ArevaEPRDCPEm Resource

From: WELLS Russell D (AREVA US) [Russell.Wells@areva.com]
Sent: Tuesday, December 16, 2008 5:08 PM
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. 105, FSAR Ch 11, Supplement 1
Attachments: RAI 105 Supplement 1 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. provided responses to 10 of the 11 questions of RAI No. 105 on December 5, 2008. The attached file, "RAI 105 Supplement 1 Response US EPR DC.pdf" provides a technically correct and complete response to the remaining question, as committed.

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 105 Question11.02-3.

The following table indicates the respective pages in the response document, "RAI 105 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 105 — 11.02-3	2	3

This concludes the formal AREVA NP response to RAI 105, and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

(Russ Wells on behalf of)
Ronda Pederson
ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
New Plants Deployment
AREVA NP, Inc.
An AREVA and Siemens company
3315 Old Forest Road
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Phone: 434-832-3694
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From: DUNCAN Leslie E (AREVA NP INC)
Sent: Friday, December 05, 2008 6:56 PM
To: 'Getachew Tesfaye'
Cc: 'John Rycyna'; Pederson Ronda M (AREVA US); BENNETT Kathy A (OFR) (AREVA US); DELANO Karen V (AREVA US)
Subject: Response to U.S. EPR Design Certification Application RAI No. 105, FSAR Ch. 11

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 105 Response US EPR DC.pdf" provides technically correct and complete responses to 10 of the 11 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 105 Questions 11.03-1, 11.03-2, 11.04-1, 11.04-2, and 11.04-4.

The following table indicates the respective pages in the response document, "RAI 105 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 105 — 11.01-4	2	3
RAI 105 — 11.02-1	4	4
RAI 105 — 11.02-2	5	6
RAI 105 — 11.02-3	7	7
RAI 105 — 11.03-1	8	14
RAI 105 — 11.03-2	15	15
RAI 105 — 11.03-3	16	17
RAI 105 — 11.04-1	18	18
RAI 105 — 11.04-2	19	19
RAI 105 — 11.04-3	20	21
RAI 105 — 11.04-4	22	22

A complete answer is not provided for one of the 11 questions. The schedule for a technically correct and complete response to this question is provided below.

Question #	Response Date
RAI 105 — 11.02-3	December 19, 2008

Sincerely,

(Les Duncan on behalf of)

Ronda Pederson
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From: Getachew Tesfaye [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Wednesday, November 05, 2008 3:25 PM
To: ZZ-DL-A-USEPR-DL

Cc: George Cicotte; Timothy Frye; Joshua Wilson; Stephen Campbell; Surinder Arora; Joseph Colaccino; John Rycyna
Subject: U.S. EPR Design Certification Application RAI No. 105 (1243, 1378,1246, 1379, 1380), FSAR Ch. 11

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on October 20, 2008, and discussed with your staff on November 4, 2008. Draft RAI Questions 11.03-2, 11.04-1, and 11.04-3 were modified as a result of that discussion. 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: 57

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Subject: Response to U.S. EPR Design Certification Application RAI No. 105, FSAR Ch 11, Supplement 1
Sent Date: 12/16/2008 5:07:38 PM
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From: WELLS Russell D (AREVA US)

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MESSAGE	4431	12/16/2008 5:07:44 PM
RAI 105 Supplement 1 Response US EPR DC.pdf	125384	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
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Response to

Request for Additional Information No. 105, Supplement 1

11/05/2008

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 11.01 - Source Terms
SRP Section: 11.02 - Liquid Waste Management System
SRP Section: 11.03 - Gaseous Waste Management System
SRP Section: 11.04 - Solid Waste Management System
Application Section: FSAR Ch 11

QUESTIONS for Health Physics Branch (CHPB)
QUESTIONS for Balance of Plant Branch 2 (ESBWR/ABWR) (SBPB)

Question 11.02-3:

RG 1.143 Regulatory Position 1.2.1 specifies that all tanks should have provisions to monitor tank levels. Designated high liquid level conditions should actuate alarms both locally and in the control room. This information was not found in Section 11.2 of the application. Verify in FSAR Section 11.2 that all tanks have the proper Instrumentation based on the guidance in RG 1.143.

Response to Question 11.02-3:

Tank level instrumentation is provided to detect and control spills of radioactive liquids and to warn of tank overflows. Design features provided for liquid radwaste system tanks (storage tanks, monitoring tanks, and concentrate tanks) outside containment for overflow protection will be listed in a new table, U.S. EPR FSAR Tier 2, Table 11.2-12. The information in this table is appended to this response (see Table 11.02-3-1).

In the event of a tank overflow, the radioactivity resulting from the spill is confined within the Radioactive Waste Processing Building (RWB), which has sealed floors and drains. The Radioactive Waste Processing Building is also equipped with an extensive floor drain system as a part of the nuclear island drain/vent system (NIDVS), described in U.S. EPR FSAR Tier 2, Section 9.3.3. The floor drain system is routed to the liquid waste storage system for treatment.

Additional text will be added to U.S. EPR FSAR Tier 2, Section 11.2.2 to describe the instrumentation and associated alarms to monitor the tank levels, as follows:

11.2.2.6 Instrumentation Design

Instrumentation readout is available in the main control room (MCR) and on a local control panel for major components. Instrumentation display for other components is available on a local control panel.

Releases to the environment are monitored using radiation sensors and flow sensors to limit and control offsite releases. See Section 11.2.1.2.3 for a description of this instrumentation.

In accordance with the guidelines of RG 1.143, each tank has level instrumentation that actuates an alarm on detection of high liquid levels, allowing action to be taken to divert the flow to a backup tank to avoid a tank overflow. A summary of the tank level indication and associated alarms is provided in Table 11.2-12.

Table 11.02-3-1—Liquid Waste Storage System Tank Level Indication, Alarms, and Overflows

Tank	Level Indication Location	Alarm Location	Alarm	Overflow To
Liquid Waste Storage Tank	MCR Local Control Panel	MCR Local Control Panel	High	(1) Primary – Redundant storage tank in series. (2) Secondary - Room drains, which are pumped to waste storage tanks
Monitoring Tank	MCR Local Control Panel	MCR Local Control Panel	High	(1) Primary – Redundant monitoring tank in series. (2) Secondary - Room drains, which are pumped to waste storage tanks
Concentrate Tank	MCR Local Control Panel	MCR Local Control Panel	High	(1) Primary – Redundant concentrate tank in series. (2) Secondary - Room drains, which are pumped to waste storage tanks

FSAR Impact:

U.S. EPR FSAR Tier 2, Section 11.2.2 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

11.02-3

- Demineralizer resin bed load capacity.

11.2.2.6 Instrumentation Design

Instrumentation readout is available in the main control room (MCR) and on a local control panel for major components. Instrumentation display for other components is available on a local control panel.

Releases to the environment are monitored using radiation sensors and flow sensors to limit and control offsite releases. See Section 11.2.1.2.3 for a description of this instrumentation.

In accordance with the guidelines of RG 1.143, each tank has level instrumentation that actuates an alarm on detection of high liquid level, allowing action to be taken to divert the flow to a backup tank to avoid a tank overflow. A summary of the tank level indication and associated alarms is provided in Table 11.2-12.

11.2.3 Radioactive Effluent Releases

For the U.S. EPR, releases of radioactive effluent via the liquid pathway only occurs by discharges from the monitoring tanks in the liquid waste storage system. Most of the activity carried into the liquid waste storage and processing systems is removed from the waste stream by a combination of chemical treatments, evaporation, inertial separation, and demineralization and filtration. These treatments may be performed repeatedly, with continuing concentration and chemical treatment cycles, until the wastewater meets release limits. Contaminants removed from the wastewater are transferred to the solid waste management system (see Section 11.4).

Treated wastewater held in the monitoring tanks must be sampled and analyzed in the laboratory before its release can be authorized. The laboratory analysis confirms that the activity of the wastewater in the monitoring tanks is within release limits. Once the laboratory results have been reviewed and confirmed to be within release limits, release is authorized. During the release, two radiation sensors in the activity-measurement tank and two flow sensors downstream of the tank continually monitor and record the discharge. If the sensors detect activity or an activity release rate in excess of release limits, or if a significant discrepancy exists between the two activity measurements or the two flow measurements, the sensors signal automatic valve closure, which terminates the release.

11.2.3.1 Discharge Requirements

Discharge requirements consist of liquid radioactive waste activity, flow monitor alarm settings, and automatic isolation settings. These requirements are established for each batch of monitoring tank treated wastewater to meet the ALARA design objectives.

Table 11.2-11—Liquid Waste Management Cost-Benefit Analysis

Calculation	Whole Body Dose	Thyroid Dose
Annual dose reduction to the population within 50 miles of site due to addition of a waste demineralizer subsystem	0.06 person-rem	0.46 person-rem
Nominal dose over 60 years of operation	3.6 person-rem	27.6 person-rem
Obtainable benefit from addition of radwaste processing and control option	$7200	$55,200
Total cost over 60 years of operation (direct cost + O&M×60 years)	$446,000	$446,000
Benefit/Cost Ratio (values greater than 1.0 should be included in plant system design)	0.016	0.12

Table 11.2-12—Liquid Waste Storage System Tank Level Indication, Alarms, and Overflows

Tank	Level Indication Location	Alarm Location	Alarm	Overflow To
Liquid Waste Storage Tank	MCR Local Control Panel	MCR Local Control Panel	High	(1) Primary – Redundant storage tank in series (2) Secondary – Room drains, which are pumped to waste storage tanks.
Monitoring Tank	MCR Local Control Panel	MCR Local Control Panel	High	(1) Primary – Redundant monitoring tank in series. (2) Secondary – Room drains, which are pumped to waste storage tanks.
Concentrate Tank	MCR Local Control Panel	MCR Local Control Panel	High	(1) Primary – Redundant concentrate tank in series. (2) Secondary – Room drains, which are pumped to waste storage tanks.

11.02-3