

## ArevaEPRDCPEm Resource

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**From:** Tesfaye, Getachew  
**Sent:** Tuesday, April 06, 2010 3:50 PM  
**To:** 'usepr@areva.com'  
**Cc:** Dehmel, Jean-Claude; Roach, Edward; Jennings, Jason; Colaccino, Joseph;  
ArevaEPRDCPEm Resource  
**Subject:** Draft - U.S. EPR Design Certification Application RAI No. 387 (4591), FSAR Ch. 11 PHASE 4  
RAI  
**Attachments:** Draft RAI\_387\_CHPB\_4591.doc

Attached please find draft RAI No. 387 regarding your application for standard design certification of the U.S. EPR. If you have any question or need clarifications regarding this RAI, please let me know as soon as possible, I will have our technical Staff available to discuss them with you.

Please also review the RAI to ensure that we have not inadvertently included proprietary information. If there are any proprietary information, please let me know within the next ten days. If I do not hear from you within the next ten days, I will assume there are none and will make the draft RAI publicly available.

Thanks,  
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**Hearing Identifier:** AREVA\_EPR\_DC\_RAIs  
**Email Number:** 1296

**Mail Envelope Properties** (0A64B42AAA8FD4418CE1EB5240A6FED11165B4EBB8)

**Subject:** Draft - U.S. EPR Design Certification Application RAI No. 387 (4591), FSAR Ch.  
11 PHASE 4 RAI  
**Sent Date:** 4/6/2010 3:49:43 PM  
**Received Date:** 4/6/2010 3:49:44 PM  
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**Post Office:** HQCLSTR02.nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	727	4/6/2010 3:49:44 PM
Draft RAI_387_CHPB_4591.doc		36858

**Options**

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

Draft

Request for Additional Information No. 387(4591), Revision 1

4/6/2010

U. S. EPR Standard Design Certification  
AREVA NP Inc.  
Docket No. 52-020  
SRP Section: 11.02 - Liquid Waste Management System  
Application Section: 11.2

QUESTIONS for Health Physics Branch (CHPB)

11.02-19

Phase 4 RAI

Follow-up to Open Item 273, Supplement 1, Question 11.2-05

In the response dated Nov. 6, 2009, the applicant provides information addressing the staff's concerns about the introduction of aerobic bacteria and chelating and anti-foaming agents in treating wastes and removing encrusted solids in the evaporator. A review of the response indicates that there are no descriptions of design features and discussions of operational steps that would be taken to prevent the inadvertent introduction of chelating and anti-foaming agents into the demineralizer system and prevent the generation of explosive gas mixtures. The applicant is requested to revise the response and FSAR in providing a complete description of essential design and operational features that address the following issues:

- a. Describe conditions that would involve the use of chemical agents that may or may not be expected to be miscible in waste water and describe operational steps that will be applied (such as limiting the amounts or concentration of agents introduced as feed waste water to the evaporator, stratification, decanting, isolation, flushing, venting, etc.) when such chemical agents are used for the removal of encrusted solids or treat waste water. The descriptions should illustrate measures that would be used to prevent the inadvertent introduction of chelating and anti-foaming agents in evaporator distillates that could damage the integrity or performance of demineralizer ion-exchange resins and avoid the accumulation of explosive gas mixtures.
- b. Confirm that the design provides no direct means of pumping chemical agents (as diluted and undiluted mixtures) from the chemical addition system directly to the demineralizer system's ion-exchange columns, and describe provisions that would prevent such occurrences, such as the use of check valves, system interlocks, etc.
- c. Confirm in the design description that the "evaporator sump" is an integral internal component of the evaporator system and not an external feature of its design.

11.02-20

Phase 4 RAI

Follow-up to Open Item 273, Supplement 1, Question 11.2-15

In the response dated Nov. 6, 2009, the applicant provides information addressing the staff's concerns about the inconsistent listing of LWMS components in FSAR Table 11.2-2 given system depictions of FSAR Figures 11.2-1 to 11.2-3. A review of the response indicates that the descriptions of newly added components to FSAR Table 11.2-2 (pages 8 and 9) are incomplete as they not include descriptive parameters and the parameters are left to be supplied by vendors. The applicant is requested to provide this information or specify that this aspect of the design is not part of the design certification, or assign a COL information for these table entries.

For LWMS components used to process waste water and demonstrate compliance with 10 CFR Part 20, Appendix B (Table 2, Col. 2.) effluent concentration limits and 10 CFR Part 50, Appendix I design objectives, Table 11.2-2 should include a footnote that states that LWMS processing components are designed to meet or exceed the listed operating parameters, and equal or exceed the decontamination factors listed in FSAR Table 11.2-3.

A review of FSAR Sections 1.8.1 and 11.2 indicates that the listing of COL information items is incomplete. Regulatory Guide 1.206 (Section C.III.4) addresses COL information that a COL applicant is required to address because of plant and site-specific conditions that cannot be described at the design certification stage. In this context, the staff has determined that the following COL information items should be added to the FSAR. The COL information items are:

1. The COL applicant is responsible for ensuring that offsite liquid effluent discharges and associated doses to members of the public (using plant and site-specific parameters) due to radioactive liquid effluents comply with effluent concentration limits of 10 CFR Part 20, Appendix B (Table 2, Col. 2); dose limits of 10 CFR 20.1301, 20.1302, and 20.1301(e) in unrestricted areas; and design objectives of Sections II.A and II.D of Appendix I to 10 CFR Part 50.
2. The COL applicant will include plant and site-specific information describing how design features and implementation of operating procedures for the LWMS will address the requirements of 10 CFR Part 20.1406(b) and guidance of SRP Section 11.2, Regulatory Guides 4.21 and 1.143, IE Bulletin 80-10, and NEI 08-08 when the LWMS is augmented with the installation and operation of mobile skid-mounted processing systems connected to permanently installed LWMS processing equipment.

11.02-21

Phase 4 RAI

Follow-up to Open Item 299, Question 11.2-16, items a, c, d, f, g, h, and k

In the response dated Nov. 5, 2009, the applicant provides information addressing the staff's concerns about the inconsistent application of parameters used in assumptions and calculations of radioactive source terms and doses. A review of the response

indicates that the discussions do not commit to adding supporting explanations in the corresponding descriptions of FSAR Section 11.2. As addressed by the response, the FSAR still presents the use of parameters in Section 11.2 that are not supported in FSAR Sections 11.1 and 11.2. For example, steam flow rates were increased by a factor of 1.05 in bounding potential increases in process flows, but neither text nor tabulations provide any explanation for the change. Similarly, the use of an 80% capacity factor in deriving the liquid effluent source term is not explained when the U.S. EPR is expected to operate at 92%. The proposed explanatory footnote to FSAR Table 11.2-3 is incomplete as it refers instead to improved fuel performance and not the impact on the source term with the expected higher capacity factor. The applicant is requested to insert in FSAR descriptions and tables the basis for the modified plant parameters identified in RAI 299, Question 11.2-16 (items c, d, f, g, h, and k) that cannot be directly traced to another FSAR description or table. Also, the applicant should revise the proposed footnote addressing the difference between the 80% vs 92% capacity factors. For part of item (a) in RAI 299, Question 11.2-16 that addresses circulating water blowdown and dilution for liquid effluent releases, the applicant is requested to review the applicability of that part of the response to the associated topic and make it consistent with the disposition of related issues identified in RAI 290, Supplement 2, Question 11.05-15, and RAI 301, 11.02-17(2) in describing the liquid effluent flow path from the boundary of the Radwaste Processing Building to the point of environmental discharge given current and future revisions to FSAR Figure 11.5-1, which would show the full discharge path and which process streams contribute to dilution.