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10 CFR 50.4
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March 24, 2010

UN#10-079

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. 214, Initial Plant Test Program

Reference: Surinder Arora (NRC) to Robert Poche (UniStar Nuclear Energy), "Final RAI 214
CHPB 4321.doc," email dated February 23, 2010

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 Energy, dated February 23, 2010 (Reference). This RAI addresses the Initial Plant Test Program, as discussed in Section 14.2 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.

The enclosure provides our response to RAI No. 214, Question 14.02-57 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.

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

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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 March 24, 0210

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

Greg Gibson

Enclosure: Response to NRC Request for Additional Information, RAI No. 214, Initial Plant Test Program, Question 14.02-57, 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/WWH/mdf

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Enclosure

**Response to NRC Request for Additional Information,
RAI No. 214, Initial Plant Test Program, Question 14.02-57,
Calvert Cliffs Nuclear Power Plant, Unit 3**

RAI No 214

Question 14.02-57

CCNPP-3 FSAR Tier 2, Rev. 6, Section 14.2.5.3 (Test Expectations), identifies considerations that would be used in determining whether tests could proceed to the next power ascension plateau. For example, the considerations identify plant transients, core anomalies, or plant stability issues that would be reviewed, along with test results, by the Test Review Team (TRT) in determining whether to proceed to the next power level. While it is recognized that such considerations are important in ensuring plant safety, there is a second tier of plant conditions that are equally important but not included in the descriptions. The second tier of plant conditions is associated with radiation safety requirements under 10 CFR Part 20 and Appendix B to Part 20, and Part 50.36a in controlling and monitoring liquid and gaseous effluents under Part 50, Appendix I. Accordingly, the applicant is requested to revise the scope of plant conditions to include test outcomes that would be reviewed by the TRT and identify actions to be taken to avoid violations of NRC radiation protection regulations and license conditions in controlling doses plant workers and members of the public

Response

The CCNPP Unit 3 FSAR will be revised to include test outcomes that would be reviewed by the TRT and actions to be taken to avoid violations of NRC radiation protection regulations and license conditions in controlling doses to plan workers and members of the public.

COLA Impact

FSAR, Section 14.2.5.3 will be revised as follows in a future revision of the COLA:

14.2.5 REVIEW, EVALUATION, AND APPROVAL OF TEST RESULTS

14.2.5.3 Test Expectations

Test results for each phase of the test program are reviewed and verified to be complete (as required) and satisfactory before the next phase of testing is started. Phase I testing on a system is normally not started until all applicable prerequisite tests have been completed, reviewed, and approved. Prior to initial fuel loading and commencement of initial criticality, a comprehensive review of required Phase I tests is conducted by the TRT. This review provides assurance that required plant systems and structures are capable of supporting initial fuel loading and subsequent startup testing.

Phase I testing is completed prior to commencing initial fuel loading. If prerequisite or Phase I tests or portions of such tests cannot be completed prior to commencement of fuel loading, provisions for carryover testing is planned and approved in accordance with site specific administrative procedures.

When carryover testing is required, the {Site Commissioning Manager – Startup, testing, and Commissioning or designee} approves each test and identifies the portions of each test that are delayed until after fuel loading. Technical justifications for delays are documented together with a schedule (power level) for completing each

carryover test. Carryover testing is approved by the TRT as described in section 14.2.5. Documentation for carryover testing is available for NRC review, as required, prior to commencing fuel loading.

Startup testing phases (Phases II, III, and IV) of the test program are subdivided into the following categories:

- ◆ Initial fuel load.
- ◆ Precritical tests.
- ◆ Initial criticality.
- ◆ Low power physics testing.
- ◆ Power ascension testing. This testing phase ends with the completion of testing at $\geq 98\%$ power.

Each subdivision is a prerequisite which must be completed, reviewed, and approved before tests in the next category are started. The TRT membership is increased prior to beginning the low power physics testing phase by adding the {Plant General Manager, Engineering Manager, Operations Manager, and Maintenance Manager} to the TRT. Power ascension tests are scheduled and conducted at pre determined power levels. The power ascension plateaus are as follows:

- ◆ 5%
- ◆ 25%
- ◆ 50%
- ◆ 75%
- ◆ $\geq 98\%$

The TRT shall review the tests performed in the plateau and determine if it is acceptable to proceed to the next plateau. If core anomalies or plant stability issues are present the TRT shall assign a responsible organization to develop bases for proceeding to a higher power level that is reviewed, approved, and entered into the plant records by the TRT prior to increasing reactor power. Results of tests and individual parts of multiple tests conducted at a given plateau are evaluated prior to proceeding to the next level. In tests involving plant transients for which a realistic transient performance analysis has been performed, test results are compared to results of the realistic analysis rather than results of a similar analysis performed using accident analysis assumptions. For those tests which result in a plant transient for which a realistic plant transient performance analysis has been performed, the test results will be compared to the results of the realistic transient analysis to determine if the model should be revised.

The TRT compares measured plant parameters against predicted plant parameters at each plateau to determine if any limits could be exceeded prior to reaching the next plateau. If a review of plant parameters indicates that any regulatory or administrative limits could potentially be exceeded, then testing will be suspended before proceeding to the power level. Appropriate corrective actions will then be implemented and reviewed by the TRT before testing is allowed to continue. Examples of limits for which plant parameters will be monitored are as follows:

- ◆ Radiation Safety Limits (10 CFR Part 20 and Part 50.36a)
- ◆ Liquid and Gaseous Effluents (Part 50 Appendix I)
- ◆ Offsite Release Limits (thermal, chemical, etc.)
- ◆ Grid Stability (voltage, frequency, etc.)

Following completion of testing at 100% of rated power, final test results will be reviewed, evaluated and approved. This is accomplished prior to disbanding the startup organization and normal plant operation.