

cc: Gary Walden



39300 Civic Center Drive, Suite 280, Fremont, California 94538
Phone: 510-795-9800 • Fax: 510-744-6002

Facsimile Cover Sheet

To: Tim Kobetz
Company: SFPO
Phone: 301-415-8538
Fax: 301-415-8555

From: U. B. Chopra
Phone: 510-744-6053
Date: Monday, June 04, 2001
Number of Pages: 12 (Including Cover)

Subject: **Chronology of Changes Implemented to CoC 1004
Technical Specification 1.2.1 (Docket 72-1004).**

Mr. Kobetz:

As requested during our telecon with the SFPO staff on last Friday, 6/01/01, we have attached herewith a chronolgy of changes implemented to CoC 1004 Technical Specification 1.2.1 since the issuance of CoC 1004 Revision 1.

This chronolgy establishes the background leading to the inadvertent error described in our letter of May 25, 2001 (RMG-01-023). As discussed in the telecon, depending on the source and the safety implications of the error, a more expedient option (other than TNW submitting an amendment) may be available for correcting CoC 1004.

Please call me at 510-744-6053 if you have any questions.

Thank You.
U. B. Chopra

NMSSO 1PUB
Rec'd from NMSS
on 06/19/01

Chronology of Changes Implemented to CoC 1004 Technical Specification 1.2.1

1. TN West submitted Revision 3 of Amendment No.2 to CoC 1004 on February 10, 1999 to add new fuel qualification tables and increase maximum allowable PWR and BWR fuel burnup parameters (Reference 1). Attachment D of this submittal, entitled "CoC Suggested Pages" included Fuel Specification Tables 1-1a and 1-1b. This submittal did not seek to modify the specification of the fuel physical parameters listed in Tables 1-1a and 1-1b, including the "*Nominal cross-sectional envelope*". See Attachment 1 for an excerpt of Tables 1-1a and 1-1b included with Reference 1.
2. The NRC issued a preliminary CoC and SER on April 16, 1999 (Reference 2). The draft CoC amended the specification of the physical parameters listed in Fuel Specification Tables 1-1a and 1-1b by replacing the words "*See SAR Chapter 3*" with a specific value for each parameter from SAR Chapter 3. The description of the parameters "*Assembly Length*" and "*Nominal cross-sectional envelope*" was changed to "*Maximum Assembly Length (unirradiated)*" and "*Maximum Assembly Width (unirradiated)*" respectively. See Attachment 2 for an excerpt of the modified Tables 1-1a and 1-1b from Reference 2.
3. TN West submitted an application for Amendment No.3 to CoC 1004 on July 26, 1999 to add BPRAs to the authorized contents of the NUHOMS Long Cavity DSC (Reference 3). Attachment B of this submittal entitled "Suggested Changes to CoC" reflected the changes to the Fuel Specification tables due to BPA addition relative to the preliminary CoC included in Reference 2. See Attachment 3 for an excerpt of the modified Tables 1-1a and 1-1b. Thus an inadvertent error initiated in Reference 2 was not recognized by TN West and was further propagated with the submittal of Amendment No. 3.
4. The NRC consolidated Application for Amendments No.2 and 3 (References 1 and 3) into a single Amendment during rulemaking and issued Amendment No.2 on August 30, 2000 (Reference 4). The physical parameters (without BPRAs) listed in Fuel Specification Tables 1-1a and 1-1b of Reference 4 remain unchanged from those listed in Reference 2.

References:

1. Letter from Robert M. Grenier to Dennis G. Reid, "Application for Amendment of CoC No. 72-1004 for Dry Spent Fuel Storage Casks, Revision 3 (TAC No. L22597)", February 10, 1999.
2. Letter from Dennis G. Reid to Robert M. Grenier, "Preliminary Certificate of Compliance and Safety Evaluation Report for the Amended Standardized NUHOMS® Storage System", April 16, 1999.
3. Letter from Robert M. Grenier to Steven Baggett, "Application for Amendment No. 3 of NUHOMS® CoC No. 1004 for Dry Spent Fuel Storage Casks, Revision 0", July 26, 1999.

4. Letter from Steven Baggett to Robert M. Grenier, "Amendment No. 2, Certificate of Compliance No. 1004 for the NUHOMS[®] Storage System", August 30, 2000.

ATTACHMENT 1

Table 1-1a
PWR Fuel Specifications for Fuel to be Stored in the
Standardized NUHOMS®-24P DSC

Title or Parameter	Specifications
Fuel	Only intact, unconsolidated PWR fuel assemblies, with or without control components, with the following requirements
Physical Parameters Fuel Design Assembly Length Nominal Cross-Sectional Envelope Maximum Assembly Weight No. of Assemblies per DSC Fuel Cladding	See SAR Chapter 3 See SAR Chapter 3 See SAR Chapter 3 See SAR Chapter 3 ≤ 24 intact assemblies Zircaloy-clad fuel with no known or suspected gross cladding breaches
Nuclear Parameters Fuel Initial Enrichment Fuel Burnup and Cooling Time	≤ 4.0 wt. % U-235 Per Table 1-2a
Alternate Nuclear Parameters Initial Enrichment Burnup Decay Heat Neutron Source Gamma Source	≤ 4.0 wt. % U-235 ≤ 40,000 MWd/MTU and Per Figure 1.1 ≤ 1.0 kW per assembly ≤ 2.23×10^8 n/sec per assy with spectrum bounded by that in Chapter 7 of SAR ≤ 7.45×10^{15} g/sec per assy with spectrum bounded by that in Chapter 7 of SAR

Table 1-1b
BWR Fuel Specifications of Fuel to be Stored in the
Standardized NUHOMS®-52B DSC

Title or Parameter	Specifications
Fuel	Only intact, unconsolidated BWR fuel assemblies with the following requirements
Physical Parameters Fuel Design Assembly Length Nominal Cross-Sectional Envelope Maximum Assembly Weight No. of Assemblies per DSC Fuel Cladding	See SAR Chapter 3 See SAR Chapter 3 See SAR Chapter 3 See SAR Chapter 3 ≤ 52 intact channeled assemblies Zircaloy-clad fuel with no known or suspected gross cladding breaches
Nuclear Parameters Fuel Initial Lattice Enrichment Fuel Burnup and Cooling Time	≤ 4.0 wt. % U-235 Per Table 1-2b
Alternate Nuclear Parameters Initial Enrichment Burnup Decay Heat Neutron Source Gamma Source	≤ 4.0 wt. % U-235 ≤ 35,000 MWd/MTU ≤ 0.37 kW per assembly ≤ 1.01×10^8 n/sec per assy with spectrum bounded by that in Chapter 7 of SAR ≤ 2.63×10^{15} g/sec per assy with spectrum bounded by that in Chapter 7 of SAR

ATTACHMENT 2

Table 1-1a
PWR Fuel Specifications of Fuel to be Stored in the
Standardized NUHOMS® -24P DSC

Table or Parameter	Specifications
Fuel	Only intact, unconsolidated PWR fuel assemblies (without control components) with the following requirements
Physical Parameters Maximum Assembly Length (unirradiated) Maximum Assembly Width (unirradiated) Maximum Assembly Weight No. of Assemblies per DSC Fuel Cladding	165.75 in (standard cavity) 171.71 in (long cavity) 8.536 in 1682 lbs ≤ 24 intact assemblies Zircaloy-clad fuel with no known or suspected cladding defects greater than pin hole leaks or hairline cracks
Nuclear Parameters Fuel Initial Enrichment Fuel Burnup and Cooling Time	≤ 4.0 wt. % ²³⁵ U Per Table 1-2a
Alternate Nuclear Parameters Initial Enrichment Burnup Decay Heat Neutron Source Gamma Source	≤ 4.0 wt. % ²³⁵ U ≤ 40,000 MWD/MTU and per Figure 1.1 ≤ 1.0 kW per assembly ≤ 2.23 x 10 ⁸ n/sec per assy with spectrum bounded by that in Chapter 7 of SAR ≤ 7.45 x 10 ¹⁵ g/sec per assy with spectrum bounded by that in Chapter 7 of SAR

Table 1-1b
BWR Fuel Specifications of Fuel to be Stored in the
Standardized NUHOMS® -52B DSC

Table or Parameter	Specifications
Fuel	Only intact, unconsolidated BWR fuel assemblies with the following requirements
Physical Parameters Maximum Assembly Length (unirradiated) Maximum Assembly Width (unirradiated) Maximum Assembly Weight No. of Assemblies per DSC Fuel Cladding	176.16 in 5.454 in 725 lbs ≤ 52 intact channeled assemblies Zircaloy-clad fuel with no known or suspected cladding defects greater than pin hole leaks or hairline cracks
Nuclear Parameters Fuel Initial Lattice Enrichment Fuel Burnup and Cooling Time	≤ 4.0 wt. % ²³⁵ U Per Table 1-2b
Alternate Nuclear Parameters Initial Enrichment Burnup Decay Heat Neutron Source Gamma Source	≤ 4.0 wt. % ²³⁵ U ≤ 35,000 MWD/MTU ≤ 0.37 kW per assembly ≤ 1.01 x 10 ⁵ n/sec per assy with spectrum bounded by that in Chapter 7 of SAR ≤ 2.63 x 10 ¹⁵ g/sec per assy with spectrum bounded by that in Chapter 7 of SAR

ATTACHMENT 3

Table 1-1a
PWR Fuel Specifications for Fuel to be Stored in the
Standardized NUHOMS® -24P DSC

Title or Parameter	Specifications
Fuel	Only intact, unconsolidated PWR fuel assemblies (<i>with or without BPRAs</i>) with the following requirements
Physical Parameters (<i>without BPRAs</i>) Maximum Assembly Length (unirradiated) Maximum Assembly Width (unirradiated) Maximum Assembly Weight No. of Assemblies per DSC Fuel Cladding	165.75 in (standard cavity) 171.71 in (long cavity) 8.536 in 1682 lbs ≤ 24 intact assemblies Zircalloy-clad fuel with no known or suspected gross cladding breaches
Physical Parameters (<i>with BPRAs</i>) Maximum Assembly + BPRAs Length (unirradiated) Maximum Assembly Width (unirradiated) Maximum Assembly + BPRAs Weight No. of Assemblies per DSC No. of BPRAs per DSC Fuel Cladding	171.71 in (long cavity) 8.536 in 1682 lbs ≤ 24 intact assemblies ≤ 24 BPRAs Zircalloy-clad fuel with no known or suspected gross cladding breaches
Nuclear Parameters Fuel Initial Enrichment Fuel Burnup and Cooling Time BPRAs Cooling Time (<i>Minimum</i>)	≤ 4.0 wt. % U-235 Per Table 1-2a (<i>without BPRAs</i>) or Per Table 1-2c (<i>with BPRAs</i>) 5 years for B&W Designs 10 years for Westinghouse Designs
Alternate Nuclear Parameters Initial Enrichment Burnup Decay Heat (<i>Fuel + BPRAs</i>) Neutron Fuel Source Gamma (<i>Fuel + BPRAs</i>) Source	≤ 4.0 wt. % U-235 ≤ 40,000 MWd/MTU and Per Figure 1.1 ≤ 1.0 kW per assembly ≤ 2.23×10^8 n/sec per assy with spectrum bounded by that in Chapter 7 of SAR ≤ 7.45×10^{15} g/sec per assy with spectrum bounded by that in Chapter 7 of SAR

Table 1-1b
BWR Fuel Specifications of Fuel to be Stored in the
Standardized NUHOMS®-52B DSC

Title or Parameter	Specifications
Fuel	Only intact, unconsolidated BWR fuel assemblies with the following requirements
Physical Parameters Maximum Assembly Length (unirradiated) Maximum Assembly Width (unirradiated) Maximum Assembly Weight No. of Assemblies per DSC Fuel Cladding	176.16 in 5.454 in 725 lbs ≤ 52 intact channeled assemblies Zircaloy-clad fuel with no known or suspected gross cladding breaches
Nuclear Parameters Fuel Initial Lattice Enrichment Fuel Burnup and Cooling Time	≤ 4.0 wt. % U-235 Per Table 1-2b
Alternate Nuclear Parameters Initial Enrichment Burnup Decay Heat Neutron Source Gamma Source	≤ 4.0 wt. % U-235 ≤ 35,000 MWd/MTU ≤ 0.37 kW per assembly ≤ 1.01×10^8 n/sec per assy with spectrum bounded by that in Chapter 7 of SAR ≤ 2.63×10^{15} g/sec per assy with spectrum bounded by that in Chapter 7 of SAR