AP1000DCDFileNPEm Resource

From: Loza, Paul G. [lozapg@westinghouse.com]
Sent: Tuesday, November 17, 2009 2:59 PM
To: Buckberg, Perry
Cc: Lindgren, Donald A.; Wiseman, Dale A.
Subject: Acknowledgement of RAI-SRP 5.2.3-CIB1-01, -02, and -03

Hi Perry,

I acknowledge receipt for Westinghouse of RAI-SRP 5.2.3-CIB1-01, -02, and -03.

Thanks,

Paul

From: Buckberg, Perry [mailto:Perry.Buckberg@nrc.gov]
Sent: Monday, November 09, 2009 1:11 PM
To: Loza, Paul G.
Cc: Sisk, Robert B.; McKenna, Eileen; Kallan, Paul; Wiseman, Dale A.; Lindgren, Donald A.
Subject: New AP1000 RAIs and RAI-SRP 5.2.3-CIB1-01 update

Paul,

As a follow-up to the November 5, 2009 conference call, the nine (9) related RAI-SRP 5.2.3-CIB1-01 discussion issues (first e-mailed on 10/14/09) have evolved - new information/questions are highlighted in yellow.

NEW RAIs - One separate discussion issue (*Table 5.2-1 of the FSAR was changed.....*) was split off into new **RAI-SRP 5.2.3-CIB1-02**, and **RAI-SRP 5.2.3-CIB1-03** was added re: Qickloc.

RAI-SRP 5.2.3-CIB1-01 - discussion issues

1) In Table 5.2-1 of the FSAR, provide a list for each part of the reactor coolant pump (RCP) that will be stainless steel and which will be carbon steel. Otherwise, delete the option to use carbon steel material for the reactor coolant pressure boundary of the RCP.
2) Provide justification and operating experience to use carbon steel as an option for stainless steel reactor coolant pressure boundary parts (i.e., pressure forgings for the reactor coolant pump). In addition, provide justification and operating experience to use carbon steel as an option for low alloy steel reactor coolant pressure boundary parts (i.e., pressure forgings, including nozzles and tubesheets of the steam generator). Otherwise, delete the option to use carbon steel material for the reactor coolant pressure boundary.
3) Your response stated that carbon steel filler metal specifications and the associated base materials are used for welding the stator shell. Discuss the types of welds to be performed on the stator shell, since there appears to be no welding on the stator shell other than the welds joining the stator shell to the stator main flange and the stator lower flange. Include how the stator shell will be welded to the stator main flange and the stator lower flange.
4) What material is the stator can? How is it attached to the pump?
5) Discuss why the stator can and rotor can are not designed as a pressure boundary part since its primary function is to contain the reactor coolant. Discuss which areas of the pump are wetted and non-wetted and how the design (stator can and rotor can) will prevent reactor coolant from contacting the carbon steel portions. Since the motor will stop working if the stator becomes wet, discuss what amount of leakage would be needed to stop the motor and the reliability of the stator can and rotor can.

6) Explain why AP1000 will not use Inconel (Alloy 690) consumable inserts (SFA 5.30) since Inconel (Alloy 690) safe ends will be used for some components (i.e., pressurizer and steam generator).
7) Explain how carbon steel filler metals using flux (SFA 5.1 and 5.17) will be used and for which reactor coolant pressure boundary welds. Otherwise, delete the option to use carbon steel material for the reactor coolant pressure boundary.
8) Proposed Note 4 for Table 5.2-1 only limits use of carbon steel for welds that are not exposed to reactor coolant. Provide justification why this limitation does not apply to base material.
9) Clarify whether proposed Note 3 to Table 5.2-1 implies that this note only applies to gas shielded FCAW electrodes, or that only gas shielded FCAW electrodes with the FCAW process are to be used. In addition, the allowance of using FCAW rod per SFA 5.22 with the GTAW process for welding the root layer should be prohibited. Provide justification and nuclear operating experience for using FCAW on stainless steel reactor coolant pressure boundary material.

Table 5.2-1 of the FSAR was changed in Revision 17 to replace material specifications SA-312 and SA-376 for seamless pipe with material specification SA-479 for hot or cold-rolled bar stock. Provide justification and operating experience for using cold-rolled bar stock in lieu of seamless pipe. In addition, the UNS designation S21800 for material specification SA-479 has higher carbon, phosphorus and silicon composition than Types 304 and 316, along with a low chromium content with no molybdenum additions. Discuss how this material is similar to Types 304 and 316 stainless steels, and justify the compatibility with the reactor coolant, along with operating experience. Otherwise, remove the UNS designation S21800 from Table 5.2-1. Which of these materials are used for the Quickloc?

RAI-SRP 5.2.3-CIB1-02

Table 5.2-1 of the FSAR was changed in Revision 17 to include material specification SA-338, Types F316, F316L and F316LN. Clarify this material specification since this is not a material specification listed in the ASME Code, Section II for stainless steel.

RAI-SRP 5.2.3-CIB1-03

Discuss the Quickloc component specified in AP1000 DCD, FSAR Figure 5.3-1 to include at least the following information. A summary of this information should be included in the DCD.

1) What materials are used?
2) How is it welded to the top head?
3) Discuss how the pressure boundary is maintained with the quickloc?
4) Is the quickloc a flared, flareless or compression type mechanical fitting? Are flanges or gaskets used?
5) Provide a drawing/sketch detailing the quickloc, including the dimensions?
6) Discuss operating experience of the quickloc.
7) Are Quickloc addressed in the ASME Code?
8) What type of inspections and maintenance is performed for this component (Quickloc fittings and the weld for the Quickloc to the reactor vessel head) to ensure the integrity of the pressure boundary.

Thanks,

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Hearing Identifier: AP1000_DCD_Review
Email Number: 239

Mail Envelope Properties (6F27D3A0E6C93E4A9212AD1F4FA57B600A885BCD7D)

Subject: Acknowledgement of RAI-SRP 5.2.3-CIB1-01, -02, and -03
Sent Date: 11/17/2009 2:58:36 PM
Received Date: 11/17/2009 2:58:40 PM
From: Loza, Paul G.

Created By: lozapg@westinghouse.com

Recipients:
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Post Office: SWEC9966.w-intra.net

Files	**Size**	**Date & Time**
MESSAGE	6094	11/17/2009 2:58:40 PM

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Priority: Standard
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