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Your ref: Docket No. 52-006
Our ref: DCP/NRC2263

September 15, 2008

Subject: AP1000 Response to Request for Additional Information (SRP14.3.2)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 14.3.2. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in the response is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

A response is provided for RAI-SRP14.3.2-CCIB-02,-03, and -07 through -12 as sent in an email from Dave Jaffe to Sam Adams dated June 26, 2008. This response completes eight of twelve requests received to date for SRP Section 14.3.2.

Questions or requests for additional information related to the content and preparation of this response should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Very truly yours,

Robert Sisk, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

/Enclosure

1. Response to Request for Additional Information on SRP Section 14.3.2

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NRO

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ENCLOSURE 1

Response to Request for Additional Information on SRP Section 14.3.2

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP14.3.2-CCIB-02
Revision: 0

Question:

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 the spent fuel shipping cask crane 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?

Westinghouse Response:

The name of the Spent Fuel Shipping Cask Crane was changed to Cask Handling Crane by the DCD mark-ups provided in RAI-SRP9.1.5-SBPB-07. This change is incorporated in Revision 17 of the DCD.

No part of the bridge, trolley or load block can break the plane of the spent fuel pool edge, as there is a permanent stop to prevent this from happening. The load block hangs between the bridge girders. Any object that is attached to the hook is not considered part of the crane.

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP14.3.2-CCIB-03
Revision: 0

Question:

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?

Westinghouse Response:

The ITAAC for protection against internal flooding were established, reviewed, and approved as part of the AP1000 Design Certification. There have been no changes to the design that require a new review of the ITAAC. If the NRC staff has a concern about the original review of the AP1000 protection a request for additional information is not the appropriate method to address such a concern. To require a change to an ITAAC approved as part of the design certification a material error would need to be identified.

The reason why and how maximum flood level is used as an acceptance criterion for the integrity of the boundaries between rooms is explained by information included in Tier 2 Section 3.4.

In the third paragraph of Subsection 3.4.1.1.2 "Protection from Internal Flooding" the following information is included.

> The AP1000 minimizes the number of penetrations through enclosure or barrier walls below the flood level. Those few penetrations through flood protection walls that are below the maximum flood level are watertight. Any process piping penetrating below the maximum flood level either is embedded in the wall or floor or is welded to a steel sleeve embedded in the wall or floor.

If the as-built wall has a penetration that is not watertight the maximum flood level would be at the elevation of the penetration instead of the top of the curb and would fail the Acceptance Criterion.

In the tenth paragraph of Subsection 3.4.1.2.2.1 Containment Flooding Events the following information is included.

> Curbs are provided around openings through the maintenance floor at elevation 107'-2" to control flooding. Overflow into the refueling canal occurs through a pipe centered at elevation 110'-0". Curbs around openings into the chemical and volume control system compartment extend up to elevation 110'-0". Curbs around openings into the PXS-A compartment extend up to elevation 110'-2". Curbs around openings into the PXS-B compartment extend up to elevation 110'-1". With these curb elevations, water flooding the maintenance floor is directed first into the refueling canal, then into the CVS compartment, then into the PXS-B compartment, and finally into the PXS-A compartment.

This paragraph defines the maximum flood level for the various compartments.

The determination that the acceptance criteria are met is based on an inspection and no additional analysis is needed.

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP14.3.2-CCIB-07
Revision: 0

Question:

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.

Westinghouse Response:

The Design Commitment, Inspection, Test, and Analysis, and Acceptance Criteria have all been modified per RAI-SRP9.1.5-SBPB-09. These changes are incorporated in Revision 17 of the AP1000 DCD. Please review the response and ITAAC changes submitted in RAI-SRP9.1.5-SBPB-09.

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP14.3.2-CCIB-08
Revision: 0

Question:

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.

Westinghouse Response:

The Design Commitment, Inspection, Test, and Analysis, and Acceptance Criteria have all been modified per RAI-SRP9.1.5-SBPB-09. These changes are incorporated in Revision 17 of the AP1000 DCD. Please review the response and ITAAC changes submitted in RAI-SRP9.1.5-SBPB-09.

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP14.3.2-CCIB-09
Revision: 0

Question:

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.

Westinghouse Response:
Through NEI, Westinghouse has worked extensively with NSIR to develop and implement industry standard ITAACs for security based on SRP 14.3.12 (Ref. 1). Alarm type and detailed activation explanations are not required by the SRP. AP1000 security ITAAC number 9 aligns with SRP ITAAC number 15 (Ref. 2) with the exception that it has been modified to specify that the emergency exits <u>through</u> the protected areas <u>perimeter</u> and vital area <u>boundary</u> are alarmed.

ITAAC test procedures will be developed for and described in the ITAAC closure report. The ITAAC closure report will discuss what causes the alarms to be activated.

References:

1. NUREG-0800, Chapter 14.3.12
2. APP-GW-GLR-034 Rev. 0, "Security Related ITAAC Changes"

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP14.3.2-CCIB-10
Revision: 0

Question:

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.

Westinghouse Response:
Through NEI, Westinghouse has worked extensively with NSIR to develop and implement industry standard ITAACs for security based on SRP 14.3.12 (Ref. 1). AP1000 physical security ITAAC number 10 (Ref. 2) conforms to SRP ITAAC number 4.

ITAAC test procedures will be developed for and described in the ITAAC closure report. Performance requirements for the intrusion detection system will be defined in the ITAAC closure report per Regulatory Guide 5.44 (Ref. 3). A 90% detection of penetration with a 95% confidence will be the goal of the intrusion detection system per reference 3. The intrusion detection system is designed to detect an individual weighing a minimum of 77 pounds whether the individual is running, walking, crawling, jumping, or rolling through the perimeter of a protected area per reference 3.

Reference(s):

1. NUREG-0800, Chapter 14.3.12
2. APP-GW-GLR-034 Rev. 0, "Security Related ITAAC Changes"
3. Regulatory Guide 5.44 Rev. 3, "Perimeter Intrusion Alarm Systems"

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP14.3.2-CCIB-11
Revision: 0

Question:

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.

Westinghouse Response:
Through NEI, Westinghouse has worked extensively with NSIR to develop and implement industry standard ITAACs for security based on SRP 14.3.12 (Ref. 1). AP1000 physical security ITAAC number 11 (Ref. 2) aligns with SRP ITAAC number 9 with the exception that it has been modified from the SRP to place emphasis on the access authorization system not the picture badge.

ITAAC test procedures will be developed for and described in the ITAAC closure report. The ITAAC closure report will discuss the number of correct personnel identifications required during the testing to declare the system acceptable. Requirements of the access authorization system are discussed in section 9 of the site specific physical security plan (Ref. 3) which each COL applicant will provide.

References:

1. NUREG-0800, Chapter 14.3.12
2. APP-GW-GLE-034 Rev. 0, "Security Related ITAAC Changes"
3. NEI 03-12 Rev. 4, "Security Plan, Training and Qualification Plan, Safeguards Contingency Plan"

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP14.3.2-CCIB-12
Revision: 0

Question:
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.

Westinghouse Response:
Through NEI, Westinghouse has worked extensively with NSIR to develop and implement industry standard ITAACs for security based on SRP 14.3.12 (Ref. 1). AP1000 physical security ITAAC number 13 (Ref. 2) aligns with SRP ITAAC number 16 with the exception that it has been modified from the SRP to specifically state that central and secondary alarm stations have conventional communication capabilities with local law enforcement. Conventional communication capabilities refer to a land line telephone. This is specifically stated in the ITAAC. The ITAAC does not require redundant communications with local law enforcement.

The specific local law enforcement agency (LLEA) that a site communicates with is site specific. The primary LLEA supporting each site is defined in section 4.6 of the site specific physical security plan (Ref. 3). Therefore, it is inappropriate to include this information in the standard ITAACS.

Reference(s):

1. NUREG-0800, Chapter 14.3.12
2. APP-GW-GLR-034 Rev. 0, "Security Related ITAAC Changes"
3. NEI 03-12 Rev. 4, "Security Plan, Training and Qualification Plan, Safeguards Contingency Plan"

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None