AP1000DCDFileNPEm Resource

From: Adams II, Samuel L. [adamssl@westinghouse.com]
Sent: Monday, June 30, 2008 9:02 AM
To: David Jaffe
Cc: Perry Buckberg
Subject: FW: RAIs for Westinghouse DCD rev 16 ITAAC changes
Attachments: RAIs for Westinghouse DCD rev 16 ITAAC changes 6-26-08.doc

Hi Dave,

I acknowledge receipt of the attached RAIs on SRP Section 14.3.2.

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

Thanks.

Sam

From: David Jaffe [mailto:David.Jaffe@nrc.gov]
Sent: Thursday, June 26, 2008 12:31 PM
To: Adams II, Samuel L.
Cc: Rhonda Carmon; Edmund Kleeh
Subject: RAIs for Westinghouse DCD rev 16 ITAAC changes

Please acknowledge receipt of the attached RAI.

Hearing Identifier: AP1000_DCD_Review
Email Number: 51

Mail Envelope Properties (9950B72C4C6D8D43958795C414DE477A06D6DEC2)

Subject: FW: RAIs for Westinghouse DCD rev 16 ITAAC changes
Sent Date: 6/30/2008 9:02:21 AM
Received Date: 6/30/2008 9:02:26 AM
From: Adams II, Samuel L.

Created By: adamssl@westinghouse.com

Recipients:
"Perry Buckberg" <Perry.Buckberg@nrc.gov>
Tracking Status: None
"David Jaffe" <David.Jaffe@nrc.gov>
Tracking Status: None

Post Office: SWEC9910.w-intra.net

Files	**Size**	**Date & Time**
MESSAGE	466	6/30/2008 9:02:26 AM
RAIs for Westinghouse DCD rev 16 ITAAC changes 6-26-08.doc	63552	

Options
Priority: Standard
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RAIs Associated with Review of ITAAC Changes
Westinghouse AP1000 DCD Amendment 16 - Task Order 19 -

RAI-SRP 14.3.2-CCIB-01

In Table 2.1.1-1, Item 5, the design commitment states the following: "The lift height of the Refueling Machine (RM) and Fuel Handling Machine (FHM) masts is limited such that the minimum required depth of water shielding is maintained." The minimum required depth of water shielding is specified in the Tier 2 Sections 9.1.2.2, 9.1.4.2.3, and 9.1.4.3.7 and Westinghouse Technical Report 121 (APP-GW-GLN-121) as 9.5 feet above the top of a fuel assembly.

The schematic, Attachment 3, provided in TR-121 shows that 24.8 feet of water is required above the top of the irradiated fuel assemblies seated in the spent fuel storage racks to move irradiated spent fuel assemblies and requires a minimum depth of water shielding of 9.5 feet above the top of active fuel in a fuel assembly being moved. Assuming the same operating deck elevation and water level for the reactor refueling cavity as the spent fuel pool, 24.5 feet of water is required above the top of the reactor vessel flange to provide the minimum depth of water shielding of 9.5 feet for spent fuel movement. However, technical specification sections 3.7.5 and 3.9.4, respectively, require the SFP water level to be greater than or equal to 23 feet over the top of irradiated fuel assemblies seated in the storage racks and the refueling cavity water level to be greater than or equal to 23 feet above the top of the reactor vessel flange for spent fuel movement.

The ITAAC in Table 2.1.1-1, Item 5 appears to be in disagreement with the technical specifications stated above. Explain the apparent discrepancy between what is required in the acceptance criteria for Item 5 and the 23 feet that is required in the technical specifications stated above.

RAI-SRP 14.3.2-CCIB-02

In ITAAC Table 2.3.5-2, Item 4, the design commitment 4 states: "The cask handling crane cannot move over the spent fuel pool." The ITAAC requires a test be performed with the acceptance criteria being that <u>the spent fuel shipping cask crane</u> does not move over the spent fuel pool.

The staff asks the applicant to explain why in the acceptance criteria the crane is called the spent fuel shipping cask crane instead of cask handling crane as stated in the design commitment?. The acceptance criteria is not very definitive as to whether in this instance the term 'crane' is meant to include every part of the crane including the bridge, trolley, load block with hook, and a large object being moved by the crane.

If the load block is not permitted over the SPF, is there a stand off distance for the load block hook to the edge of the SFP during the test which is dependent on the size of an object on the hook, such as a spent fuel cask?

RAI-SRP 14.3.2-CCIB-03

In ITAAC Table 3.3-6, for Item 5.c, the design commitment states in summary: "The boundaries between the following rooms which contain safety-related equipment, 11205, 11207 and 11209; are

designed to prevent flooding between these rooms." The ITA for this item requires that an inspection of the boundaries between the rooms be performed. However, the acceptance criteria for this ITAAC states in summary that a report exists that confirms that flooding of rooms 11205, 11207 and 11209 is prevented to a maximum flood level of 110'-2", 110'-1" and 110'-0", respectively.

The staff requests that the acceptance criteria be modified by adding the words in bold to state –"A report exists **and concludes that that the boundaries of the rooms are designed so** that flooding……." Explain why the acceptance criteria specifies a preventable maximum flood level for each room external to each room instead of addressing the design of the boundaries between the rooms to prevent flooding from one to another. Explain if the report will be based entirely on inspection results or will some type of analysis also be performed?

RAI-SRP 14.3.2-CCIB-04

In ITAAC Table 2.2.3-4, for design commitment Item 8.c, ITA item vii states: "Inspections of the as-built components will be conducted for plates located above the containment recirculation screens." The AC item vii states that: "plates located above each containment recirculation screen are no more than 1 foot above the top of the screen and extend out at least 10 feet perpendicular to and at least 7 feet to the side of the screen surface."

The staff asks the applicant to explain the following: a) if there is to be one solid plate or if many individual plates are permitted above each recirculation screen, b) is there a minimum height of the plates above the top of the screens or can the plates be in contact with the screens, c) what is the required thickness of the plate or plates provided, d) the orientation of the plates to the screens since it is not clear as to what is perpendicular to the screens and what are the sides of the screens, and d) is the dimension of at least 7 feet to the side of the screen surface for only one side or two. The staff requests that the details provided in the applicant's explanation be incorporated into AC item vii.

RAI-SRP 14.3.2-CCIB-05

In ITAAC Table 2.2.3-4, for design commitment Item 8.c, ITA item viii states: "Inspections of the IRWST and Containment recirculation screens will be conducted." The AC item viii states that: "The screen surface area of each IRWST screen is ≥ 500 ft^2. The screen surface area of each containment recirculation screen is > 2500 ft^2. The bottom of the containment recirculation screens is ≥ 2 ft above the loop compartment floor."

The staff asks the applicant to explain the following: a) is there a required shape of the screens and if there is a maximum surface area requirement, b) is there a maximum height the bottom of the recirculation screens should be above the loop compartment floor, c) what is the required thickness of the screens, their construction, and screen mesh size, and d) how the screens are supported. The staff requests that the details provided in the applicant's explanation be incorporated into AC item viii.

RAI-SRP 14.3.2-CCIB-06

In ITAAC Table 2.2.3-4, for design commitment Item 8.c, ITA item xii states in part: "Inspections will be conducted of the core makeup tank (CMT) level sensors upper level tap lines." The AC item xii states that: "Each upper level tap line has a downward slope of ≥ 2.4 degrees from the centerline of the connection to the CMT to the centerline of the connection to the standpipe."

The staff asks the applicant to explain the following: a) exactly when the downward slope of the upper level tap line begins, b) can the tap line run horizontal then turn 90 degrees downward or define in greater detail the requirements, and c) provide any requirements on the size of the tap lines or connections. The staff requests that the details provided in the applicant's explanation be incorporated into AC item xii.

RAI-SRP 14.3.2-CCIB-07

In ITAAC Table 2.3.5-2, Item 3.b, the design commitment 3.b states: "The cask handling crane prevents the uncontrolled lowering of a heavy load." The ITA for this DC states "Load testing of the main hoist will be performed. The test load will be at least equal to the weight of the spent fuel shipping cask."

The definition of a heavy load at a nuclear power plant is the weight of one fuel assembly or greater. The staff asks the applicant to explain the following: a) why the DC is not that the cask handling crane prevents the uncontrolled lowering of a heavy load equal to the cranes design load rating, b) why the ITA requires the test load only be at least equal to the weight of the spent fuel shipping cask instead of the design load rating of the crane, and c) why the ITA does not define the weight of a spent fuel shipping cask as a fully loaded spent fuel shipping cask and its lifting yoke.

The AC for this DC states "The crane lifts the test load, and lowers, stops, and holds the test load with the hoist holding brakes." The staff asks the applicant to explain the following: d) why the ITA statement "The test load will be at least equal to the weight of the spent fuel shipping cask" is not included with the AC since it is really acceptance criteria, e) why the AC does not specify a hold period for the test load to determine if the brakes slip over time, and f) why the AC does not require the crane after a test load hold period for the crane to move with the load suspended to another location and perform the complete lifting test over again. The staff requests that the details provided in the applicant's explanation be incorporated into DC, ITA and AC item 3.b.

RAI-SRP 14.3.2-CCIB-08

In ITAAC Table 2.3.5-2, Item 3.d, the design commitment 3.d states: "The maintenance hatch hoist prevents the uncontrolled lowering of a heavy load." The ITA for this DC states "Testing of the redundant hoist holding mechanisms for the maintenance hatch hoist that handles heavy loads will be performed by lowering the hatch at the maximum operating speed."

The definition of a heavy load at a nuclear power plant is the weight of one fuel assembly or greater. The staff asks the applicant to explain the following: a) why the DC is not that the maintenance hatch hoist prevents the uncontrolled lowering of a heavy load equal to the hoist's design load rating, and b) if the maintenance hatch hoist will handle other loads besides the hatch since the ITA states "the maintenance hatch hoist that handles heavy loads.

The AC for this DC states "Each hoist holding mechanism stops and holds the hatch." Explain why the AC does not specify a hold period for the hatch load to determine if the brakes slip over time. The staff requests that the details provided in the applicant's explanation be incorporated into DC, ITA and AC item 3.d.

RAI-SRP 14.3.2-CCIB-09

In ITAAC Table 2.6.9-1, Item 9, the ITA for this DC states "A test is performed to verify that the emergency exits for the protected area perimeter and the vital area are alarmed." The AC for this DC states "The emergency exits from the protected area perimeter and the vital area are alarmed."

Explain what type of alarm is required at the exits, such as sound, light or silent door alarm which alerts a guard elsewhere. Also, explain what causes the alarms to be activated, such as when a door is opened. The staff requests that the details provided in the applicant's explanation be incorporated into AC item 9.

RAI-SRP 14.3.2-CCIB-10

In ITAAC Table 2.6.9-1, Item 10, the ITA for this DC states "Tests are performed for the intrusion detection system used to detect penetration or attempted penetration of the protected area barrier and the vital area portals." The AC for this DC states "The intrusion detection system annunciates in the central and secondary alarm stations upon penetration or attempted penetration into the protected area barrier or the vital area portals."

The staff asks the applicant to explain the following: a) how the penetration tests are to be performed, b) what constitutes a penetration or attempted penetration, c) the desired sensitivity of the intrusion detection system, and d) if the system annunciates on any detection. The staff requests that the details provided in the applicant's explanation be incorporated into ITA and AC item 10.

RAI-SRP 14.3.2-CCIB-11

In ITAAC Table 2.6.9-1, Item 11, the ITA for this DC states "A test of the access control system is performed." The AC for this DC states "The access control system can identify and authorize personnel entering the protected area."

The staff asks the applicant to explain the following: a) how the access control tests are to be performed, b) what constitutes identifying personnel, c) the desired sensitivity of the access control system, and d) the number of correct personnel identifications required during the testing to declare the system acceptable. The staff requests that the details provided in the applicant's explanation be incorporated into ITA and AC item 11.

RAI-SRP 14.3.2-CCIB-12

In ITAAC Table 2.6.9-1, Item 13, the ITA for this DC states "Inspection of the central and secondary alarm stations confirms that each is equipped with the capability to communicate with local law enforcement authorities." The AC for this DC states "The central and secondary alarm stations have communication capabilities with local law enforcement authorities."

The staff asks the applicant to explain the following: a) what is the required method of communication with local law enforcement authorities, b) are there any requirements for redundancy in communication if one type fails or is disabled, and c). exactly what local law enforce authorities are, such as sheriff or county police. The staff requests that the details provided in the applicant's explanation be incorporated into ITA and AC item 13.

RAI-SRP 14.3.2-CCIB-13

In ITAAC Table 2.7.1-4, Item 8.a, the design commitment 8.a states "The Nuclear Island Nonradioactive Ventilation System (VBS) provides cooling to the main control room (MCR), control support area (CSA), remote shutdown room (RSR), and Class 1E electrical rooms." The ITA for this DC states "Testing will be performed on the components in Table 2.7.1-3 using controls in the MCR." The AC for this DC states "Controls in the MCR operate to cause the components listed in Table 2.7.1-3 to perform the listed functions."

The staff asks the applicant to explain the following: a) why the ITAAC for the DC do not provide the required cooling capacity or other measure of cooling needed for delivery to the MCR, CSA, RSR and Class IE electrical rooms by design, and b) why the AC is a verification of the ability of controls in the MCR to start the components listed in Table 2.7.1-3 instead of a verification that the design level of cooling can be actually achieved for the MCR, CSA, RSR and Class IE electrical rooms. The staff requests that the details provided in the applicant's explanation be incorporated into ITA and AC item 8.a.

RAI-SRP 14.3.2-CCIB-14

In ITAAC Table 2.7.1-4, Item 8.c, the design commitment 8.c states "The Nuclear Island Nonradioactive Ventilation System (VBS) maintains main control room (MCR) and control support area (CSA) habitability when radioactivity is detected." The ITA for this DC states "Testing will be performed on the components in Table 2.7.1-3 using controls in the MCR." The AC for this DC states

"Controls in the MCR operate to cause the components listed in Table 2.7.1-3 to perform the listed functions."

The staff asks the applicant to explain the following: a) why the ITAAC for the DC do not provide the required system component alignments and operating equipment (components) needed to isolate the MCR and CSA from the radioactivity, and b) why the AC is a verification of the ability of controls in the MCR to start the components listed in Table 2.7.1-3 which may assist in maintaining habitability of the MCR and CSA when radioactivity is detected instead of verification that the proper alignment of equipment is achieved to maintain habitability. The staff requests that the details provided in the applicant's explanation be incorporated into ITA and AC item 8.c.

RAI-SRP 14.3.2-CCIB-15

In ITAAC Table 3.1-1, Item 6, the design commitment 6 states "The control support area (CSA) provides a habitable workspace environment." The ITA and AC for this DC states "See Tier 1 Material, Table 2.7.1-4, items 1, 8a), 8c), 12, and 13, Nuclear Island Nonradioiactive Ventilation System (VBS)."

As written, complete verification of this DC for the CSA is dependent upon DCs for the VBS listed in Table 2.7.1-4. Table 2.7.1-4 DC item 1 verifies the VBS is constructed as designed, DC item 8a is that the VBS provides cooling to the CSA, DC item 8c is that the VBS maintains CSA habitability when radioactivity is detected and DC items 12 and 13 verify controls and displays exist in the main control room for the VBS. The staff asks the applicant to explain the following: a) why the ITA and AC for this Table 3.1-1, Item 6 DC is strictly based on the 5 DCs for the VBS, and b) why a habitable workspace environment for the CSA does not also include such things as heating, lighting, computers, desks, chairs, communications, restrooms, and drinking water. The staff requests that the details provided in the applicant's explanation be incorporated into ITA and AC item 6.