ArevaEPRDCPEm Resource

From: BRYAN Martin (EXT) [Martin.Bryan.ext@areva.com]
Sent: Thursday, June 24, 2010 9:30 AM
To: Tesfaye, Getachew
Cc: Hearn, Peter; KOWALSKI David J (AREVA NP INC)
Subject: FW: DRAFT RESPONSE FOR FSAR Chapter 9 Weekly NRC Telecon
Attachments: Blank Bkgrd.gif; DRAFT RESPONSE RAI 417 Q.09.02.02-116.pdf

Importance: High

Draft responses to discuss today.

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

From: KOWALSKI David J (AREVA NP INC)
Sent: Thursday, June 24, 2010 8:43 AM
To: BRYAN Martin (EXT)
Cc: GARDNER George Darrell (AREVA NP INC); BALLARD Robert W (AREVA NP INC); CONNELL Kevin J (AREVA NP INC); HUDDLESTON Stephen C (AREVA NP INC); BROUGHTON JR Ronnie T (AREVA NP INC); SLOAN Sandra M (AREVA NP INC); MCINTYRE Brian (AREVA NP INC)
Subject: FW: DRAFT RESPONSE FOR FSAR Chapter 9 Weekly NRC Telecon
Importance: High

Marty:

Please transmit to Getachew Tesfaye the attached partial set of DRAFT responses to RAI 417 questions. This response will be discussed at today's (6/24/10) FSAR Chapter 9 Weekly Telecon/GoToMeeting with the NRC.

Attached is the following DRAFT response:

- Response to RAI 417 - Question 09.02.02-116. This response has been revised to reflect NRC comments received during the 6/22/10 meeting.

Note that this DRAFT response has not been through the final Licensing review/approval process; nor does it 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

From: KOWALSKI David J (AREVA NP INC)
Sent: Thursday, June 24, 2010 7:48 AM
To: BRYAN Martin (EXT)
Cc: GARDNER George Darrell (AREVA NP INC); BALLARD Robert W (AREVA NP INC); CONNELL Kevin J (AREVA NP INC); HUDDLESTON Stephen C (AREVA NP INC); GHALI David (AREVA NP INC); SLOAN Sandra M (AREVA NP INC); MCINTYRE Brian (AREVA NP INC)
Subject: DRAFT RESPONSE FOR FSAR Chapter 9 Weekly NRC Telecon
Importance: High

Marty:

Please transmit to Getachew Tesfaye the attached partial set of DRAFT responses to RAI 390 questions. This response will be discussed at today's (6/24/10) FSAR Chapter 9 Weekly Telecon/GoToMeeting with the NRC.

Attached is the following DRAFT response:

- Response to RAI 390 - Question 09.02.02-106.

Note that this DRAFT response has not been through the final Licensing review/approval process; nor does it 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: 1595

Mail Envelope Properties (BC417D9255991046A37DD56CF597DB7106A48BEF)

Subject: FW: DRAFT RESPONSE FOR FSAR Chapter 9 Weekly NRC Telecon
Sent Date: 6/24/2010 9:29:32 AM
Received Date: 6/24/2010 9:29:51 AM
From: BRYAN Martin (EXT)

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

Recipients:
"Hearn, Peter" <Peter.Hearn@nrc.gov>
Tracking Status: None
"KOWALSKI David J (AREVA NP INC)" <David.Kowalski@areva.com>
Tracking Status: None
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: AUSLYNCMX02.adom.ad.corp

Files	**Size**	**Date & Time**
MESSAGE	2944	6/24/2010 9:29:51 AM
Blank Bkgrd.gif	210	
DRAFT RESPONSE RAI 417 Q.09.02.02-116.pdf	469419	

Options
Priority: High
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Request for Additional Information No. 417(4741), Revision 0

6/8/2010

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: 9.2.2

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

09.02.02-116

Follow-up to RAI 334, Question 9.2.2-61 and RAI 174, Question 9.2.2-12:

During the staff's review of the FSAR markup provided for RAI 334 Supplement 1 and RAI 9.2.2-61, it was noted on page 9.2-44 of Tier 2 Section 9.2.2.6.1, "Control Features and Interlocks" that the CCWS pump trip interlock was omitted from the discussion of the response to MIN4 surge tank level. The staff also found that the corresponding FSAR Tier 1 ITAAC Commitment Item 4.6 had been deleted. While not specifically addressed in RAI 334, the staff was informed that this change was made by the applicant in response to RAI 182 Supplement 4 and guidance from SRP 14.3 was cited as the basis for deletion of the ITAAC for MIN4 CCWS pump trip interlock in FSAR Tier 1 Section 2.7.1. However, staff review of this change found that the MIN4 interlock provides other functions (described below) and therefore questions the applicability of the SRP 14.3 definition "provided solely for equipment protection." The applicant is therefore requested to determine if removal of the Tier 1 ITAAC for MIN4 was appropriate with consideration to the other functions identified below.

a. Since the comment of RAI 182 and the SRP 14.3 guidance appear to apply only to Tier 1 ITAAC, describe the basis in this RAI response for the CCWS pump trip interlock being omitted from the discussion of the response to MIN4 surge tank level on page 9.2-44 of the Tier 2 Section 9.2.2 markup for RAI 334. Furthermore, based on the FSAR markup of the Emergency Backup Switchover Sequence from RAI 9.2.2-61), the tripping of the CCWS pump will automatically start the opposite CCWS train. Therefore, the tripping of a CCWS pump based on MIN4, is not solely for equipment protection but does automatically start the opposite CCWS pump.

b. The description of the MIN4 interlock on page 9.2-44 of the markup indicates that the common header switchover function is unlocked to allow restoration of flow to the common users, which were isolated at MIN3. Since restoration of flow to users on the common header can be important (e.g. RCP thermal barrier coolers), describe the basis for deleting the Tier 1 MIN4 Interlock from the CCWS ITAAC.

Response to Question 9.2.2-116:

a. A review of the CCWS confirmed the automatic pump trip on MIN4 level. In addition, an automatic pump trip automatically starts the opposite train associated with the common header. At a MIN4 surge tank level, the train switchover function is unlocked to allow restoration of flow to the common users. U.S. EPR FSAR Tier 1, Section 2.7.1 will be revised to include this information.

   U.S. EPR FSAR Tier 2, Section 9.2.2.6.1 (I&C) will be revised to include a discussion related to CCWS pump trip on MIN4 tank level. This discussion already exists in Tier 2, Section 9.2.2.3.1.

b. Refer to the Response to Question 9.2.2-116 Part (a).

FSAR Impact:

U.S. EPR FSAR, Tier 1, Section 2.7.1 and Table 2.7.1-3 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR FSAR, Tier 2, Section 9.2.2.6.1will be revised as described in the response and indicated on the enclosed markup.

4.0 I&C Design Features, Displays and Controls

4.1 Displays listed in Table 2.7.1-2—Component Cooling Water System Equipment I&C and Electrical Design are retrievable in the main control room (MCR) and the remote shutdown station (RSS) as listed in Table 2.7.1-2.

4.2 The CCWS equipment controls are provided in the MCR and the RSS as listed in Table 2.7.1-2.

4.3 Equipment listed as being controlled by a priority and actuator control system (PACS) module in Table 2.7.1-2 responds to the state requested by a test signal.

4.4 A CCWS low flow condition automatically opens the low head safety injection (LHSI)/residual heat removal (RHR) heat exchanger (HX) inlet valve.

4.5 A surge tank level of MIN3 automatically isolates the associated train common header switchover valves.

4.6 ~~A surge tank level of MIN4 automatically trips the associated CCWS pump~~Deleted.

4.7 A flowrate difference between the supply and return from the Nuclear Auxiliary Building (NAB) and the Radioactive Waste Building (RWB) automatically isolates the non-safety-related branch.

4.8 Loss of one CCWS train initiates an automatic switchover to allow cooling of the common 'a' and/or 'b' headers.

4.9 Deleted.

4.10 CCWS train separation to RCP thermal barriers is maintained by interlocks provided on the supply and return thermal barrier containment isolation valves. The interlocks require that CIVs associated with one common header be closed before the other common header CIVs can be opened.

5.0 Electrical Power Design Features

5.1 The components designated as Class 1E in Table 2.7.1-2 are powered from the Class 1E division as listed in Table 2.7.1-2 in a normal or alternate feed condition.

5.2 Valves listed in Table 2.7.1-2 fail as-is on loss of power.

6.0 Environmental Qualifications

6.1 Components in Table 2.7.1-2, that are designated as harsh environment, will perform the function listed in Table 2.7.1-1 in the environments that exist during and following design basis events.~~Electrical drivers for equipment listed in Table 2.7.1-2 for harsh environment can perform the safety function in Table 2.7.1-1 following exposure to the design basis environments for the time required.~~

Table 2.7.1-3—Component Cooling Water System ITAAC (7 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
4.6	Deleted.~~A surge tank level of MIN4 automatically trips the associated CCWS pump.~~	~~Tests will be performed using test signals to verify the interlock.~~Deleted.	Deleted.~~The following interlock responds as specified below when activated by a test signal:~~ ~~Surge tank level of MIN4 automatically trips the associated CCWS pump.~~
4.7	A flow rate difference between the supply and return from NAB and RWB automatically isolates the non-safety related branch.	Tests will be performed using test signals to verify the interlock.	The following interlock responds as specified below when activated by a test signal: Flow rate difference between the supply and return from NAB and RWB automatically isolates the non-safety related branch.
4.8	Loss of one CCWS train initiates an automatic switchover to allow cooling of the common "a" and/or "b" headers.	Tests will be performed using test signals to verify the interlock.	The following interlock responds as specified below when activated by a test signal: Loss of one CCWS train automatically initiates a switchover to allow cooling of the common "a" and/or "b" headers.
4.9	Deleted.	Deleted.	Deleted.
4.10	CCWS train separation to RCP thermal barriers is maintained by interlocks provided on the supply and return thermal barrier containment isolation valves. The interlocks require that CIVs associated with one common header be closed before the other common header CIVs can be opened.	Tests will be performed using test signals to verify the interlocks.	The following interlock responds as specified below when activated by a test signal: Thermal barrier CIVs associated with common header 1 fail to open while CIVs associated with common header 2 are opened and vice versa. Thermal barrier CIVs associated with common header 1 open when CIVs associated with common header 2 are closed and vice versa.

RAI 417, Q 9.2.2-116

Insert 'A'

4.6 A surge tank level of MIN4 automatically trips the associated CCWS pump and unlocks the common header switchover function to allow restoration of flow to the common users.

Insert 'B'

Commitment Wording		Inspections, Tests, Analysis	Acceptance Criteria
4.6	A surge tank level of MIN4 automatically trips the associated CCWS pump and unlocks the common header switchover function to allow restoration of flow to the common users.	Tests will be performed using test signals to verify the interlock.	The following interlocks respond as specified below when activated by a test signal: Surge tank level MIN4 automatically trips the associated CCWS pump. Surge tank level MIN4 unlocks the switchover sequence. This interlock to be verified by including a switchover sequence in the interlock test for surge tank MIN4 level.

- The common user emergency and normal switchover sequence is inhibited to avoid the transfer of the faulted piping on the associated train. The non-safety-related branches are isolated by fast closing valves if there is a flow mismatch between the inlet and outlet of the users supply and return lines.

- If the surge tank level continues to decrease to less than the MIN3 setpoint, the common headers are isolated by closure of the switchover valves (KAA10/20/30/40 AA006/010/032/033) and the switchover sequence is prohibited.

- If the surge tank level continues to decrease to less than MIN4 set point, the common user sets switchover sequence function is unlocked to allow supplying of the common users by the associated train. The DWDS supply isolation valve (KAA10/20/30/40 AA027) is also closed in order to avoid DW water supply to a train with a leak.

The surge tank level is detected by two redundant analog level measurements.

CCWS Actuation from Safety Injection Signal

Upon receipt of a safety injection signal, the four CCWS trains are started, supplying all SIS pump coolers and the four LHSI heat exchangers. The non-safety-related users outside of the RB are also isolated.

The system response optimizes the CCWS to cool the SIS pumps and LHSI heat exchangers. The following CCWS actuations are automatically initiated:

- Start CCWS pumps (KAA10/20/30/40 AP001), if not previously running.

- Open LHSI HX isolation valves (KAA12/22/32/42 AA005).

- Open LHSI pump seal cooler isolation valves (KAA22/32 AA013).

- Close isolation valves for non-safety related users outside of RB (KAB50 AA001/004/006 & KAB80 AA015/016/019).

Simultaneous operation of LHSI heat exchanger isolation valves (opening) and non-safety-related user isolation valves (closing) maintains pump operation in a safe range.

CCWS Operation from Containment Isolation Stage 1

Upon receipt of a containment isolation stage 1 signal, CONT HVAC and NI DVS users in the RB are isolated via closure of KAB40 AA001/006/012.

This system response isolates these users, confirms the containment isolation function is met, and allows a maximum cooling flow rate through the LHSI heat exchanger in the event of a coincident safety injection signal.