

## CCNPP3eRAIPEm Resource

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**From:** Arora, Surinder  
**Sent:** Tuesday, August 27, 2013 1:17 PM  
**To:** Massie, Wayne A (wayne.massie@unistarnuclear.com)  
**Cc:** Infanger, Paul (paul.infanger@unistarnuclear.com); Wheeler, Larry; Segala, John; McKenna, Eileen; Hearn, Peter; CCNPP3eRAIPEm Resource  
**Subject:** CCNPP3 - FSAR Section 9.2.5 & CFD Calculations Audit  
**Attachments:** C Cliffs \_audit\_plan.pdf

Wayne/Paul,

As discussed yesterday in our weekly phone call, attached is the Audit Plan to support the NRC's review of FSAR Section 9.2.5 documentation & CFD Calculations. Based on your preference, this audit is scheduled at the Bechtel's Reston office on October 2 and 3, 2013. Please also note that the audit plan lists the minimum documentation the staff would like to review during the audit. However, during the staff's review of the presented material, there is a potential that some additional relevant information/documents may also be identified and requested for review.

Please review the audit plan and let me know if a pre-audit clarification call is needed to discuss any preparatory details.

Thanks.

**SURINDER ARORA, PE**  
**LEAD PROJECT MANAGER,**  
**Calvert Cliffs Unit 3 Project**  
**Office of New Reactors**  
**US Nuclear Regulatory Commission**

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**Hearing Identifier:** CalvertCliffs\_Unit3Col\_RAI  
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**Created By:** Surinder.Arora@nrc.gov

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**AUDIT PLAN  
TO REVIEW SELECTED AREAS RELATED TO  
CALVERT CLIFFS UNIT 3  
CHAPTER 9 and CALCULATIONS**

APPLICANT: UniStar

APPLICANT CONTACT:

TIME: Oct. 1 - 2, 2013

LOCATION: Bechtel Power Corporation  
12021 Sunset Hills Road  
Reston, VA 20190

TECHNICAL REVIEWERS: Larry Wheeler (NRO, Audit Team Leader)  
Tarico Sweat (NRO – reviewer - optional)  
Ryan Nolan (NRO – reviewer)  
Brad Harvey or Mike Mazaika (NRO – reviewer)  
Christopher Boyd (RES- reviewer)  
David Nold or James O’Driscoll (NRO – reviewer - optional)

PROJECT MANAGERS Surinder Arora  
Peter Hearn

## **A. Background**

The staff will be conducting an audit of the Calvert Cliffs Unit 3 COLA, Revision 9, Chapter 9, focusing on balance of plant sections. The focus of this audit is the ultimate heat sink (Section 9.2.5 of the COLA).

To achieve the review goals in an efficient manner, the staff assembled an interdisciplinary audit team consisting of professionals with expertise in all the various systems to be reviewed. The audit team will include staff from the NRC; no contractors will support the audit team. To facilitate and expedite the work, it is foreseen that the audit will be attended by representatives from UniStar who will also introduce the documents available for the staff to review and indicate documents which are classified as proprietary along with the supporting documents and technical evidence to the reviewers. The staff will document the audit issues in an audit report that may result in new supplemental RAIs.

## **B. Regulatory Audit Bases**

The bases for the audit include all documents in Table 2 below, Calvert Cliffs Unit 3 COLA (Revision 9), and all supporting calculations used to ensure compliance with the General Design Criteria (GDC) outlined in the applicable SRP.

## **C. Regulatory Audit Scope or Methodology**

The areas of focus for the audit are the calculations, methodologies, assumptions, and results used to reach conclusions addressed in various previously submitted RAIs. The subjects addressed in these RAIs are listed in Table 2.

## **D. Information and Other Material Necessary for the Regulatory Audit**

Copies of the COLA, Revision 9, should be available as reference materials to the audit members. All calculations, as defined in Table 2, used to develop responses to previous RAIs should be provided; knowledgeable personnel to explain any questions the staff may have about the calculations should be available.

## **E. Team Assignments**

The team leader will be responsible for conducting the audit. Other team members will assist as required.

## **F. Logistics**

The NRC staff will conduct the review over a period of two (2) business days. Any remaining items not discussed at the end of the 2<sup>nd</sup> day will be deferred for future NRC/UNISTAR audits.

Following the audit, each technical reviewer will prepare a separate audit report with specific issues and any proposed new RAIs or supplemental RAIs to existing RAIs and will send the report to the team leader two weeks from the end of the audit date. The team leader will assemble and prepare a final audit report. This final audit report will

contain a section that lists all supplemental RAIs. The final report will be made available to all contributors for their concurrence before issuance.

An agenda for the audit is presented in Table 1. The specific audit scope is identified in Table 2.

If necessary, any circumstances related to conducting the audit should be communicated to Surinder Arora (NRC Project Manager) at 301-415-1421 (surinder.arora@nrc.gov).

### **G. Special Requests**

NRC staff will take lunch outside the audit offices.

### **H. Deliverables**

At the conclusion of the audit, the staff will generate an audit report which will summarize questions raised during the audit and associated UniStar's responses. The report will note any follow-up actions such as new RAIs or supplemental RAIs to existing RAIs. This report will be made available to the NRC project manager within 60 days of the completion of this audit.

The report will be made available for UniStar within 90 days of the last day of the audit.

### **I. References**

NRC/NRO Office Instruction, NRO-REG-108, Revision 0, Regulatory Audits (ML081910260)

**Table 1: Audit Agenda**

<b>Date</b>	<b>Time</b>	<b>Item</b>	<b>Responsible</b>
10/1/13	8:30 am - 9:00 am	Opening remarks, presentation of participants, organizational questions (Entrance)	NRC and DSRA BPTS Branch Chief
	9:00 am – 12:00 pm	Audit of calculations	UniStar/Bechtel
	12:00 pm – 1:00 pm	Lunch Break	NRC off site
	1:00 pm – 4:00 pm	Audit of calculations	UniStar/Bechtel
	4:00 pm – 4:30 pm	Daily summary with applicant	NRC Staff
10/2/13	8:30 am – 12:00 pm	Audit of calculations	UniStar/Bechtel
	12:00 pm – 1:00 pm	Lunch Break	NRC off site
	1:00 pm – 3:30 pm	Audit of calculations	UniStar/Bechtel
	3:30 pm – 4:30 pm	Audit Summary (Exit)*	NRC Staff

\*The exit time may be adjusted if the NRC staff has completed their reviews.

**Table 2: Audit Items**

<b>System</b>	<b>Calculations ##</b>
Ultimate Heat Sink (9.2.5)	<ol style="list-style-type: none"> <li>1. UHS makeup pumps, NPSH, vortex, head, flow velocities</li> <li>2. Calculation that supports COL Item 9.2-6 (highest wet bulb and dry bulb are bounding)</li> <li>3. Calculation that supports COL Item 9.2-7 (Max. cold water return based on max. wet bulb temperature) * see new RAI # below</li> <li>4. Calculation that supports COL Item 9.2-8 (Max. evaporative and drift losses)</li> <li>5. Calculation that supports COL Item 9.2-10 (cooling effects on intakes) – * see new RAI # below</li> <li>6. Calculation that supports COL Item 9.2-11 (confirm Max. cold water return – worst combination wet and dry bulb)</li> <li>7. Velocity calculation through travelling screens</li> <li>8. Calculation that supports site specific changes related to EPR RAI 351 Question 09.02.05-27; changes to the cooling tower basin volume (2 feet lower) and wet bulb recirculation/interference correction factor of 2.5 °F.</li> <li>9. CFD model. This should include documentation that lays out the choices made in the CFD model details or provide the CFD simulation file (with the starccm+ program) for the staff to view.</li> </ol> <p>UniStar RAI 365/6582 (Question 09.02.05-30)            UniStar RAI 287/5324 (Question 09.02.05-19)            EPR RAI 351/4021 (Question 09.02.05-27)</p> <p>*UniStar RAI 398/7198 (Question 09.02.05-32)</p>

**## Minimum calculations to be reviewed by the staff**