## ArevaEPRDCPEm Resource

**From:** BRYAN Martin (EXTERNAL AREVA) [Martin.Bryan.ext@areva.com]
**Sent:** Tuesday, August 03, 2010 11:11 AM
**To:** Tesfaye, Getachew
**Cc:** Hearn, Peter; KOWALSKI David (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA)
**Subject:** FW: DRAFT RESPONSES FOR FSAR Chapter 9 Weekly NRC Telecon
**Attachments:** Blank Bkgrd.gif; DRAFT RESPONSE RAI 361 Q.09.02.02-103.pdf

Additional draft response to be reviewed today if the staff has time to review.

Martin (Marty) C. Bryan
U.S. EPR Design Certification Licensing Manager
AREVA NP Inc.
Tel: (434) 832-3016
702 561-3528 cell
Martin.Bryan.ext@areva.com

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**From:** KOWALSKI David (RS/NB)
**Sent:** Tuesday, August 03, 2010 11:08 AM
**To:** BRYAN Martin (EXT)
**Cc:** BALLARD Bob (EP/PE); CONNELL Kevin J (AREVA NP INC); HUDDLESTON Stephen (EP/PE); EDWARDS Harold (EP/PE); GARDNER Darrell (RS/NB); SLOAN Sandra (RS/NB); MCINTYRE Brian (RS/NB)
**Subject:** DRAFT RESPONSES FOR FSAR Chapter 9 Weekly NRC Telecon

Marty:

Please transmit to Getachew Tesfaye the attached partial set of DRAFT responses to RAI 361 questions. If the NRC reviewers have enough time to review these responses, they can be discussed at today's (8/3/10) FSAR Chapter 9 Weekly Telecon/GoToMeeting with the NRC, or can be scheduled for a future telecon.

Attached are the following DRAFT responses:

- Response to RAI 361 - Question 09.02.02-103.

Note that these DRAFT responses have not been through the final Licensing review/approval process; nor do they reflect technical editing.

Please call me if you have any questions. Thanks.

***David J. Kowalski, P.E.***
Principal Engineer
New Plants Regulatory Affairs

**AREVA NP Inc.**
An AREVA and Siemens company

7207 IBM Drive, Mail Code CLT-2A
Charlotte, NC 28262
Phone: 704-805-2590
Mobile: 704-293-3346

Fax: 704-805-2675
Email: David.Kowalski@areva.com

**Hearing Identifier:** AREVA_EPR_DC_RAIs
**Email Number:** 1771

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**From:** BRYAN Martin (EXTERNAL AREVA)

**Created By:** Martin.Bryan.ext@areva.com

**Recipients:**
"Hearn, Peter" <Peter.Hearn@nrc.gov>
Tracking Status: None
"KOWALSKI David (AREVA)" <David.Kowalski@areva.com>
Tracking Status: None
"ROMINE Judy (AREVA)" <Judy.Romine@areva.com>
Tracking Status: None
"RYAN Tom (AREVA)" <Tom.Ryan@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

**Post Office:** AUSLYNCMX02.adom.ad.corp

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Response to

Request for Additional Information No. 361, Supplement 1

3/04/2010

U.S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 09.02.02 - Reactor Auxiliary Cooling Water Systems
Application Section: 09.02.08

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

**Question 09.02.02-103:**

**Follow-up to RAI 174, Question 09.02.02-53**

The safety chilled water system (SCWS) must be capable of removing heat from structures, systems and components (SSCs) important to safety during normal operating and accident conditions over the life of the plant in accordance with general design criteria (GDC) 44 requirements. Based on the staff's review of the applicant's response to RAI 174, Question 9.2.2-53, Supplement 5 and information provided in the associated markup of the Final Safety Analysis Report (FSAR), Section 9.2.8, "Safety Chilled Water System" the staff found a significant design change to the system. The safety chilled water system (SCWS) design now utilizes "cross-ties" between Trains 1 and 2 and between Trains 3 and 4, instead of the independent four-train system structure utilized in the original design. In Final Safety Analysis Report (FSAR) section 9.2.8.3.2, the applicant states "At or before the end of 24 hours post DBA, the cross-tie isolation valves are manually isolated to protect against a passive failure." The staff requests the applicant address the basis for the 24-hour period and the tracking or controlling of this time post accident (i.e. valve timing logic, COL applicant action item for procedures, etc.)

**Response to Question 09.02.02-103:**

The basis for the 24-hour period is the limiting single failures indicated in U.S. EPR FSAR Tier 2, Section 15.0.0.3.8. The 24-hour period is not a licensing or design requirement.

Unless there is a failure that affects SCWS, post-LOCA operator action is dependent upon the condition of the RCS and ECCS; not on the condition of the SCWS.

The sentence describing the 24-hour period will be deleted from the FSAR.

**FSAR Impact:**

U.S. EPR FSAR Tier 2, Section 9.2.8.3.2 will be changed as described in the response and indicated in the attached markup.

Nitrogen pressurized expansion tank confirms system high points are retained at positive pressure.

A manually operated make up demineralized water supply is used when water loss resulting from operational measures (e.g., venting and draining) is indicated by an expansion tank pressure instrument.

The SCWS is treated with hydrazine in low concentration for corrosion control. Monitoring of the water chemistry is provided by means of local sampling ~~at the central chilled water station~~.

### 9.2.8.3.2 Abnormal Operation

~~In the event of a DBA, with one SCWS safety-related train down for maintenance, and in case of failure of a second SCWS safety-related train (e.g., refrigeration units or pumps), the back up is provided by the two remaining SCWS 100 percent trains of the corresponding divisions.~~In the event of a DBA with concurrent loss of offsite power (LOOP) the operating train of a divisional pair receives a "Start" signal to return the operating train to operation after load shed. If an active single failure occurs (assume either the EDG fails to start or the SCW train pump or chiller does not re-start), then the standby train receives a "Start" signal. This sequence confirms that one train of a divisional pair is operating. ~~At or before the end of 24 hours post DBA, the cross-tie~~ isolation valves are manually isolated to protect against a passive failure. Delete

The SCWS is powered from the emergency diesel generators (EDG) and continues to function during a DBA. Divisions 1 and 4 of the SCWS provide a heat sink to ~~Division 1 and 4~~ system users and HVAC systems in the event of a severe accident or station blackout (SBO). Divisions 1 and 4 are powered from motor control centers that are re-powered by the station blackout diesels during an SBO event.

Under seismic or post-accident conditions, when demineralized water may be unavailable for SCWS makeup, a manual connection to the fire water distribution system is available to provide a seismic makeup source within a time frame consistent with the SCWS expansion tank capacity to accommodate expected out-leakage from the system for seven days.

A mechanical or electrical failure of the running SCWS pump results in a transfer to the standby pump.

Each refrigeration chiller in the four divisions of the SCWS has three 50 percent capacity compressors to provide sufficient operating redundancy and flexibility in the event of a compressor failure. The two remaining chiller compressors provide 100 percent capacity.





Revised IAW RAI 361, Q 09.02.02-103