nearest resident, and nearest gardens for all 16 wind-rose sectors.

3. FSAR Table 11.3-2 refers to FSAR Tables 2.3-93 and 2.3-94 as sources of data for atmospheric deposition parameters (D/Q) within 50 miles, but FSAR Table 2.3-93 presents information for atmospheric deposition parameters (D/Q) for the site boundary, nearest resident, and nearest gardens; and FSAR Table 2.3-94 lists wind distances for specific dose receptor locations and wind-rose sector.

> The applicant is requested to review all footnotes and table citations, given above examples, and correct inconsistencies between the proposed RAI response of March 16, 2011 and Revision 8 of the FSAR, Sections 11.3 and 2.3.5.

Response

A Licensing Basis Document Change Request (LBDCR) was processed to implement the Combined License Application (COLA) changes associated with the request for additional information (RAI) 290 and RAI 291 responses[1]. The original RAI 290 and RAI 291 LBDCR provided changes to FSAR Table 11.3-2, "Gaseous Pathway Parameters." However, the Section 2.3 table numbers reflected in the RAI 290 and RAI 291 responses and incorporated into FSAR Table 11.3-2 were subsequently revised during the processing of COLA Revision 8. Therefore, the Section 2.3 table references in the COLA Revision 8 version of FSAR Table 11.3-2, "Gaseous Pathway Parameters," were incorrect. This condition has been entered into the UniStar Nuclear Energy (UNE) corrective action program for disposition. A new LBDCR, for

the RAI 349 and RAI 350 responses, has been processed to correct the FSAR Table 11.3-2 table references as shown in the COLA impact below.

The dispersion parameters given in FSAR Table 2.3-83, "{Normal Effluent Annual Average, Undecayed, Undepleted x/Q Values for Mixed Mode Release Using 242,458 cfm Flow Rate for Grid Receptors}" are lower in some cases as compared to the values provided in FSAR Table 11.3-10, "{Bounding 50-mile Dispersion Factors (sec/m3) for CCNPP Site}." The reason is FSAR Table 11.3-10 contains values which bound the values provided in FSAR Tables 2.3-83, 2.3-88, and 2.3-89.

COLA Impact

FSAR Table 11.3-2 is being updated as follows:

Table 11.3-2 - {Gaseous Pathway Parameters}

Parameter Description	Value
Growing season, fraction of year (April – October)(1)	0.583
Fraction time animals on pasture per year	0.583
Intake from Pasture when on Pasture	1.0
Fraction of the maximum individual's vegetable intake that is from his own garden	0.76
Absolute Humidity, g/m^3	8.4
50-mile Population Distribution	Table 11.3-9
50-mile distribution of normal effluent undecayed/undepleted atmospheric dispersion factors (2)	Table ~~2.3-83~~11.3-10
50-mile distribution of normal effluent decayed/undepleted atmospheric dispersion factors(3)	Table ~~2.3-83~~11.3-10
50-mile distribution of normal effluent decayed/depleted atmospheric dispersion factors(4)	Table ~~2.3-83~~11.3-10
50-mile distribution of normal effluent deposition (D/Q) values	~~Table 2.3-93 – Table 2.3-94~~ Table 2.3-91 and Table 2.3-92
Milk Production within 50 mi (kg/yr)(5)	Table 11.3-11
Meat Production within 50 mi (kg/yr)(5)	Table 11.3-14
Vegetable/Grain Production within 50 mi (kg/yr)(5)	Table 11.3-17

Notes:

1. The growing season is the span of months when the temperature is above freezing for all days during the month. Based on local climatological data, this occurs from April through October. (NOAA, 2002)
2. A bounding set of dispersion factors (see Table ~~2.3-83~~11.3-10) representing the more limiting (i.e., higher) value of the undecayed/undepleted χ/Q (~~Table 2.3-84 and Table 2.3-85~~Table 2.3-83) and gamma χ/Q (~~Table 2.3-90 and Table 2.3-91~~Table 2.3-88 and Table 2.3-89) for each distance and sector is used as a bounding input to the GASPAR II population dose input file for the undecayed/undepleted atmospheric dispersion factors. This approach is conservative as it results in a bounding dose estimate.
3. A bounding set of dispersion factors (see Table ~~2.3-83~~11.3-10) representing the more limiting (i.e., higher) value of the undecayed/undepleted χ/Q (~~Table 2.3-84 and Table 2.3-85~~Table 2.3-83) and gamma χ/Q (~~Table 2.3-90 and Table 2.3-91~~Table 2.3-88 and Table 2.3-89) for each distance and sector is used as a bounding input to the GASPAR II population dose input file for the decayed/undepleted atmospheric dispersion factors. This approach is conservative since no credit is taken for either decay, resulting in a conservative dose estimate.
4. A bounding set of dispersion factors (see Table ~~2.3-83~~11.3-10) representing the more limiting (i.e., higher) value of the undecayed/undepleted χ/Q (~~Table 2.3-84 and Table 2.3-85~~Table 2.3-83) and gamma χ/Q (~~Table 2.3-90 and Table 2.3-91~~Table 2.3-88 and Table 2.3-89) for each distance and sector is used as a bounding input to the GASPAR II population dose input file for the decayed/depleted atmospheric dispersion factors. This approach is conservative since no credit is taken for either decay or depletion, resulting in a conservative dose estimate.
5. Data for 50-mile food and crop production obtained from the U.S. Department of Agriculture statistics for Delaware, Maryland, and Virginia, the states within 50 miles of CCNPP. (USDA, 2002)

Enclosure 2

Table of Changes to CCNPP Unit 3 COLA Associated with The Response to RAI No. 349 and RAI No. 350, Calvert Cliffs Nuclear Power Plant, Unit 3

Table of Changes to CCNPP Unit 3 COLA Associated with Response to RAI No. 349 and RAI 350

Change ID #	Subsection	Type of Change	Description of Change
Part 2 – FSAR			
CC3-12-0125	11.2.3.5	Incorporate COLA markups associated with the RAI 349 Question 11.02-7 response.	CCNPP Unit 3 FSAR Section 11.2.3.5, as reflected in COLA Revision. 8, is being corrected to reflect the RAI 290 and RAI 291 response provided in UNE letter UN#11-090, dated March 16, 2011. The last paragraph in FSAR Section 11.2.3.5, Revision 8, Section 11.2.3.5, provided a value of "1.0E 05 uCi/ml." This value is being revised to be, "1.0E-05 uCi/ml," to reflect the RAI 290 response provided in UNE letter UN#11-090, dated March 16, 2011.
CC3-12-0125	Table 11.3-2	Incorporate COLA markups associated with the RAI 350 Question 11.03-4 response.	CCNPP Unit 3 FSAR Table 11.3-2, as reflected in COLA Revision 8, includes table citations as sources of information, which are inconsistent with the information presented in the RAI 290 and RAI 291 response, dated March 16, 2011. CCNPP Unit 3 FSAR Table 11.3-2, as reflected in COLA Revision 8, is being corrected to reflect the RAI 291 response provided in UNE letter UN#11-090, dated March 16, 2011, and to correct the Section 2.3 table references used in the table.