AP1000DCDFileNPEm Resource

From: Adams II, Samuel L. [adamssl@westinghouse.com]
Sent: Friday, May 30, 2008 2:20 PM
To: Perry Buckberg; Rhonda Carmon
Subject: FW: SRP 19.0 RAIs
Attachments: RAI-SRP 19.0-SPLA-11.doc; RAI-SRP 19.0-SPLA-5.doc; RAI-SRP 19.0-SPLA-6.doc; RAI-SRP 19.0-SPLA-7.doc; RAI-SRP 19.0-SPLA-8.doc; RAI-SRP 19.0-SPLA-9.doc; RAI-SRP 19.0-SPLA-10.doc

Sorry, I forgot to cc you on the message below.

From: Adams II, Samuel L.
Sent: Friday, May 30, 2008 2:19 PM
To: 'Michael Miernicki'
Subject: FW: SRP 19.0 RAIs

Hi Mike,

I acknowledge receipt of the attached RAIs on SRP 19.0.

I will let you know as soon as possible if a clarification call is necessary.

Thanks.

Sam

From: Michael Miernicki [mailto:Michael.Miernicki@nrc.gov]
Sent: Friday, May 30, 2008 10:47 AM
To: Adams II, Samuel L.
Cc: Perry Buckberg; Rhonda Carmon
Subject: SRP 19.0 RAIs

Sam, please see attached RAIs and let me know as soon as possible whether Westinghouse understands these questions or if a conference call is necessary for any clarifications. Thanks.

Mike

Michael J. Miernicki
Project Manager
NRC/NRO/DNRL/NWE2
301-415-2304

Hearing Identifier: AP1000_DCD_Review
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Subject: FW: SRP 19.0 RAIs
Sent Date: 5/30/2008 2:20:02 PM
Received Date: 5/30/2008 2:20:10 PM
From: Adams II, Samuel L.

Created By: adamssl@westinghouse.com

Recipients:
"Perry Buckberg" <Perry.Buckberg@nrc.gov>
Tracking Status: None
"Rhonda Carmon" <Rhonda.Carmon@nrc.gov>
Tracking Status: None

Post Office: SWEC9910.w-intra.net

Files	**Size**	**Date & Time**
MESSAGE	854	5/30/2008 2:20:10 PM
RAI-SRP 19.0-SPLA-11.doc	29248	
RAI-SRP 19.0-SPLA-5.doc	26688	
RAI-SRP 19.0-SPLA-6.doc	25664	
RAI-SRP 19.0-SPLA-7.doc	27200	
RAI-SRP 19.0-SPLA-8.doc	27200	
RAI-SRP 19.0-SPLA-9.doc	27200	
RAI-SRP 19.0-SPLA-10.doc	26176	

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

RAI-SRP 19.0-SPLA-11

The AP1000 Final Safety Evaluation Report (FSER) included several specific COL action items related to shutdown procedures. These action items correspond to COL information item 13.5 1 in the AP1000 DCD. Please clarify how Westinghouse will ensure that the specific considerations listed below will be included in Phase 3 procedure development, as described in APP-GW-GLR-040, “Plant Operations, Surveillance, and Maintenance Procedures” (TR70):

a) FSER COL Action Item 19.1.8.1-4: The COL applicant will implement the maintenance guidelines as described in the “Shutdown Evaluation Report” (WCAP-14837).
b) FSER COL Action Item 19.1.8.3-1: The COL applicant is responsible for developing procedures…to close containment hatches and penetrations following an accident during Modes 5 and 6, before steam is released into the containment.
c) FSER COL Action Item 19.1.8.16-1: The COL applicant will have policies that maximize the availability of normal residual heat removal (RNS) valve V-023 and procedures to open this valve during cold shutdown and refueling operations when the RCS is open and the passive residual heat removal system (PRHR) cannot be used for core cooling.
d) FSER COL Action Item 19.1.8.16-2: The COL applicant will develop administrative controls to ensure that inadvertent opening of RNS valve V-024 is unlikely since inadvertent opening results in a draindown of the RCS inventory to the in-containment refueling water storage tank (IRWST) and requires gravity injection from the IRWST.
e) FSER COL Action Item 19.1.8.16-4: The COL applicant will maintain procedures to respond to low hot-leg level alarms.
f) FSER COL Action Item 19.3.7-1: The COL applicant will develop an outage planning and control program and will appropriately address the factors that improve low-power and shutdown operations consistent with DCD Tier 2, Revision 16, Chapter 19E, Shutdown Evaluation Report and NUMARC 91-06
g) FSER COL Action Item 19.1.8.7-1: The COL applicant will have procedures and policies to have the non-safety related wide range pressurizer level indication during cold shutdown

RAI-SRP 19.0-SPLA-5

In TR135, the process for evaluating each design change proposal (DCP) for impact on the PRA is described. It focuses on each SSC that the DCP adds, deletes, or modifies. The staff's understanding is that if the DCP deals with an SSC that is modeled in the PRA, it was further evaluated for potential impact on the PRA.

The staff considers other changes to be impacts: changes to assumptions or PRA insights as well as changes to model logic or probability data. Any of these may be caused by design changes, and this impact may not be direct. DCPs may have an impact on the PRA, for example, by altering the **operation** of SSCs that are modeled.

Analysts might choose not to model an SSC or its supporting systems because it is normally in the required state to prevent or mitigate an event. A new or revised operating procedure might alter, for some MODE, the alignment of such an SSC. Documented insights or assumptions may be affected. The equipment would then require **re**alignment to prevent or mitigate consequences of an event applicable to the MODE in question. It may be necessary to add it (and/or supporting SSCs) to the PRA model for that MODE.

For example, DCD Table 19.59-18, "AP1000 PRA-Based Insights," includes the following information (item 1b):

- ADS has four stages.
- Each stage is arranged into two separate groups of valves and lines.
- Stages 1, 2, and 3, connected to the top of the pressurizer, provide a vent path to preclude pressurization of the RCS during shutdown conditions if decay heat removal is lost.

The modification described in APP-GW-GEE-101 alters this configuration during RCS vacuum refill, and therefore has an impact on the PRA.

Please identify and briefly describe each DCP incorporated in the amended design and assess its potential to have such an impact on the PRA. For each DCP that that may have an impact upon the PRA or other risk studies (e.g., seismic and internal fire) please evaluate and report its potential significance.

RAI-SRP 19.0 SPLA-6

In APP-GW-GLN-022, Revision 1, Section 3.4, Westinghouse asserts that the proposed activity (addition of a DAS cabinet in a location that is spatially separated from plant north) does not result in an impact to features that mitigate severe accidents. A change to the location of a DAS cabinet has the potential to affect the timing of steps taken to mitigate an ATWS event (positively or negatively) and to reduce risk by providing a spatially diverse actuation station.

Please confirm that this impact on the PRA does not result in a significant change to the risk importance of any SSC or human action.

RAI-SRP 19.0-SPLA-7

At the Westinghouse on-site technical review in May 2008, the staff reviewed the CAFTA fault tree for safety-related recirculation squib valve (V-118) failing to open in manual and automatic (gate identifier IWF0013). On the CAFTA fault tree for squib valve 118 failing to open, common cause failure (CCF) probability of the component interface modules (CIMs) is listed as 2.97E-8. The staff then compared this with the common cause failure data for digital I&C components as documented in Westinghouse Calculation Note APP-PRA-GSC-222, "AP1000 PRA Protection and Safety Monitoring System," dated February 20, 2007. On page 11 of 65 of this calculation note, CCF probability of the CIMs is listed as 1.23E-5. The staff then noted that the RAW value for CCF of the CIMs as listed in the Shutdown PRA is >250. In addition, CCF failure of the CIMs impacts every safety-related valve actuated by the safety-related protection and safety monitoring system (PMS). Given the potential risk significance of this type of discrepancy, please provide the following information:

(a) Confirmation that the CCF failure of digital I&C components as listed on page 11 of Westinghouse Calculation Note APP-PRA-GSC-222, "AP1000 PRA Protection and Safety Monitoring System," dated February 20, 2007, was reviewed and documented in the CAFTA PRA database (AP1000.rr).

(b) Updated DCD information, including (i) the results of re-solving and re-quantifying the baseline and RTNSS full power PRA, the shutdown PRA, and the external events PRA, (ii) any new risk insights identified during re-quantification of the previously mentioned PRAs, and (iii) the results of the revised importance analyses.

RAI-SRP 19.0-SPLA-8

The AP1000 Final Safety Evaluation Report (FSER) included COL **action** items related to fire **and flooding** protection concerns:

a) FSER COL Action Item 19.1.8.1-2: The COL applicant will take appropriate compensatory measures to minimize risk when a fire door, fire barrier penetration, or flood barrier penetration must be open to allow specific maintenance (e.g., during plant shutdown). Appropriate outage management, administrative controls, procedures, and operator knowledge of plant configuration minimize risk during shutdown. In particular, minimizing risk will call for configuration control of fire/flood barriers to ensure the integrity of fire and flood barriers between areas containing equipment performing redundant safe-shutdown functions.
b) FSER COL Action Item 19.1.8.1-3: The design provides fire detection and suppression capability. The design also provides flooding control features and sump level indication. The COL applicant is expected to take compensatory measures to maintain adequate detection and suppression capability during maintenance activities. This is part of COL Action Item 19.1.8.1-3.

COL **information** items 9.5-3 and 9.5-8 are found in subsections 9.5.1.8.3 and 9.5.1.8.8 of the DCD Revision 16 (and are listed in Table 1.8-2). These two COL information items address fire protection but not flooding. Please clarify how concerns about flooding detection, barrier integrity, and control will be addressed.

RAI-SRP 19.0-SPLA-9

In AP1000 DCD Table 1.8-2, FSER COL Action Item 19.1.8.16-3 corresponds to DCD COL information item 18.7-1. This action item states the following:

"Since inadvertent opening of RNS valve V024 results in a draindown of RCS inventory to the IRWST and requires gravity injection from the IRWST, the COL applicant will have administrative controls to ensure that inadvertent opening of this valve is unlikely. **The control room design will take into account this error.**"

Please explain what features of the control room design will ensure that inadvertent opening of valve V024 is unlikely.

RAI-SRP 19.0-SPLA-10

Section 13.5 of the AP1000 Design Control Document (DCD), Revision 16, no longer refers to the combined license (COL) applicant in the discussion of plant-specific guidelines for freeze seals. Please clarify whether the development of freeze seal guidelines is the responsibility of the COL applicant (as one of the “operational and maintenance programmatic issues” referred to in COL information item 13.5-1), is included in the procedure development described in APP-GW-GLR-040, “Plant Operations, Surveillance, and Maintenance Procedures” (TR70), or is controlled in some other way. Please confirm that guidelines for use of freeze seals are specifically included in the COL information item 13.5-1 or describe how they will be developed.