## ArevaEPRDCPEm Resource

**From:** WELLS Russell D (AREVA US) [Russell.Wells@areva.com]
**Sent:** Wednesday, December 17, 2008 9:08 AM
**To:** Getachew Tesfaye
**Cc:** John Rycyna; Pederson Ronda M (AREVA US); BENNETT Kathy A (OFR) (AREVA US); DELANO Karen V (AREVA US); SLIVA Dana (EXT)
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 140, FSAR Ch 14
**Attachments:** RAI 140 Response US EPR DC.pdf

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 140 Response US EPR DC.pdf" provides technically correct and complete responses to 2 of the 3 questions.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 140 Questions 14.03-8 and 14.03-9.

The following table indicates the respective pages in the response document, "RAI 140 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

| Question # | Start Page | End Page |
|---|---|---|
| RAI 140 — 14.03-7 | 2 | 2 |
| RAI 140 — 14.03-8 | 3 | 3 |
| RAI 140 — 14.03-9 | 4 | 4 |

A complete answer is not provided for 1 of the 3 questions. The schedule for a technically correct and complete response to these questions is provided below.

| Question # | Response Date |
|---|---|
| RAI 140 — 14.03-7 | February 26, 2009 |

Sincerely,

(Russ Wells on behalf of)
*Ronda Pederson*
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Licensing Manager, U.S. EPR Design Certification
New Plants Deployment
**AREVA NP, Inc.**
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**From:** Getachew Tesfaye [mailto:Getachew.Tesfaye@nrc.gov]
**Sent:** Monday, November 17, 2008 2:39 PM
**To:** ZZ-DL-A-USEPR-DL
**Cc:** Clinton Ashley; Christopher Jackson; Michael Miernicki; Joseph Colaccino; John Rycyna
**Subject:** U.S. EPR Design Certification Application RAI No. 140 (1595), FSARCh. 14

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on November 7, 2008, and on November 17, 2008, you informed us that the RAI is clear and no further clarification is needed. As a result, no change is made to the draft RAI. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

Thanks,
Getachew Tesfaye
Sr. Project Manager
NRO/DNRL/NARP
(301) 415-3361

**Hearing Identifier:** AREVA_EPR_DC_RAIs
**Email Number:** 58

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**From:** WELLS Russell D (AREVA US)

**Created By:** Russell.Wells@areva.com

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| **Files** | **Size** | **Date & Time** |
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**Response to**

**Request for Additional Information No. 140 (1595), Revision 0**

**11/17/2008**

**U. S. EPR Standard Design Certification**
**AREVA NP Inc.**
**Docket No. 52-020**
**SRP Section: 14.03 - Inspections, Tests, Analyses, and Acceptance Criteria**
**Application Section: FSAR 14.3**

**QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)**

**Question 14.03-7:**

A key design feature of long term core cooling is the debris source term evaluated in FSAR Section 6.3 and its impact on NPSH. No ITAAC exists to verify the debris source term. Therefore, develop ITAAC to inspect containment materials to ensure as-built is consistent with as analyzed/tested for long term core cooling capability or justify why no ITAAC is required. Specifically address debris source term that was evaluated, including material types, sizes, and quantities, to ensure only analyzed/tested materials are installed and quantities and sizes installed are bounded by the evaluation.

**Response to Question 14.03-7:**

A response to this question will be provided by February 26, 2009.

**Question 14.03-8:**

ITAAC guidance provided in SRP 14.3 indicates that filters (e.g. strainers) required for a safety function are in the design description. FSAR Tier 1, Table 2.2.2-1 describes a trash rack, retaining basket, and sump strainer functioning as filtering devices or debris retaining devices. However, only the suction strainer has ITAAC. Therefore, develop ITAAC to inspect the trash racks and the retaining baskets serving as debris retaining devices listed in FSAR Tier 1, Table 2.2.2-1. Acceptance criteria to ensure as-built is consistent with as analyzed/tested filtering characteristics, should verify maximum mesh or grid opening size, minimum surface area, bypass flow, and include other special features that are used to provide protection such as curbs (weirs).

**Response to Question 14.03-8:**

U.S. EPR FSAR Tier 1, Section 2.2.2 will be revised to include the retaining baskets, trash racks, and weirs.

**FSAR Impact:**

U.S. EPR FSAR, Tier 1, Section 2.2.2 will be revised as described in the response and indicated on the enclosed markup.

**Question 14.03-9:**

ITAAC guidance provided in SRP 14.3 indicates that filters required for a safety function are in the design description. FSAR Tier 2, Table 14.3-6, Item 6-9 lists each suction inlet line as having a debris screen (sump strainer). FSAR Tier 1, Table 2.2.2-1 describes the sump strainer functioning as a filtering device. ITAAC acceptance criteria in FSAR Tier 1, Table 2.2.2-3, Item 7.5, verifies that the screen exists. No performance criteria is provided. To ensure as-built is consistent with as analyzed/tested filtering characteristics, in addition to verifying the debris screen exists, propose revisions to Acceptance Criteria to verify it exists and is consistent with the design characteristics such as the maximum mesh opening size, minimum surface area, and other special features that are used to provide protection such as curbs (weirs) or justify how the current Acceptance Criteria meets requirements.

**Response to Question 14.03-9:**

U.S. EPR FSAR Tier 1, Section 2.2.2 will be revised to include sump strainer performance criteria.

**FSAR Impact:**

U.S. EPR FSAR, Tier 1, Section 2.2.2 will be revised as described in the response and indicated on the enclosed markup.

# U.S. EPR Final Safety Analysis Report Markups

## 4.0 Instrumentation and Controls (I&C) Design Features, Displays, and Controls

4.1 Displays listed in Table 2.2.2-2—IRWSTS Equipment I&C and Electrical Design are retrievable in the main control room (MCR) and the remote shutdown station (RSS) as listed in Table 2.2.2-2.

4.2 The IRWSTS equipment controls are provided in the MCR and the RSS as listed in Table 2.2.2-2.

4.3 ~~Actuators~~ Equipment listed as being controlled by a priority and actuat~~i~~on~~r~~ ~~and~~ control system (PACS) module in Table 2.2.2-2 responds to the state requested by a test signal~~are controlled by a PACS module~~.

## 5.0 Electrical Power Design Features

5.1 The components designated as Class 1E in Table 2.2.2-2 are powered from the Class 1E division as listed in Table 2.2.2-2 in a normal or alternate feed condition.

5.2 Valves listed in Table 2.2.2-2 fail as-is on loss of power.

## 6.0 Environmental Qualifications

6.1 Equipment listed in Table 2.2.2 -2 for harsh environment can perform the function in Table 2.2.2-1 following exposure to the design basis environments for the time required.

## 7.0 Equipment and System Performance

7.1 Class 1E valves listed in Table 2.2.2-2 can perform the function listed in Table 2.2.2-1 under system design conditions.

7.2 Containment isolation valves listed in Table 2.2.2-1 close within the containment isolation response time following initiation of a containment isolation signal.

7.3 The IRWST provides a required water volume.

7.4 Post-LOCA pH control is provided for the IRWST with trisodium phosphate (TSP).

7.5 The IRWST suction inlet line for each safety injection system division has a debris screen.

14.03-8 & 14.03-9

7.6 The IRWST supplies water to the safety injection system (SIS) and to the SAHRS.

7.7 The IRWST provides water to flood the spreading area.

7.8 The IRWST has a retaining basket located directly below each heavy floor opening.

7.9 The IRWST has a trash rack located over each heavy floor opening.

7.10 The IRWST has a weir located around each trash rack at the heavy floor opening.

7.11 The IRWST has a weir located at the annular space wall openings.

**Table 2.2.2-3—IRWSTS Inspections, Tests, Analyses, and Acceptance Criteria (~~5~~ 6 Sheets)**

| Commitment Wording | | Inspection, Test or Analysis | Acceptance Criteria |
|---|---|---|---|
| 7.2 | Containment isolation valves listed in Table 2.2.2-1 close within the containment isolation response time following initiation of a containment isolation signal. | Tests will be performed to demonstrate the ability of the containment isolation valves listed in Table 2.2.2-1 to close within the containment isolation response time following initiation of a containment isolation signal. | The containment isolation valves listed in Table 2.2.2-1 close within the required times following initiation of a containment isolation signal:<br>30JNK10 AA009 ≤ 30 seconds<br>30JNK10 AA013 ≤ 30 seconds<br>30JNK11 AA009 ≤ 60 seconds |
| 7.3 | The IRWST provides a required water volume. | An inspection will be performed of the IRWST required water volume. | The IRWST provides the following required minimum water volume: 66,886 $ft^3$. |
| 7.4 | Post-LOCA pH control is provided for the IRWST with TSP. | An inspection and analysis will be performed of the post LOCA pH control for the IRWST with TSP. | The following quantity of TSP exists for the IRWST to provide a post-LOCA pH control > 7:<br>≥ 12,200 $lb_m$ TSP. |
| 7.5 | The IRWST suction inlet line for each safety injection system division has a debris screen.<br>14.03-8 & 14.03-9 | a. An inspection will be performed for the existence of a debris screen in the IRWST suction inlet line for each safety injection system division.<br>b. An inspection will be performed to verify the minimum surface area and maximum mesh grid opening of the debris screen. | a. A debris screen exists in the IRWST suction inlet line for each safety injection system division.<br>b. The debris screen has a minimum surface area of 753 $ft^2$ and the screen mesh is a maximum grid opening of 0.08 x 0.08 inches. |
| 7.6 | The IRWST supplies water to the safety injection system and to the severe accident heat removal system. | An inspection will be performed of the IRWST to supply water to the safety injection system and severe accident heat removal system. | The IRWST supplies water to the safety injection system and the severe accident heat removal system. |
| 7.7 | The IRWST provides water to flood the spreading area. | An inspection will be performed of the IRWST to provide water to flood the spreading area. | The IRWST provides water to flood the spreading area. |

**Table 2.2.2-3—IRWSTS Inspections, Tests, Analyses, and Acceptance Criteria (~~5~~ 6 Sheets)**

| Commitment Wording | | Inspection, Test or Analysis | Acceptance Criteria |
|---|---|---|---|
| 7.8 | The IRWST has a retaining basket located directly below each heavy floor opening. | a. An inspection will be performed for the existence of a retaining basket in the IRWST directly under each heavy floor opening.<br><br>b. An inspection will be performed to verify the minimum surface area and maximum mesh grid opening of the retaining basket. | a. A retaining basket exists in the IRWST directly below each heavy floor opening.<br><br>b. The retaining basket has a minimum surface area of 721 ft2 and a maximum grid opening of 0.08 x 0.08 inches. |
| 7.9 | The IRWST has a trash rack located over each heavy floor opening. | a. An inspection will be performed for the existence of a trash rack over each heavy floor opening.<br><br>b. An inspection will be performed to verify the maximum grid opening of the trash rack. | a. A trash rack exists over each heavy floor opening to the IRWST.<br><br>b. The trash rack has a maximum grid opening of 4 x 4 inches. |
| 7.10 | The IRWST has a weir located around each trash rack at the heavy floor opening. | a. An inspection will be performed for the existence of a weir around each trash rack at the heavy floor opening<br><br>b. An inspection will be performed to verify the height of the weir around each trash rack at the heavy floor opening. | a. A weir exists around each trash rack at the heavy floor opening.<br><br>b. The weir has a minimum height of 2 inches. |
| 7.11 | The IRWST has a weir located at the annular space wall openings. | a. An inspection will be performed for the existence of a weir at the annular space wall openings.<br><br>b. An inspection will be performed to verify the height of the weir at the annular space wall openings. | a. A weir exists at the annular space wall opening.<br><br>b. The weir has a minimum height of 4 inches. |

14.03-8 & 14.03-9