

PMSTPCOL PEmails

From: Tai, Tom
Sent: Thursday, August 04, 2011 2:06 PM
To: Harbuck, Craig
Cc: STPCOL; Joseph, Stacy
Subject: FW: Draft Response to RAI 16-71
Attachments: RAI 16-71 DRAFT.pdf

Craig,

Attached for your information is a draft response to RAI 16-71 from Steve Cashell. Please let me know if you have any questions.

Regards

Tom Tai
DNRL/NRO
(301) 415-8484
Tom.Tai@NRC.GOV

From: Cashell, George S [<mailto:gscashell@STPEGS.COM>]
Sent: Thursday, August 04, 2011 2:02 PM
To: Tai, Tom; Joseph, Stacy
Cc: Mookhoek, William; Scheide, Richard; Agles, James
Subject: Draft Response to RAI 16-71

Tom,

Attached is the draft response to RAI 16-71 concerning center-to-center distance between fuel assemblies in the fuel storage racks. Please note that this draft response has not been reviewed by the project yet. Please call if you have any questions.

Thanks,

Steve Cashell
734-384-9894
734-693-4242

Hearing Identifier: SouthTexas34Public_EX
Email Number: 3026

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Subject: FW: Draft Response to RAI 16-71
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From: Tai, Tom

Created By: Tom.Tai@nrc.gov

Recipients:

"STPCOL" <STP.COL@nrc.gov>
Tracking Status: None
"Joseph, Stacy" <Stacy.Joseph@nrc.gov>
Tracking Status: None
"Harbuck, Craig" <Craig.Harbuck@nrc.gov>
Tracking Status: None

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QUESTION

In its letter (U7-C-NINA-NRC-110098) of July 19, 2011, NINA proposed to remove the new fuel storage racks from the New Fuel Vault of the STP 3&4 ABWR design and revise Standard Departure STD DEP 9.1-1. The attachments to this letter contained a new site specific Tier 1 Departure (STP DEP T1 2.5-1) to remove the new fuel racks from the New Fuel Vault, a revision to departure STD DEP 9.1-1, and the COL application changes associated with these revisions. One of the changes associated with STP DEP T1 2.5-1 omits generic TS 4.3.1.2 (related to center to center distance between fuel assemblies) for new fuel storage from plant specific TS Subsection 4.3.1, Criticality.

NUREG-1433, Standard Technical Specifications, General Electric Plants, BWR/4, Revision 3 (STS) 4.3.1.1.c specifies that the **spent fuel** storage racks are designed and shall be maintained with a "nominal [6.5] inch center to center distance between fuel assemblies placed in the storage racks."

STS 4.3.1.2.d specifies that the **new fuel** storage racks are designed and shall be maintained with a "nominal [6.50] inch center to center distance between fuel assemblies placed in storage racks." Like the STS, generic TS 4.3.1.2.d also specify a center to center distance between fuel assemblies placed in the storage racks. However, as noted, STD DEP T1 2.5-1 omits generic TS 4.3.1.2 for new fuel storage from plant-specific TS Subsection 4.3.1.

However, unlike STS 4.3.1.1.c, generic TS Subsection 4.3.1.1 is missing the provision that specifies a center to center distance between fuel assemblies placed in the spent fuel storage racks. The staff identifies the following reasons why the provision of STS 4.3.1.1.c should be added to plant specific TS 4.3.1.1.

- The generic TS 4.3.1.2 new fuel storage requirement for nominal center to center distance between assemblies placed in the new fuel storage racks should continue to apply when the new fuel is placed in the spent fuel storage racks.
- Including this provision as plant-specific TS 4.3.1.1.c would achieve consistency with STS 4.3.1.1.c.
- The NRC staff previously rejected an industry proposal to remove this provision from STS Rev. 0, Subsection 4.3.1.1 (NUREG-1433, Rev 0, change traveler WOG-24, change C.9, was rejected by the staff on July 27, 1993.)
- The staff has not found an official agency record on the ABWR DC docket that contains an explicit justification for omitting this provision from the ABWR generic TS.

Therefore, the staff requests that the applicant revise departure STP DEP T1 2.5-1 to add the provision of STS 4.3.1.1.c to the plant-specific TS.

RESPONSE

The generic TS 4.3.1.2.d requirement for nominal center to center distance between assemblies placed in the fuel storage racks that was removed from the plant specific technical specifications by letter U7-C-NINA-NRC-110098 dated July 19, 2011, will be restored as plant specific TS 4.3.1.1.c.

The revised COLA Part 2, Tier 2, Section 16.4, Part 4, Section 4.4 and Part 7, Section 2.1, STP DEP T1 2.5-1 pages are shown below. These changes will be included in COLA Rev. 6.

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COLA Part 2, Tier 2, Section 16.4Design Features
4.0

4.0 DESIGN FEATURES

The information in this section of the reference ABWR DCD, including all subsections, is incorporated by reference with the following departure and site-specific supplements. The site-specific supplements partially address COL License Information Item 16.1.

STP DEP T1 2.5-1

4.1 Site

4.1.1 Site and Exclusion Area Boundaries

~~The site and exclusion area boundaries shall be~~ are as described or as shown in Figure 4.1-1 follows:

~~The STP site is located approximately 89 miles southwest of Houston, Texas, and 205 miles southeast of Austin, Texas. The site area is approximately 12,200 acres located in a rural area of south-central Matagorda County. STP 3 & 4 are located within the Exclusion Area Boundary (EAB) already designated for STP 1 & 2. The site boundary entirely encompasses the designated EAB for STP 3 & 4. The EAB is an oval having a minimum distance of approximately 4692 feet from the center of each of the STP 1 & 2 Reactor Containment Buildings. The center of the exclusion area "oval" is a point approximately 305 feet directly west of the center of the Unit 2 Reactor Containment Building.~~

4.1.2 Low Population Zone (LPZ)

~~The LPZ shall be~~ is defined by the 3-mile radius circle from a point approximately 305 feet directly west of the center of the Unit 2 Reactor Containment Building. This point is also the center of the existing STP 1 & 2 LPZ as described or as shown in Figure 4.1-2.

STP DEP T1 2.5-1

4.3 Fuel Storage

4.3.1 Criticality

4.0 DESIGN FEATURES (continued)

4.3.1.1 *The spent fuel storage racks are designed and shall be maintained with:*

a. Fuel assemblies having a maximum k-infinity of 1.35 in the normal reactor core configuration at cold conditions;

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the DCD Tier 2;

~~4.3.1.2 The new fuel storage racks are designed and shall be maintained with:~~

~~*a. Fuel assemblies having a maximum k-infinity of 1.35 in the normal reactor core configuration at 20°C;*~~

~~*b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the DCD Tier 2;*~~

~~*c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1 of the DCD Tier 2; and*~~

~~*d-c. nominal [approximately 16] cm, center to center distance between fuel assemblies placed in storage racks.*~~

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COLA Part 4, Section 4.4

4.0 DESIGN FEATURES

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. Fuel assemblies having a maximum k-infinity of 1.35 in the normal reactor core configuration at cold conditions;
- b. $k_{\text{eff}} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the FSAR;

~~4.3.1.2 The new fuel storage racks are designed and shall be maintained with:~~

- ~~a. Fuel assemblies having a maximum k-infinity of 1.35 in the normal reactor core configuration at 20°C;~~
- ~~b. $k_{\text{eff}} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1 of the FSAR;~~
- ~~c. $k_{\text{eff}} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in Section 9.1 of the FSAR; and~~
- d c. A nominal, [approximately 16] cm, center to center distance between fuel assemblies placed in storage racks.

Part 7, Section 2.1, STP DEP T1 2.5-1**STP DEP T1 2.5-1, Elimination of New Fuel Storage Racks From the New Fuel Vault**

This departure eliminates the new fuel storage racks from the New Fuel Vault (NFV). This site specific change will result in there being only a single design for fuel storage racks, all of which are located in the spent fuel pool (SFP). These racks will store both new and spent fuel assemblies.

The reference ABWR DCD provides for new fuel storage racks in the NFV so that new fuel can be stored in the NFV after receipt inspection and subsequently moved to the SFP before being loaded in the Reactor Pressure Vessel (RPV). New fuel also could be moved directly to the SFP after receipt inspection. At STP 3&4, new fuel will always be moved directly to the SFP after receipt inspection. This reduces the number of times fuel must be handled before being loaded in the RPV. By eliminating interim storage in the NFV, the number of fuel handling evolutions is reduced, thereby reducing risk associated with fuel handling. Eliminating the new fuel racks from the design of STP 3&4 avoids the expense of design, procurement and licensing of a system that will not be used.

- Tier 1 Subsection 2.5.6, Fuel Storage Facility, was modified to remove the new fuel storage rack descriptions.
- Tier 1 Table 2.5.6, Fuel Storage Facility, was modified to remove the new fuel storage rack references.
- Tier 2 Subsection 1.2.6.5 was modified to remove the new fuel storage rack references.
- Tier 2 Subsection 2.2.6.6 was modified to remove the new fuel storage rack references.
- Tier 2 Subsection 3.1.2.1 was modified to remove the new fuel storage rack references.
- Tier 2 Subsection 2.6.3.2 was modified to remove the new fuel storage rack references.
- Tier 2 Section 9.1 was modified to remove the new fuel storage rack references.
- Tier 2 Subsection 9.1.1 was modified to remove the new fuel storage rack references. Descriptions for storage of new fuel were referenced to the Spent Fuel Storage descriptions in Section 9.1.2.
- Tier 2 Subsection 9.1.4 was modified to remove the new fuel storage rack references and load paths modified to remove the new fuel storage racks as a destination.
- Tier 2 Subsection 9.1.6.1 (COL License Information Item 9.1) was revised to reference COL License Information Item 9.3 based on elimination of the New Fuel Storage Racks.

- Tier 2 Subsection 9.1.6.2 (COL License Information Item 9.2) was revised to reference COL License Information Item 9.4 based on elimination of the New Fuel Storage Racks.
- Tier 2 Table 9.1-8 was revised to remove reference to the new fuel vault.
- Tier 2 Figure 9.1-14 was modified to remove reference to New Fuel Storage Racks in the New Fuel Vault.
- Tier 2 Section 12.3 was modified to add reference to STP DEP T1 2.5-1.
- Tier 2 Subsection 12.3.4.3 was modified to remove the new fuel storage rack references.
- Tier 2 Chapter 16, Technical Specifications Design Features Section 4.3, Fuel Storage, was modified to remove the new fuel storage rack references and to include a fuel storage rack center to center distance requirement in the spent fuel storage rack specification, 4.3.1.1.

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