

## CCNPP3eRAIPEm Resource

---

**From:** Arora, Surinder  
**Sent:** Thursday, April 28, 2011 1:58 PM  
**To:** Robert.Poche@unistarnuclear.com; 'cc3project@constellation.com'  
**Cc:** CCNPP3eRAIPEm Resource; DeMarshall, Joseph; Laura, Richard; Colaccino, Joseph; Hearn, Peter; Wilson, Anthony; Vrahoretis, Susan  
**Subject:** Draft RAI 305 CTSB 5733  
**Attachments:** Draft RAI 305 CTSB 5733.doc

Rob,

Attached is Draft RAI No. 305 (eRAI No. 5733). You have until May 12, 2011 to review it and decide whether you need a clarification phone call to discuss any questions in the RAI before the final issuance. After the phone call or on May 12, 2011, the RAI will be finalized and sent to you for response. You will then have 30 days to provide a technically complete response or an expected response date for the RAI.

Thanks

**SURINDER ARORA, PE**  
**PROJECT MANAGER,**  
**Office of New Reactors**  
**US Nuclear Regulatory Commission**

Phone: 301 415-1421  
FAX: 301 415-6406  
Email: [Surinder.Arora@nrc.gov](mailto:Surinder.Arora@nrc.gov)

**Hearing Identifier:** CalvertCliffs\_Unit3Col\_RAI  
**Email Number:** 113

**Mail Envelope Properties** (B46615B367D1144982B324704E3BCEED6AD0565088)

**Subject:** Draft RAI 305 CTSB 5733  
**Sent Date:** 4/28/2011 1:57:36 PM  
**Received Date:** 4/28/2011 1:57:38 PM  
**From:** Arora, Surinder

**Created By:** Surinder.Arora@nrc.gov

**Recipients:**

"CCNPP3eRAIPEm Resource" <CCNPP3eRAIPEm.Resource@nrc.gov>  
Tracking Status: None  
"DeMarshall, Joseph" <Joseph.DeMarshall@nrc.gov>  
Tracking Status: None  
"Laura, Richard" <Richard.Laura@nrc.gov>  
Tracking Status: None  
"Colaccino, Joseph" <Joseph.Colaccino@nrc.gov>  
Tracking Status: None  
"Hearn, Peter" <Peter.Hearn@nrc.gov>  
Tracking Status: None  
"Wilson, Anthony" <Anthony.Wilson@nrc.gov>  
Tracking Status: None  
"Vrahoretis, Susan" <Susan.Vrahoretis@nrc.gov>  
Tracking Status: None  
"Robert.Poche@unistarnuclear.com" <Robert.Poche@unistarnuclear.com>  
Tracking Status: None  
"cc3project@constellation.com" <cc3project@constellation.com>  
Tracking Status: None

**Post Office:** HQCLSTR01.nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	642	4/28/2011 1:57:38 PM
Draft RAI 305 CTSB 5733.doc		53242

**Options**

**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

Request for Additional Information No. 305 (eRAI 5733)  
DRAFT  
4/28/2011

Calvert Cliffs Unit 3  
UniStar  
Docket No. 52-016  
SRP Section: 16 - Technical Specifications  
Application Section: SRP 16

QUESTIONS for Technical Specification Branch (CTSB)

16-23

This RAI is in response to the applicant's response to follow-up RAI 260, Question 16-22 (RAI 260, Question 16-22 was a follow-up to RAI 190, Question 16-20, which was a follow-up to RAI 95, Questions 16-1 and 16-2).

1. The response to Part B, Section 1.8.2, DEPARTURES, on Page 4 of 32 states that "The Setpoint Control Program (SCP) Administrative Technical Specification (TS) reference in COLA FSAR Section 1.8.2, "Departures," is being retained." The associated markup for Section 1.8.2 was not provided in the response.
2. The "Summary of Departure" discussion on page 28 of 32, states that "Applicable Surveillance Requirements and footnotes are revised to reference the Setpoint Control Program. Numerical setpoints are removed and replaced with a reference to the Setpoint Control Program." This statement is inaccurate. Footnotes that had been previously revised to reference the SCP in Table 3.3.1-2 were deleted in Part C of the response to RAI 190, Question 16-20. In addition, the footnote used to replace the numerical setpoints in the Limiting Trip Setpoint / Design Limit column of Table 3.3.1-2 was also deleted in Part C of the response to RAI 190, Question 16-20.
3. The "Summary of Departure" discussion on pages 28/29 of 32, states that "The TS Bases 3.3.1 are revised to incorporate additional background information and clarify the applicability of the program to specific functions." This statement is inaccurate. All Reactor Trip and Engineered Safety Features setpoints specified in the Protection System TS are subject to the requirements of the SCP identified in Plant Specific Technical Specifications (PTS) 5.5.18, "Setpoint Control Program."
4. The response to Part C, Setpoint Control Program section (Items 1,3,6), on pages 4 through 6, and the associated changes made to the SCP Administrative TS (5.5.18) on pages 15 through 18 (COLA Impact, Part 4, Item 10), do not sufficiently address the staff's concerns regarding the necessary content of the SCP TS, as indicated below:
  - The response to Part C, Item 1, resulted in a significant re-write of step 5.5.18.c and revision to step 5.5.18.d of the proposed SCP TS. Although the referenced changes address the U.S. EPR overall surveillance testing philosophy that CALIBRATION surveillances are only performed at the sensor level (i.e., analog components subject to drift), inaccuracies exist

relative to certain aspects of the program guidance associated with (1) the evaluation and trending of as-found calibration setting values, and (2) as-left calibration setting value calibration specifics.

Regarding the response to Part C, Item 3, the staff questions the applicant's claim that Technical Report ANP-10287P, "Incore Trip Setpoint and Transient Setpoint Methodology For U.S. EPR," provides the methodology used to determine the channel uncertainties for the Low DNBR and HLPD Reactor Trip functions. It appears that (1) ANP-10287P may only provide the methodologies used to determine the analytical limits associated with these functions, and (2) the methodology used to determine the channel uncertainties as described in ANP-10275P-A, "U.S. EPR Instrument Setpoint Methodology Topical Report," may actually be applicable to all functions, including those whose setpoints are cycle specific values (i.e., Table 3.3.1-2 functions A.1.a, A.1.b, A.1.c, A.1.d, A.1.e, A.2, B.11.c, B.11.d, B.12.a, and B.12.b).

Permissive value guidance as described in the response to Part C, Item 6, and the resultant changes made to steps 5.5.18.b and 5.5.18.e of the SCP TS, cannot be utilized. Permissive function setpoints are bracketed values in LCO 3.3.1, Table 3.3.1-2, of the U.S. EPR Design Certification. They are not stated values as originally indicated in RAI 260, Question 16-22, Part C, Item 6, on page 3 of 32.

The staff proposes that the applicant adopt the model specification provided within. It is the staff's position that the model specification satisfies 10 CFR 50.36(c)(1)(ii)(A). In addition, the applicant is requested to (1) determine which report(s) provide NRC approved methodologies for the determination of channel uncertainties and to ensure that only the applicable report(s) are referenced in step 5.5.18.b of the SCP TS, and (2) confirm that the SCP TS, revised to reflect the U.S. EPR overall surveillance testing philosophy that CALIBRATION surveillances are only performed at the sensor level, is fully supported by ANP-10275P-A, "U.S. EPR Instrument Setpoint Methodology Topical Report," which appears to be silent regarding the application of two-sided PTAC, AV, and ALT limits to each of the sensor calibration settings (e.g., the five points checked during CALIBRATION – 0%, 25%, 50%, 75%, and 100% of span).

5. Permissive value guidance as described in the response to Part C, Bases section (Items 1,2) on page 6 of 32, and the resultant changes made to the Bases discussions associated with Surveillance Requirements 3.3.1.4, 3.3.1.6, and 3.3.1.9, in corresponding Items f, g, and h on page 21 of 32, cannot be utilized. Permissive function setpoints are bracketed values in LCO 3.3.1, Table 3.3.1-2, of the U.S. EPR Design Certification. They are not stated values as originally indicated in RAI 260, Question 16-22, Part C, Bases section (Items 1,2), on page 3 of 32. The staff proposes that the applicant revise the Bases text in Items f, g, and h to read as follows:

- f. "In accordance with Specification 5.5.18, the Setpoint Control Program shall establish a document containing the current value of the specified LTSP, NTSP, AV, PTAC, and ALT for each Technical Specification required automatic protection instrumentation function, except for permissive

functions, which only require the NTSP, AV, PTAC, and ALT. The Setpoint Control Program also establishes requirements for the performance of CALIBRATION surveillances.”

- g. “In accordance with Specification 5.5.18, the Setpoint Control Program shall establish a document containing the current value of the specified LTSP, NTSP, AV, PTAC, and ALT for each Technical Specification required automatic protection instrumentation function, except for permissive functions, which only require the NTSP, AV, PTAC, and ALT. The Setpoint Control Program also establishes requirements for the performance of CALIBRATION surveillances.”
  - h. “SR 3.3.1.9 verifies that the Nominal Trip Setpoints are properly loaded into the applicable APUs. In accordance with Specification 5.5.18, the Setpoint Control Program shall establish a document containing the current value of the specified LTSP, NTSP, AV, PTAC, and ALT for each Technical Specification required automatic protection instrumentation function, except for permissive functions, which only require the NTSP, AV, PTAC, and ALT.”
6. The markup for Plant-Specific Technical Specifications, Item c, on page 10 of 32, reads “Verify setpoints are properly loaded in APUs in accordance with TS 5.5.18, “Setpoint Control Program.”” Item c should read “Verify setpoints are properly loaded in APUs in accordance with Specification 5.5.18, “Setpoint Control Program (SCP)””, to ensure consistency with similar changes made to Plant-Specific Technical Specifications, Items a and b, on page 10 of 32.
  7. COLA Impact, Part 4, Generic Changes, Item 1, TS 1.1, DEFINITIONS, on page 8 of 32, addresses bracketed information associated with the Definition for PROTECTION SYSTEM (PS) RESPONSE TIME. The Reviewer’s Note referenced in subpart b under Generic Technical Specifications is being revised in the U.S. EPR Design Certification. In addition, the response did not address the bracketed information and associated Reviewer’s Note in the Bases discussion for the Protection System Response Time Surveillance Requirement (SR 3.3.1.10). The applicant is requested to provide a response that is complete and accurate.
  - 8. COLA Impact, Part 4, Generic Changes, Items 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 15, and 16 are not associated with follow-up RAI 260, Question 16-22, or the CCNPP Unit 3 Instrumentation Technical Specifications).** Therefore, the referenced Items will not be evaluated under RAI 260, Question 16-22.
  9. COLA Impact, Part 4, Site Specific Changes, Item 1, LCO 3.3.2, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION, on page 25 of 32, revises CCNPP Unit 3 TS Table 3.3.2-1, “Post Accident Monitoring Instrumentation,” by adding the PAM variable “Essential Service Water System Cooling Tower Basin Level.” COLA Impact, Part 4, Site Specific Changes, Item 3, BASES 3.3.2, POST ACCIDENT MONITORING (PAM) INSTRUMENTATION, on page 26 of 32, revises CCNPP Unit 3 Bases Section B 3.3.2 by providing a Bases discussion for the PAM variable “Essential Service Water System Cooling Tower Basin Level.” The staff questions inclusion of this site-specific PAM

variable in CCNPP Unit 3 TS Table 3.3.2-1 and associated Bases Section B 3.3.2, as well as its classification as a Type A variable, based on the following:

A 72-hour basin water volume is the minimum water volume that must be present in a basin to accommodate system water inventory losses experienced in the basin due to ultimate heat sink tower operation under the worst case environmental conditions, and with the highest essential service water heat load for a 72-hour period, without incurring pump damage during operation. The applicable modes for PAM instrumentation (Types A, B, and C) in LCO 3.3.2 are Modes 1, 2, and 3. From an operational perspective, would CCNPP Unit 3 be expected to remain in Mode 3 (Hot Standby;  $\geq 350$  °F) following a Design Basis Accident (DBA) event requiring the implementation of EOPs beyond the 72 hour point? In all likelihood, the plant would most likely be in Mode 4 (Hot Shutdown;  $350$  °F >  $T_{avg}$  >  $200$  °F) with plans to transition to Mode 5 (Cold Shutdown;  $\leq 200$  °F) well before expiration of the 72 hour period beyond which the site-specific PAM variable for monitoring the performance of the Ultimate Heat Sink (UHS) in the Calvert PTS would be required.

The applicant is requested to justify the Type A classification for the “Essential Service Water System Cooling Tower Basin Level” PAM variable and its inclusion in CCNPP Unit 3 TS Table 3.3.2-1 and associated Bases Section B 3.3.2.

10. **COLA Impact, Part 4, Site-Specific Changes, Items 2 and 4 are not associated with follow-up RAI 260, Question 16-22, or the CCNPP Unit 3 Instrumentation Technical Specifications.** Therefore, the referenced Items will not be evaluated under RAI 260, Question 16-22.

**Attachment to RAI 305 (eRAI 5733)**

**Example Setpoint Control Program Specification**

(CCNPP Unit 3, Follow up to RAI 260, Question 16-22)

5.5.18 Setpoint Control Program

- a. The Setpoint Control Program (SCP) implements the regulatory requirement of 10 CFR 50.36 (c)(1)(ii)(A) that technical specifications will include items in the category of limiting safety system settings (LSSS), which are settings for automatic protective devices related to those variables having significant safety functions. The LSSS for both SL related and Non-SL related automatic protection instrumentation functions are included in the scope of the Setpoint Control Program.
- b. The Limiting Trip Setpoint (LTSP), Nominal Trip Setpoint (NTSP), Allowable Value (AV), Performance Test Acceptance Criteria (PTAC) and As-Left Tolerance (ALT) for each Technical Specification required automatic protection instrumentation function, except for permissive functions, which only require the NTSP, AV, PTAC, and ALT, shall be calculated in conformance with the instrumentation setpoint methodology previously reviewed and approved by the NRC in ANP-10275P-A, "U.S. EPR Instrument Setpoint Methodology Topical Report," Revision 0, dated February 26, 2008 (ML080590482), and the conditions stated in the associated NRC safety evaluation.
- c. Performance of CALIBRATION surveillances shall include the following:
  1. The as-left calibration setting values shall be the values at which the sensor was set at the completion of the surveillance with no additional adjustment of the sensor. The as-found calibration setting values shall be the values measured during subsequent performance of the surveillance before making any adjustment to the sensor that could change the calibration setting values.
  2. The as-found calibration setting values shall be compared with the previous as-left values or the specified calibration settings (e.g., 0, 25, 50, 75, 100%). If the as-found calibration setting values are compared with the specified calibration settings to meet this requirement, then the following conditions apply:
    - i. the setting tolerance band (i.e., the specified ALT) must be less than or equal to the square root of the sum of the squares of reference accuracy, measurement and test equipment errors, and readability uncertainties;
    - ii. the setting tolerance band (i.e., the specified ALT) must be included in the total loop uncertainty; and
    - iii. the pre-defined test acceptance criteria band (i.e., the specified PTAC) for each as-found calibration setting value must include either the setting tolerance band (the specified ALT) or the uncertainties associated with the setting tolerance band (the specified ALT), but not both of these.

3. If any as-found calibration setting value is outside the two-sided limits of “previous as-left value  $\pm$  PTAC” or “calibration setting  $\pm$  PTAC,” but inside the specified limits of  $\pm$  AV, then the sensor shall be evaluated to verify that it is functioning in accordance with its design basis before declaring the surveillance requirement met and returning the sensor to service. This condition shall be dispositioned by the plant’s corrective action program.
  4. If any as-found calibration setting value is outside the two-sided limits of  $\pm$  AV, then the surveillance requirement is not met and the sensor shall be immediately declared inoperable.
  5. The sensor shall be calibrated such that the as-left calibration setting values are within the specified ALT around the specified calibration settings (e.g., 0, 25, 50, 75, 100%) at the completion of each CALIBRATION surveillance; otherwise, the surveillance requirement is not met and the sensor shall be immediately declared inoperable.
- d. The difference between each as-found calibration setting value and either the previously recorded as-left value or the specified calibration setting (e.g., 0, 25, 50, 75, 100%) for each sensor, shall be trended and evaluated to verify that the sensor is functioning in accordance with its design basis.
  - e. The Setpoint Control Program shall establish a document containing the current value of the specified LTSP, NTSP, AV, PTAC, and ALT for each Technical Specification required automatic protection instrumentation function, except for permissive functions, which only require the NTSP, AV, PTAC, and ALT, a record of changes to those values, and references to the calculation documentation. Changes to this document shall be governed by the regulatory requirements of 10 CFR 50.59. In addition, changes to the specified LTSP, NTSP, AV, PTAC, and ALT values shall be governed by the approved setpoint methodology. This document, including any midcycle revisions or supplements, shall be provided to the NRC upon issuance for the initial cycle and each reload cycle.
  - f. The NTSP value for each Technical Specification required automatic protection instrumentation function shall be verified to be properly loaded into its assigned Acquisition and Processing Unit during the performance of Surveillance Requirement 3.3.1.9.