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Your ref: Docket No. 52-006
Our ref: DCP/NRC2178

June 26, 2008

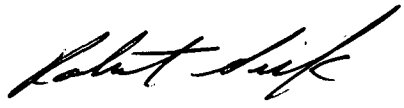
Subject: AP1000 Response to Requests for Additional Information (SRP9.1.5)

Westinghouse is submitting a response to the NRC requests for additional information (RAIs) on SRP Section 9.1.5. 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-SRP9.1.5-SBPB-01 through -08, as sent in an email from Perry Buckberg to Sam Adams dated April 29, 2008. This response completes all requests received to date for SRP Section 9.1.5.

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,



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/Enclosure

1. Response to Requests for Additional Information on SRP Section 9.1.5

D063
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ENCLOSURE 1

Response to Requests for Additional Information on SRP Section 9.1.5

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.5-SBPB-01
Revision: 0

Question:

In AP1000 DCD Revision 16 it is stated on page 9.1-38 under section 9.1.5.1.2, "Codes and Standards," that the polar crane and cask handling cranes are designed according to NUREG-0554 supplemented by ASME NOG-1 for a Type I single failure proof (SFP) crane. This complies with SRP 9.1.5. Detailed descriptions of the polar crane and cask handling crane are also given in DCD Revision 16 section 9.1.5.

On page 9.1-37 of DCD Revision 16 under section 9.1.5.1.1, "Safety Design Basis," it is stated that the containment equipment hatch hoist and containment maintenance hatch hoist are SFP systems and are classified as seismic Category I. It is also stated that the components of SFP systems necessary to prevent uncontrolled lowering of a critical load are classified as safety-related. On page 9.1-38 of DCD Revision 16 under section 9.1.5.2, "System Description," it is stated that the containment equipment hatch hoist and maintenance hatch hoist incorporate SFP features based on NUREG-0612 guidelines. Additionally, Section 9.1.5.1.2 states that hoists are designed according to ASME NOG-1 and to the applicable ANSI standard. Table 3.2-3 lists the principle design code for MHS-MH-06 and 06 as manufacturers' standard. Unlike the polar crane and cask handling crane, there are no detailed descriptions of the containment equipment hatch hoist and maintenance hatch hoist in DCD section 9.1.5. nor are the design requirements as explicit as they are for the polar and cask handling cranes. Since the equipment and maintenance hatch hoists are SFP, they should have more specific design criteria similar to what is specified for the polar crane and cask handling cranes.

A) ASME NOG-1 for Type I cranes describes design details for SFP hoists. Explain why the DCD does not require the design requirements that are specified for single failure hoists in ASME NOG 1 for a Type 1 cranes to be implemented for the single failure proof equipment and maintenance hatch hoists.

B) Describe the design of the containment equipment hatch hoist and maintenance hatch hoist and the single failure proof features that make them single failure proof systems. Explain if any and which components of these two single failure proof systems prevent uncontrolled lowering of a critical load and are classified safety-related.

Westinghouse Response:

A) The Design Specification of the Maintenance Hatch Hoist system and Equipment Hatch Hoist system will follow the guidelines of NUREG-0554 supplemented by ASME NOG-1. The AP1000 DCD Revision 16, Table 3.2-3 will be revised to reflect this change.

B) The Maintenance Hatch Hoist system and Equipment Hatch Hoist system will adhere to NUREG-0554 supplemented by ASME NOG-1 by the detailed designs following these standards.

References:

i) NUREG-0554, "Single Failure Proof Cranes For Nuclear Power Plants"
ii) ASME NOG-1, "Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)"

Design Control Document (DCD) Revision:

Revise DCD Rev.16 Table 3.2-3 as follows:

MHS-MH-05	Equipment Hatch Hoist	C	I	~~Manufacturer Std.~~ NUREG-0554 supplemented by ASME NOG-1
MHS-MH-06	Maintenance Hatch Hoist	C	I	~~Manufacturer Std.~~ NUREG-0554 supplemented by ASME NOG-1

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.5-SBPB-02
Revision: 0

Question:

In AP1000 DCD Revision 16 on page 9.1-40 in the second paragraph under the heading Lifting Devices Not Specially Designed (for the Polar Crane) it is stated that for the handling of critical loads, dual or redundant slings are used, or a sling having a load rating twice that required for a non-critical load is used. On page 9.1-43 of the DCD in the second paragraph under the heading Lifting Devices Not Specially Designed (for the Cask Handling Crane) the same statement is made. This statement is meant to meet the criteria of NUREG-0612 paragraphs 5.1.6(1)(b)(i) and (ii). Explain how the statements are in compliance with the NUREG-0612 criteria when a sling having a load rating twice that required for a non-critical load is used instead of a load rating twice that required for a critical load.

Westinghouse Response:

NUREG-0612 section 5.1.6 states:

Section 5.1.1 of this report provides certain guidance on slings and special handling devices. Where the alternative is chosen of upgrading the handling system to be "single-failure-proof", the steps beyond general guidelines of Section 5.1.1 should be taken.

Since Westinghouse is not upgrading an existing crane, the intent of the verbiage in the DCD was to conform to section 5.1.1 (5) - Lifting devices that are not specially designed should be installed and used in accordance with the guidelines of ANSI B30.9-1971, "Slings." However, in selecting the proper sling, the load used should be the sum of the static and maximum dynamic load.* The rating identified on the sling, should be in terms of the "static load" which produces the Maximum Static + Dynamic Load.

*For the purpose of selecting the proper sling, loads imposed by the SSE need not be included in the dynamic loads imposed on the sling or lifting device.

What this means is that no matter what type of load is being lifted "critical lift or non-critical lift" the sling rating needs to take into account both static and dynamic loading. But, when you are making a "critical lift" then you must either:

1.) Use two (2) of the properly rated slings per the formula above, OR
2.) Use one (1) sling with Twice (2x) the proper rating per the formula above.

Reference:
1. NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants"

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

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-SRP9.1.5-SBPB-03
Revision: 0

Question:

NUREG-0800 section 9.1.5 revision 1, "Overhead Heavy Load Handling Systems," states in paragraph III.4.C.ii.(2) that slings should satisfy the criteria of ASME B30.9 and be constructed of metallic material (chain or wire rope). In AP1000 DCD Revision 16 it is stated on pages 9.1-40 and 9.1-43 under the headings Lifting Devices Not Specially Designed in the first paragraph that slings or other lifting devices not specially designed are selected in accordance with ANSI B30.9, except that the load rating is based on the combined maximum static and dynamic loads that could be imparted to the sling. The two separate headings are associated with the polar crane and cask handling crane, respectively.

A) Explain if Lifting Devices Not Specially Designed are used with the containment equipment hatch hoist, containment maintenance hatch hoist and other heavy load handling systems in the nuclear island.

B) Although it is stated in the DCD that slings and other lifting devices not specially designed are selected in accordance with ANSI B30.9, explain how the criteria that slings for SFP cranes and hoists be constructed of metallic material (chain or wire rope) is satisfied for the DCD Revision 16.

Westinghouse Response:

A) The Maintenance Hatch Hoist and Equipment Hatch Hoist use lifting devices not specially designed that meet the safety factor requirements of ASME B30.26 2004, "Rigging Hardware".

B) The Westinghouse Design Specifications for the Polar Crane and Cask Handling Crane references ASME B30.9, "Slings" and the NRC REGULATORY ISSUE SUMMARY 2005-25, SUPPLEMENT 1 CLARIFICATION OF NRC GUIDELINES FOR CONTROL OF HEAVY LOADS. This verbiage needs added to the DCD.

In this Supplement, it states that: Slings should satisfy the criteria of American Society of Mechanical Engineers (ASME) B30.9-2003, "Slings," and be constructed of metallic material (chain or wire rope).

Reference:

1. ASME B30.26 2004, "Rigging Hardware"

Design Control Document (DCD) Revision:

Under sections 9.1.5.2.1.2 Component Descriptions and 9.1.5.2.2.2 Component Descriptions:

Lifting Devices Not Specially Designed

Slings or other lifting devices not specially designed are selected in accordance with ANSI B30.9 (Reference 15), except that the load rating is based on the combined maximum static and dynamic loads that could be imparted to the sling.

For the handling of critical loads, dual or redundant slings are used, or a sling having a load rating twice that required for a non-critical load is used and shall be constructed of metallic material (chain or wire rope) per NRC REGULATORY ISSUE SUMMARY 2005-25, SUPPLEMENT 1 (Ref. 23).

9.1.7 References

23. NRC REGULATORY ISSUE SUMMARY 2005-25, SUPPLEMENT 1 "CLARIFICATION OF NRC GUIDELINES FOR CONTROL OF HEAVY LOADS", May 2007.

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.5-SBPB-04
Revision: 0

Question:

In AP1000 DCD Revision 16 on page 9.1-43 under the heading "Special Lifting Devices" (for the cask handling crane) it is stated that the special lifting devices used for the handling of critical loads are listed in Table 9.1.5-2. A review of Table 9.1.5-2 finds only special lifting devices for the polar crane and none for the cask handling crane. Existing plant operating experience demonstrates that a special lifting device is normally used between a cask and the cask handling crane hook due to the shape and size of the cask.

Explain if a special lifting device will be used between the cask and cask handling crane hook for the AP1000 design and if so, why it is not listed in Table 9.1.5-2. If a special lifting device is not used, explain the anticipated rigging of the cask to the cask handling crane hook.

Westinghouse Response:

Special Lifting Devices will be used with the Cask Handling Crane and will be added to the DCD in Table 9.1.5-2.

Design Control Document (DCD) Revision:

Revise DCD Rev.16 Table 9.1.5-2 as shown below:

Table 9.1.5-2

SPECIAL LIFTING DEVICES USED FOR THE HANDLING OF CRITICAL LOADS

Polar Crane Special Lifting Devices	**Description**
Integrated head package (IHP)	The IHP combines several separate components into an integral unit. It incorporates the lifting device that provides the interface between the polar crane and the reactor vessel head.
Reactor internals lifting rig	The reactor internals lifting rig is a three-legged carbon steel and stainless steel structure that is attached to the main hook for handling of the upper and lower reactor internals packages.
Reactor coolant pump (RCP)	The RCP handling machine is used for removal of the RCP motor and hydraulic elements from the pump casing. The pump/motor shell includes lifting lugs which are attached to a lifting device to allow the RCP motor and hydraulic elements to be handled by the polar crane main hook.
Cask Handling Crane Special Lifting Devices	**Description**
Cask Lift Yoke, Cask Lift Yoke Extension and Loaded Canister Handling Equipment	These devices are used for the handling of the Casks and Loaded Canisters, which provide the interface between the Cask Handling Crane and the Shipping Cask or Loaded Canister.

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.5-SBPB-05
Revision: 0

Question:

SRP 9.1.5 and NUREG 0612 provide guidance that state that safe load paths should be defined for movement of heavy loads to minimize the potential to impact irradiated fuel in the reactor vessel and in the spent fuel pool and safe shutdown equipment. These load paths should be defined in procedures, and shown on equipment layout drawings.

A) Please explain where equipment layout drawings are provided in the DCD that show safe load paths for moving heavy loads
B) A COL Action item should be developed to ensure that the COL applicant will provide procedures that define safe load paths.

Westinghouse Response:

A) These drawings are not provided in the DCD. This information is part of the operational programs and is covered by Section 13.4 of the DCD.

B) Operations programs and procedures are discussed in Sections 13.4 and 13.5 of the DCD respectively. Existing COL Information Items are provided in these sections. No further COL Items are necessary.

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-SRP9.1.5-SBPB-06
Revision: 0

Question:

SRP 9.1.5 and NUREG 0612 provide guidance for applicants to describe a heavy load handling program for design, operation, testing, maintenance and inspection of heavy load handling systems.

A COL Action item should be developed to ensure that the COL applicant will provide such a heavy load handling program.

Westinghouse Response:

Westinghouse will provide the COL holder with the Operations and Maintenance Manuals for the heavy load handling systems so that they can be used when they create their programs. Operations programs and procedures are discussed in Sections 13.4 and 13.5 of the DCD to include existing COL Information Items. No further COL Information Items are necessary.

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-SRP9.1.5-SBPB-07
Revision: 0

Question:

a) TR-106, "AP1000 Licensing Design Changes for Mechanical System and Component Design Updates," APP-GW-GLN-106, Revision 1, Section II, on page 9 of 57 under design change subsection 2.i (Design Change 241, Cask Handling Crane Design) states:

> This change is to allow for the Cask Handling Crane to be operated by radio remote control, vice operator's cab, to allow for an unobstructed view of the load at all times.

However, further down in design change subsection 2.i it is also stated:

> The remote and pendant control station shall each have an emergency stop switch that stops all crane motions by removing power.

In AP1000 DCD Revision 16 on page 9.1-42, in the second paragraph under section 9.1.5.2.2.1, System Operation (for the Cask Handling Crane), it is stated:

> Movements of the bridge, trolley, main, and auxiliary hoists can be controlled from a radio remote control or from a pendant suspended from the crane.

Clarify if the cask handling crane is to be operated by radio remote control and from the operator's cab or by radio remote control and from a pendant suspended from the crane.

b) TR-106, "AP1000 Licensing Design Changes for Mechanical System and Component Design Updates," APP-GW-GLN-106, Revision 1, Section IV, on page 45 of 57 under design change subsection 2.k (Design Change 256, Maintenance Hatch Hoist Design) states:

> To be consistent with the changes to DCD Tier 2 regarding the description of the cask handling crane, the following sections of the FSER will need to be revised: Section 9.1.5. This design change does not affect the conclusion in the FSER that the AP1000 cask handling crane complies with the requirements of:

Explain why the above discussion, under the design change subsection 2.k titled, "Design Change 256, Maintenance Hatch Hoist Design," is for the cask handling crane instead of the containment maintenance hatch hoist.

c) In AP1000 DCD Revision 16 on page 9.1-38, in the paragraph under section 9.1.5.2, System Description, it is stated:

> Based on the conservative design of these heavy load handling systems and associated special lifting devices, slings, and load lift points (see subsection 9.1.5.2.3), a load drop of the critical loads handled by the polar crane, cask handling crane, containment equipment hatch hoist, and maintenance hatch hoist and is unlikely.

Provide the correct subsection which a reader is referred to since subsection 9.1.5.2.3 does not exist.

d) TR-106, "AP1000 Licensing Design Changes for Mechanical System and Component Design Updates," APP-GW-GLN-106, Revision 1, Section II, on page 6 of 57 under design change subsection 2.c (Design Change 170, Polar Crane Design) states:

> The critical lift for the Polar Crane is the lifting of the Integrated Head Package from the Reactor Vessel Head to the in-containment storage stand during a refueling outage.

Clarify if the Integrated Head Package is lifted by the Polar Crane from the Reactor Vessel Head or from the Reactor Vessel. Clarify which components comprise the Integrated Head Package. Clarify if the Integrated Head Package and Reactor Vessel Head are two separate lifts by the polar crane.

e) The Title for Section 9.1.6.5 should include Overhead Heavy Load Handling System

f) In tier 1 Section 2.3.5, Item number 4: The cask handling crane is still called the spent fuel shipping cask crane.

Westinghouse Response:

A) The Cask Handling Crane will be operated by radio remote control or from a pendant suspended from the crane. There is no operator's cab for this crane. The word "vice" means "instead of".

B) Design Change 256 makes the Maintenance Hatch Hoist system a single failure proof system. The FSER already lists the Maintenance Hatch Hoist system as a single failure proof system. Therefore Design Change 256 does not affect the conclusion in the FSER that the Maintenance Hatch Hoist system complies with the requirements of:
   - GDC 2 (compliance to the guidance of Regulatory Positions C.1 and C.6 of RG 1.13, as well as Regulatory Positions C.1 and C.2 of RG 1.29),
   - GDC 4 (compliance to the guidance of Regulatory Positions C.3 and C.5 of RG 1.13)

C) The correct subsection is 9.1.5.3, not 9.1.5.2.3.

D) The Integrated Head Package is lifted by the Polar Crane from the Reactor Vessel. The Integrated Head Package includes the Reactor Vessel Head, the Shield Shroud, the Control Rod Drive Mechanism cooling fans, and the Lifting Rig.

The Integrated Head Package and the Reactor Vessel Head are not two separate lifts by the Polar Crane.

E) The title for section 9.1.6.5 should be changed to "Inservice Inspection Load Handling Systems" from "Inservice Inspection Light Load Handling System".

F) The Cask Handling Crane should not be referred to as the Spent Fuel Shipping Cask Crane and needs to be changed in the DCD in 4 sections.

Reference(s):

i) APP-MH02-Z0-101, "Cask Handling Crane Design Specification"
ii) APP-GW-GEE-256, "Maintenance Hatch Hoist Design"
iii) NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design"

Design Control Document (DCD) Revision:

9.1.5.2 System Description

Table 9.1-5 lists heavy load handling systems in the nuclear island. The polar crane is and cask handling crane are designed according to the requirements of NUREG-0554 supplemented by ASME NOG-1 for a Type I, single-failure-proof crane. A description of these polar cranes is provided in this subsection. The containment equipment hatch hoist and maintenance hatch hoist system incorporates single-failure-proof features based on NUREG-0612 guidelines. Based on the conservative design of these heavy load handling systems and associated special lifting devices, slings, and load lift points (See see subsection ~~9.1.5.2.3~~ 9.1.5.3), a load drop of the critical loads handled by the polar crane or the equipment hatch hoist, cask handling crane, containment equipment hatch hoist, and maintenance hatch hoist and is unlikely. Except for the containment polar crane and the equipment hatch hoists, cask handling crane, containment, equipment hatch hoist, and containment maintenance hatch hoist, the heavy load handling systems are not single-failure-proof.

9.1.6.5 Inservice Inspection ~~Light Load Handling System~~ Load Handling Systems

2.3.5 Mechanical Handling System

Design Description

The mechanical handling system (MHS) provides for lifting heavy loads. The MHS equipment can be operated during shutdown and refueling.
The component locations of the MHS are as shown in Table 2.3.5-3.

1. The functional arrangement of the MHS is as described in the Design Description of this Section 2.3.5.

2. The seismic Category I equipment identified in Table 2.3.5-1 can withstand seismic design basis loads without loss of safety function.

3. The MHS provides the following safety-related functions:

   a) The containment polar crane prevents the uncontrolled lowering of a heavy load.
   b) The cask handling crane prevents the uncontrolled lowering of a heavy load.
   c) The equipment hatch hoist prevents the uncontrolled lowering of a heavy load.
   d) The maintenance hatch hoist prevents the uncontrolled lowering of a heavy load.

4. The ~~spent fuel shipping cask~~ cask handling crane cannot move over the spent fuel pool.

Table 2.3.5-2 (cont.)
Inspections, Tests, Analyses, and Acceptance Criteria

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3.d) The maintenance hatch hoist prevents the uncontrolled lowering of a heavy load.	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.	Each hoist holding mechanism stops and holds the hatch.
4. The cask handling crane cannot move over the spent fuel pool.	Testing of the cask handling crane is performed.	The ~~spent fuel shipping cask~~ cask handling crane does not move over the spent fuel pool.

9.1.5.3 Safety Evaluation

The design and arrangement of heavy load handling systems promotes the safe handling of heavy loads by one of the following means:

- A single-failure-proof system is provided so that a load drop is unlikely.

- The arrangement of the system in relationship to safety-related plant components is such that the consequences of a load drop are acceptable per NUREG 0612. Postulated load drops are evaluated in the heavy loads analysis.

The polar crane cask handling crane, the containment equipment hatch, and the maintenance hatch hoists are single failure proof. These systems stop and hold a critical load following the credible failure of a single component. Redundancy is provided for load bearing components such as the hoisting ropes, sheaves, equalizer assembly, hooks, and holding brakes. These systems are designed to support a critical load during and after a safe shutdown earthquake. The seismic Category I equipment and maintenance hatch hoist systems are designed to remain operational following a safe shutdown earthquake. The polar crane is designed to withstand rapid pressurization of the containment during a design basis loss of coolant accident or main steam line break, without collapsing.

The cask loading pit is separated from the spent fuel pool. The ~~spent fuel shipping cask~~ cask handling crane cannot move over the spent fuel pool because the crane rails do not extend over the pool. Mechanical stops prevent the cask handling crane from going beyond the ends of the rails.

A heavy loads analysis is performed to evaluate postulated load drops from heavy load handling systems located in safety-related areas of the plant, specifically the nuclear island. No evaluations are required for critical loads handled by the containment polar crane, the cask handling crane, the containment equipment hatch hoist, and the containment maintenance hatch hoist since a load drop is unlikely.

14.2.9.4.14 Mechanical Handling System Crane Testing

Purpose

The purpose of the mechanical handling system crane testing is to verify that the as-installed components properly perform their functions. The test ensures operation and adequacy of the containment polar crane, which is used to lift and relocate components providing access to the reactor fuel, vessel internals, and reactor components during refueling and servicing operations.
In addition, the following load handling systems described in subsection 9.1.5 are tested; the equipment hatch hoist, maintenance hatch hoist, and the ~~spent fuel shipping cask~~ cask handling crane.

Prerequisites

The construction testing of the heavy lift cranes has been completed. Required support systems, electrical power supplies and control circuits are operational. The heavy load analysis, defining the load paths, has been completed.

General Test Method and Acceptance Criteria

Heavy load crane performance is observed and recorded during a series of individual component and integrated system testing. The following testing verifies that the crane systems function as described in subsection 9.1.5 and in appropriate design specifications:

a) Proper operation and assembly of the various cables, grapples, and hoists including brakes, limit switches, load cells, and other equipment protective devices are verified.

b) Proper operation of control, instrumentation, interlocks, and alarms is verified.

c) Dynamic and static load testing of cranes and hoists, and associated lifting and rigging equipment are performed including a static load test at 125 percent of rated load and full operational test at 100 percent of rated load.

PRA Revision:
None

Technical Report (TR) Revision:
Revise TR-106 as follows:

2.k Design Change 256, Maintenance Hatch Hoist Design:

To be consistent with the changes to DCD Tier 2 regarding the description of the ~~cask handling crane~~ Maintenance Hatch Hoist, ~~the following sections of~~ the FSER will not need to be revised~~:~~ ~~Section 9.1.5~~. This design change does not affect the conclusion in the FSER that the AP1000 ~~cask handling crane~~ Maintenance Hatch Hoist complies with the requirements of:

- GDC 2 (adherence to the guidance of Regulatory Positions C.1 and C.6 of RG 1.13, as well as Regulatory Positions C.1 and C.2 of RG 1.29),
- GDC 4 (adherence to the guidance of Regulatory Positions C.3 and C.5 of RG 1.13)

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.5-SBPB-08
Revision: 0

Question:

TR-106, "AP1000 Licensing Design Changes for Mechanical System and Component Design Updates," APP-GW-GLN-106, Revision 1, Section V describe Post AP1000 DCD Revision 16 changes that were not in TR 134. Please verify that the following changes will be documented in the DCD:

a) Post AP1000 DCD Revision 16 changes have been made to Table 9.1.5-3, Polar Crane Component Data in TR-106, "AP1000 Licensing Design Changes for Mechanical System and Component Design Updates," APP-GW-GLN-106, Revision 1 . DCD Revision 16 Table 9.1.5-3 provides design information for the polar crane bridge, trolley, main hoist and auxiliary hoist. Changes were made to Table 9.1.5-3 to align the DCD with ASME NOG-1 for single failure proof cranes. To align the DCD better with ASME NOG-1, **the description of the braking systems for the bridge, trolley, main hoist and auxiliary hoist were changed in Table 9.1.5-3 to address ASME NOG-1 braking requirements for single failure proof cranes.** These Table 9.1.5-3 post DCD Revision 16 changes are documented in Westinghouse TR-106, but are not documented in TR-134, "AP1000 Impacts to Support COLA Standardization," APP-GW-GLR-134, Revision 4..

b) Post AP1000 DCD Revision 16 changes to the polar crane description have been made to DCD Revision 16 page 9.1-41 in the first sentence in the second paragraph from the top. These changes are under section 9.1.5.2.1.3, "Instrumentation Applications." TR-106, revision 1 has changed the sentence from:

> The secondary protection for each hoist in the raising direction is a block-actuated limit switch which directly interrupts power to the hoist motor **and the hoist brakes, causing** the brakes to set.

To:

> The secondary protection for each hoist in the raising direction is a block-actuated limit switch which directly interrupts power to the hoist motor **and causes** the brake(s) to set.

These post DCD Revision 16 changes are documented in Westinghouse TR-106, "AP1000 Licensing Design Changes for Mechanical System and Component Design Updates," APP-GW-GLN-106, Revision 1, but are not documented in TR-134.

c) Post AP1000 DCD Revision 16 changes to the cask handling crane description have been made to DCD Revision 16 page 9.1-43 in the first sentence in the last paragraph from the bottom. These changes are under section 9.1.5.2.2.3, "Instrumentation Applications." TR-106, revision 1 has changed the sentence from:

The secondary protection for each hoist in the raising direction is a block-actuated limit switch, which is mechanically and electrically independent of the primary limit switch and interrupts power to the hoist motor and **the hoist brakes, causing** the brakes to set.

To:

The secondary protection for each hoist in the raising direction is a block-actuated limit switch, which is mechanically and electrically independent of the primary limit switch and interrupts power to the hoist motor and **causes** the brake(s) to set.

These post DCD Revision 16 changes are documented in Westinghouse TR-106, "AP1000 Licensing Design Changes for Mechanical System and Component Design Updates," APP-GW-GLN-106, Revision 1, but are not documented in TR-134.

d) Post AP1000 DCD Revision 16 changes to the safety evaluation for the single failure proof cranes have been made to DCD Revision 16 page 9.1-44 in the third sentence in the third paragraph from the bottom under section 9.1.5.3, "Safety Evaluation." TR-106, revision 1 has changed the sentence from:

Redundancy is provided for load bearing components such as the hoisting ropes, sheaves, equalizer assembly, hooks, and holding brakes.

To:

Either redundancy **or double design factor** is provided for load bearing components such as the hoisting ropes, sheaves, equalizer assembly, hooks, and holding brakes.

These post DCD Revision 16 changes are documented in Westinghouse TR-106, "AP1000 Licensing Design Changes for Mechanical System and Component Design Updates," APP-GW-GLN-106, Revision 1, but are not documented in TR-134.

Westinghouse Response:

All of these changes, as proposed in TR-106 Rev.1, will be made in Revision 17 of the DCD.

Design Control Document (DCD) Revision:
As described in TR-106, Revision 1.

PRA Revision:
None

Technical Report (TR) Revision:
None