AP1000DCDFileNPEm Resource

From: Loza, Paul G. [lozapg@westinghouse.com]
Sent: Monday, May 10, 2010 3:31 PM
To: Cummins, Ed; Sisk, Robert B.; Winters, James W.; Corletti, Michael M.; Vijuk, Ronald P.; Russ, Paul A
Cc: Aiuppy, Sara A; Drog, Elizabeth M.; Lindgren, Donald A.; Loza, Paul G.; Peck, Donald E.; Fecteau, Mark W.; Melton, Michael A; Ziesing, Rolf F.; Lath, Arunabh
Subject: OI-SRP9.1.5-SBPB-01 AP1000 (2A)] for Review / Comments Due: 5/13/2010
Attachments: OI-SRP9.1.5-SBPB-01 R2.doc

Gentlemen,

Please Review and Comment on the following attached document:

Document Number: OI-SRP9.1.5-SBPB-01 AP1000
Revision: 2A
Title: Heavy loads handling program
Class: Request for Additional Information

Comments are Due By: 5/13/2010

Thank you,
Paul Loza

Hearing Identifier: AP1000_DCD_Review
Email Number: 354

Mail Envelope Properties (27265BDD489F164BAB98F1FFF6371972427D1A77)

Subject: OI-SRP9.1.5-SBPB-01 AP1000 (2A)] for Review / Comments Due: 5/13/2010
Sent Date: 5/10/2010 3:30:41 PM
Received Date: 5/10/2010 3:33:57 PM
From: Loza, Paul G.

Created By: lozapg@westinghouse.com

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MESSAGE	285	5/10/2010 3:33:57 PM
OI-SRP9.1.5-SBPB-01 R2.doc	75328	

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Priority: Standard
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AP1000 TECHNICAL REPORT REVIEW

Response to SER Open Item (OI)

OI Response Number: OI-SRP9.1.5-SBPB-01
Revision: 2

Additional Question: (Revision 1)

This question is an additional concern regarding the 11/11/09 OI/RAI response [DCP NRC 002690, RAI-SRP9.1.5-SBPB-01 R2] that described the equipment hatch hoist as 'foot mounted on a platform supported by the containment structure.' There appears to be nothing in the DCD that would explain how the structural load on containment from the hoist was evaluated - though a seismic event could result in additional loading on the containment structure, based on the load being held in place.

Westinghouse should describe the design load combinations and acceptance criteria for the containment structure when the hoist is holding the critical load. Please identify the Westinghouse document containing the analysis.

Additional Question (Revision 2)

a. (NRC Staff) The [OI-9.1.5-SBPB-01 R1] 3/31/10 response letter stated that final hatch hoist seismic analyses have not been completed at this time. Westinghouse will identify the applicable document(s) containing these analyses in a revised OI response.

b. (Westinghouse additional) – Vendor load attachment design - See below.

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Westinghouse Response: (Revision 1)

(Westinghouse initially answered this Open Item with the RAI-SRP9.1.5-SBPB-01 R2 response, and considers this the Revision 1 OI response for tracking purposes.)

The equipment hatch hoist moves each equipment hatch (EH) between alternate supported positions. Each hatch is bolted to the CV when closed, and is supported by hanging hooks while open. These hooks are either supported directly by the vessel (Lower EH) or attached to the internal stiffener (Upper EH). Loads on the CV from the hatch cover in the open position on these hooks have been generated for Service Levels A, C, and D. These loads are incorporated into the CV Design Specification, and are under evaluation by the CV Supplier for these service levels.

The hatch hoist itself is analyzed and designed to the following requirements: The load combinations and allowable stress for the hoist are per ASME NOG-1 for seismic loading, using load combinations for Type 1 cranes. Seismic and abnormal events load cases and load combinations are based on ASME NOG-1, Sections 4136, 4140, and 5480 applicable to the

Hatch Hoist, and allowable seismic stress is per Table NOG-4311-1, extreme environmental loading condition.

The equipment hatch hoist supports the equipment hatch during movement between the open and closed positions. CV Loads resulting from the hatch hoist while supporting the equipment hatch are being generated for Service Levels A, C, and D. These loads are to be incorporated into the CV Design Specification, and are to be evaluated by the CV Supplier for these service levels.

The acceptance criteria are that, after a seismic event occurs while the hoist is holding the critical load, the containment vessel will continue to perform its intended safety functions.

These final seismic analyses regarding the hatch hoist have not been completed at this time. Westinghouse will identify the applicable document(s) containing these analyses in a revised OI response.

Additional Westinghouse Response: (Revision 2)

a. The CV Loads resulting from the hatch hoist while supporting the equipment hatch are expected to be bounded by the current CV Design Specification. The calculation of these loads is currently anticipated complete on or before March, 2011. At that time, the calculated loads will be checked against the current CV Design Specification. If these loads are not bounded, the CV Design Specification will be modified and evaluated by the CV Supplier to accommodate the loads as necessary.

   Westinghouse expects to identify the applicable document(s) containing these analyses after March, 2011 and provide them for NRC audit.

b. The AP1000 equipment hatch hoist vendor has simplified the load attachment design. The current design has a hook attached to the lower block of the hoist, and the hook is attached to a shackle. The shackle pin attaches to the hatch cover so it can be lifted.

   The vendor has removed the hook and shackle, and now attaches the lower block of the hoist directly to the hatch cover with a pin. This would remove two items in the load path. The DCD markup initially supplied in RAI-SRP9.1.5-SBPB-01 R2 is revised below to incorporate the use of this lifting pin.

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Design Control Document (DCD) Revision: ~~None~~

The DCD markup shown in RAI-SRP9.1.5-SBPB-01 R2 is revised as follows:

A new Section 9.1.5.2.3 was added in the response to RAI-SRP9.1.5-SBPB-01 R2. The following markup is made to the added text as shown:

9.1.5.2.3 Equipment Hatch Hoist General Description

The equipment hatch hoist is a hoist that is foot mounted on a platform supported by the containment structure.

The hoist is electrically powered and raises and lowers loads by reeving wire rope through sheaves that are an integral part of the load block. ~~A hook or lifting lug is attached to the load block.~~ The load block is equipped with a hook or lifting device.

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A new Section 9.1.5.2.3.2 was added in the response to RAI-SRP9.1.5-SBPB-01 R2. The following markup is made to the added text as shown:

9.1.5.2.3.2 Component Descriptions

(Two paragraphs unchanged)

Two separate, redundant reeving systems are used, so that a single rope failure will not result in the dropping of the load. Two wire ropes are reeved side-by-side through the sheave blocks. Each rope connects to an equalizer that adjusts for unequal rope length. The equalizer is also a load transfer safety system, eliminating sudden load displacement and shock to the hoist in the unlikely event of a rope break. Overtravel protection is provided (see subsection 9.1.5.2.3.3); however, even in the event of ~~hook~~ overtravel in the raising direction to the point the load block contacts the hoist structure, the ropes cannot be cut or crushed.

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A new Table 9.1.5-4 was added in the response to RAI-SRP9.1.5-SBPB-01 R2. The following markup is made to the added table text as shown:

Table 9.1.5-4 **EQUIPMENT HATCH HOIST COMPONENT DATA**
Hoist

Approximate capacity	See Table 9.1-5.
~~Hook~~ Hoist speed	See Note 1.
Approximate ~~hook~~ load block travel (elevation)	To hatch (lowered position)
Main hoist braking system (diverse systems)	
Control brakes (type and number)	Hoist motor regenerative braking
Holding brakes (type and number)	Friction (two)
Emergency drum brake (type and number)	Friction (one)

Note:

1. Hoist speed is within the recommended range of ASME NOG-1.

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PRA Revision: None

Technical Report (TR) Revision: None