

ArevaEPRDCDocsPEm Resource

From: Wunder, George
Sent: Tuesday, June 24, 2014 3:49 PM
To: ArevaEPRDCDocsPEm Resource
Subject: FW: Areva Chapter 10 Non-RAI Changes
Attachments: Chapter 10 Changes for Rev 7 - TWO PAGES - Revised.pdf

Importance: High

From: KOWALSKI David (AREVA) [mailto:David.Kowalski@areva.com]
Sent: Tuesday, June 24, 2014 3:24 PM
To: Hearn, Peter
Cc: Eudy, Michael; 'George.Wunder@nrc.gov'; RYAN Tom (AREVA); HOTTLE Nathan (AREVA); GUCWA Len (EXTERNAL AREVA)
Subject: RE: Areva Chapter 10 Non-RAI Changes
Importance: High

Peter:

Please find attached two FSAR change pages that address NRC comments received during yesterday's Public Telecon concerning FSAR Chapter 10 Non-RAI Changes. Provided below is an explanation of each page:

1. Table 10.3-4, Sheet 1 of 2.

As discussed during the telecon, AREVA will revise the last row of the table to include an additional sentence containing clarification on how cooldown is accomplished.

2. Section 10.4.9.2.3.3

As discussed during the telecon, for the 2nd paragraph under Steam Generator Tube Rupture (SGTR), AREVA will cancel the proposed change presented during the telecon, and revert back to what was originally stated: "Within 30 minutes, the operator..."

To ensure consistency throughout the section, AREVA proposes to change "after" to "within" in the 1st paragraph of the same sub-section.

To provide clarification between this section and Chapter 15, AREVA also proposes to introduce a new sentence at the beginning of Section 10.4.9.2.3.3.

NOTE: AREVA will also cancel the following proposed changes in this section presented during the telecon:

- 4 instances of changing "within" to "after" on page 10.4-82 in the presentation package.

- 1 instance of changing "within" to "after" on page 10.4-86 in the presentation package.
- Changing EFWS water inventory from "166,000" to "144,000" gallons on page 10.4-87 in the presentation package.

Please call me if you have any questions or require additional information. Thank-you.

David J. Kowalski, P.E.

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From: KOWALSKI David (RS/NB)

Sent: Monday, June 23, 2014 12:56 PM

To: 'Hearn, Peter'

Cc: 'michael.eudy@nrc.gov'; 'George.Wunder@nrc.gov'; RYAN Tom (RS/NB); HOTTLE Nathan (EP/PE)

Subject: RE: Areva Chapter 10 Non-RAI Changes

Importance: High

Peter:

Please find attached three (3) FSAR Chapter 10 changes that address three of the NRC Chapter 10 talking points/comments we received last Friday. These changes address comments on FSAR Sections 10.2.4, 10.3.3 and 10.4.9.

Thank-you.

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Sent: Friday, June 20, 2014 5:10 PM

To: 'Hearn, Peter'

Cc: 'michael.eudy@nrc.gov'; 'George.Wunder@nrc.gov'; RYAN Tom (RS/NB); HOTTLE Nathan (EP/PE); GUCWA Len (External AREVA INC)

Subject: RE: Areva Chapter 10 Non-RAI Changes

Peter:

Please find attached additional FSAR Chapter 10 changes that need to be included with the package of FSAR changes originally submitted to the NRC staff on June 12, 2014. The attachment contains minor revisions to the following two sections of the FSAR:

- Tier 1, Sections 2.8.2 and 2.8.6, and
- Tier 2, Section 10.4.7.

The FSAR Chapter 10 changes will be discussed with the NRC staff during a Public Telecon scheduled for June 23, 2014.

Please call me if you have any questions or require additional information. Thank-you.

David J. Kowalski, P.E.

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From: KOWALSKI David (RS/NB)

Sent: Friday, June 20, 2014 1:42 PM

To: 'Hearn, Peter'

Cc: michael.eudy@nrc.gov; RYAN Tom (RS/NB); HOTTLE Nathan (EP/PE)

Subject: RE: Areva Chapter 10 Non-RAI Changes

Importance: High

Hello Peter.

Thank you for providing AREVA with these Chapter 10 talking points. I also want to inform you that we are planning on sending you this afternoon additional FSAR changes involving minor revisions to the following two sections of the FSAR:

- Tier 1, Sections 2.8.2 and 2.8.6, and
- Tier 2, Section 10.4.7.

These changes are currently being finalized and will be submitted to the NRC staff as soon as possible. Thank-you.

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From: Hearn, Peter [<mailto:Peter.Hearn@nrc.gov>]
Sent: Friday, June 20, 2014 12:52 PM
To: HOTTLE Nathan (EP/PE); KOWALSKI David (RS/NB)
Cc: Eudy, Michael
Subject: FW: Areva Chapter 10 Non-RAI Changes

Below are The Chapter 10 talking points for Monday's call.

Pete

The table below provides BOP branch feedback on some of the proposed changes to EPR Chapter 10 information. The staff would like the applicant to briefly go over all the Chapter 10 changes so we have a complete understanding of the changes proposed, the reason for the changes, and the impact of the changes (if any). The table below focus on some areas that the staff would like the applicant to provide more information on, or provide clarification of the information provided. The BOP branch do not have responsibility for Chapter 3 information, therefore, Projects should make sure to provide that information (markups to tables in FSAR Chapter3) to the appropriate responsible review branch.

EPR = Revision 7, Chapter 10 Non-RAI Changes – Topics for Discussion (Balance of Plant)

Affected Section	Change	Staff Feedback
10.2.4	Reworded T.G. design requirements based on discussion in Section 3.5.1.3	The applicant indicates that the change identified for Section 10.2.4 is and is consistent with the discussion in FSAR Section 3.5.1.3 and in 109. While, this may be true, and the staff has determined that adequate provide because of redundancy, two ESBWs will not be affect, and the continue to accomplished even if the non-protected ESBWs are affected. The revised text (second paragraph in section 10.2.4) seem to indicate TG will could not effect SSCs important to safety, however as indicated of the paragraph, two of the four ESWBs may be affected, and since water system is important to safety the second sentence contradicts the appears not to be true.
10.3.3	On page 10.3-11 the bullet describing how safety-related portions of the MSSS were revised. Previously it was indicated that "Heavy loads drops on safety-related portions of the MSSS are precluded during operations requiring the MSSS to be operable" the revised text only states that the safety-related portions of the MSSS are protected from load drops by means used to reduce the	The original bullet seems to indicate that Heavy loads drops on safety the MSSS are precluded during operations requiring the MSSS to be revised bullet seems to indicate that protection is achieved by reduce change needs to be explained and justified. Is heavy load handling all operation, and are loads handled near safety related portions of the MSSS single-failure proof cranes without interlocks to prevent movement over portions of the MSSS.

	consequences of load handling incidents.	
Table 10.3-4	In Table 10.3-4, sheet 1, The last comment concerning the MSSVs is changed. The word residual is removed, and additional text about venting steam to the atmosphere is added.	In section 10.3.1 “Design Bases” on page 10.3-1 of the FSAR the s that during accident conditions the MSSS provide initial residual heat steam to the atmosphere via the MSSV and the MSRT, Why is the w deleted in Table 10.3-4
10.4.2	Section 10.4.4.2.3 introduced a conforming change – if TBS is not available cooldown is accomplished by MSRTs (and not by MSSVs)	This change contradicts information in Section 10.3.2.3.3 “Plant Shut that “ during shutdown, all four steam trains are in operation with stea SGs either dumped to the man condenser via the turbine bypass, or t the MSRTs or MSSVs (or both)
10.4.9	In section 10.4.9.2.3.3 and 10.4.9.3 Change time of operator response/action from “within 30 minutes” to “after 30 minutes.” To be consistent with chapter 15 analysis since no operator action credited before 30 minutes.	The original wording supports the chapter 15 assumptions, which cor latest time at which the action will be taken (30 minutes).
10.4.9	In section 10.4.9.3 The water Inventory required for or EFW based on SBO analysis is revised down from 166, 000 gallons to 144, 000 gallons	The 166,000 gallons was provided to the staff in the response to RAI based on the EFWS providing the necessary flow for decay heat rem in hot standby conditions for eight hours. The staff originally verified t value. Since no changes in the decay heat , or amount of time at hot needs to explain the how the new volume was determined and why it operation.
10.4.9	EFWS Unreliability Results (Table 10.4.9-5) were revised and one case was eliminated	The Applicant should discuss the changes to analysis and results

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Hearing Identifier: AREVA_EPR_DC_Docs_Public
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Recipients:
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Table 10.3-4—Main Steam Supply System Single Active Failure Analysis
Sheet 1 of 2

	Component	Failure	Comments
1	Main steam isolation valves (MSIV)	Loss of power from one power supply	Loss of one power supply has no effect on ability of valve to close. Valve fails closed on loss of electrical signals or loss of hydraulic pressure. Valve actuator has 2 redundant closure systems. Valve closure is controlled by 4 cross-division power supplies provided to the actuator closing systems.
		Valve fails to close upon receipt of automatic signal	Closure of three of four MSIVs adequate to meet safety requirements.
2	Main steam relief isolation valves (MSRIV)	Loss of power from one power supply	Loss of one power supply has no effect on ability of valve to open or close. Valve fails closed upon loss of electrical signals. Valve actuator system has 2 redundant opening / closing systems. Valve closure is controlled by 4 cross-division power supplies provided to the actuator opening/closing systems.
		Valve fails to close upon receipt of automatic signal	Each valve has 2 redundant opening/closing systems. A single failure in the opening/closing system will not cause failure of valve to close. Backup isolation valve MSRCV provided in each main steam relief train.
		Valve fails to open upon receipt of automatic signal	Each valve has 2 redundant opening/closing systems. A single failure in the opening/closing system will not cause failure of valve to open. If MSRT is not available, 2 MSSVs on each main steam line provide adequate overpressure protection and provide adequate <u>initial residual heat removal by venting steam to the atmosphere. Cooldown can then be accomplished by venting steam to the atmosphere with the remaining 3 MSRTs.</u>

resulting high-temperature condition and provides an alarm in the MCR to alert the operators to close the EFWS isolation valve and to promptly perform any other required actions to return the affected pump train to service.

10.4.9.2.3.3 Accident Conditions

The operator action times described in this section support the assumptions used in the Chapter 15 analyses.

Small Break Loss of Coolant Accident (SBLOCA)

A small break loss of coolant accident (SBLOCA) results in a loss of reactor coolant inventory which cannot be compensated for by the chemical and volume control system (CVCS). The loss of primary coolant results in a decrease in reactor coolant pressure and pressurizer level. The EFWS is automatically started if SG low level is reached. On safety injection signal, partial cool down is initiated to enable medium head safety injection (MHSI) flow.

A minimum of two EFWS trains are available to restore and maintain SG water inventory during RCS cooldown to RHR system entry conditions.

Steam Generator Tube Rupture (SGTR)

An SGTR results in a leak of primary coolant into the affected SG. The EFWS is utilized to assist in RCS cooldown, as necessary. In addition, EFWS flow to the affected SG can be isolated manually after within 30 minutes or by the automatic closure of the SG isolation valve and the level control valve upon SG high level. The associated EFWS pump is shut down manually. A minimum of two EFWS trains are normally available to restore and maintain SG water inventory during RCS cool down to RHR system entry conditions.

In the unlikely event of an SGTR in one SG coincident with a single failure of another EFWS train and a third EFWS pump out for maintenance, only one intact SG is fed initially by the EFWS. Within 30 minutes, the operator opens the required discharge header isolation MOVs to align the EFWS pump feeding the affected SG to feed an intact SG.

The EFWS maintains SG water inventory during RCS cooldown to RHR system entry conditions.

Main Steam Line Break (MSLB)

A MSLB results in a significant reduction of RCS pressure and temperature and associated positive reactivity. At break initiation the secondary side pressure falls, a reactor trip occurs and the main steam isolation valves (MSIV) close. The EFWS pump aligned to the affected SG automatically starts upon SG low level. The EFWS pump