

1.0 Request for Exemption

Pursuant to 10 CFR 72.7, Holtec International requests an exemption from the requirements of 10 CFR 72.212(a)(2) and 10 CFR 72.214 for the HI-STORM 100 System Certificate of Compliance (72-1014). The regulations require compliance to the terms and conditions of the Holtec International CoC. Specifically, an exemption is requested from Appendix B, Section 3.3, “Codes and Standards” of CoC 72-1014, for Amendments 0 through 9, as well as Appendix B-100U, Section 3.3.

2.0 Background

As stated in CoC 72-1014, Appendix B, Section 3.3, the HI-STORM 100 System CoC references the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), 1995 Edition with Addenda through 1997 as the governing code for the HI-STORM System MPCs, overpacks, and transfer casks, with the exception of Sections V and IX. Section II of the ASME Code describes the material specifications, including specifications for material SA-516/516M, Grade 70. In the 1995 Edition of the ASME Code, the specification for SA-516, Grade 70 is specified as shown in Table 1.

Table 1: SA-516 Grade 70 Material Specification, Excerpted from ASME B&PV Code 1995

Elements	Composition, % - Grade 70
Carbon ,max ^A	
½ in (12.5 mm) and under	0.27
Over ½ in to 2 in (12.5 to 50 mm), incl	0.28
Over 2 in to 4 in (50 to 100 mm), incl	0.30
Over 4 to 8 in (100 to 200 mm), incl	0.31
Over 8 in (200 mm)	0.31
Manganese:	
½ in (12.5 mm) and under	
Heat analysis ^B	0.85-1.20
Product analysis ^B	0.79-1.30
Over ½ in (12.5 mm):	
Heat analysis	0.85-1.20
Product analysis	0.79-1.30

^AApplies to both heat and product analyses

^BGrade 60 plates ½ in (12.5 mm) and under thickness may have 0.85-1.20% manganese on heat analysis and 0.79-1.30% manganese on product analysis

In ASME Code editions 2007 and 2010, the material specification was updated to include an allowance for increased manganese, as shown in Table 2, Note B.

Table 2: SA-516 Grade 70 Material Specification, Excerpted from ASME 2007 and 2010

Elements	Composition, % - Grade 70
Carbon ,max ^{A,B}	
½ in (12.5 mm) and under	0.27
Over ½ in to 2 in (12.5 to 50 mm), incl	0.28
Over 2 in to 4 in (50 to 100 mm), incl	0.30
Over 4 to 8 in (100 to 200 mm), incl	0.31
Over 8 in (200 mm)	0.31
Manganese ^B :	
½ in (12.5 mm) and under	
Heat analysis	0.85-1.20
Product analysis	0.79-1.30
Over ½ in (12.5 mm):	
Heat analysis	0.85-1.20
Product analysis	0.79-1.30

^AApplies to both heat and product analyses

^BFor each reduction of 0.01 percentage point below the specified maximum for carbon, an increase of 0.06 percentage point above the specified maximum for manganese is permitted, up to a maximum of 1.50% by heat analysis and 1.60% by product analysis

^CGrade 60 plates ½ in (12.5 mm) and under thickness may have 0.85-1.20% manganese on heat analysis and 0.79-1.30% manganese on product analysis

Holtec is requesting an exemption from CoC 72-1014 Appendix B Section 3.3 and CoC 1014 Appendix B-100U Section 3.3 to be able to use the revised SA-516 material specification from ASME 2007 and 2010, for all HI-STORM Amendments. A list of components which utilize SA-516, Grade 70 is shown in Table 2.2.6 of the HI-STORM 100 FSAR (Reference [1]). This exemption is limited to the use of ASME 2007 and 2010 for material SA-516/516M, Grade 70 only, and is essentially an addition to the list of ASME Code Exemptions for the HI-STORM 100 CoC (shown below for illustration).

LIST OF ASME CODE ALTERNATIVES FOR HI-STORM 100 CASK SYSTEM			
Component	Reference ASME Code Section/Article	Code Requirement	Alternative, Justification & Compensatory Measures
HI-STORM OVERPACK and HI-TRAC TRANSFER CASK	Section II, SA-516/516M	Table 1 – Chemical requirements	All SA-516 material used in the HI-STORM 100 system is required to meet the material composition described in ASME Code Section II, 2007 and 2010 editions. This edition allows for a different manganese content from the 1995 edition, but does not change the structural or thermal properties of the material.

3.0 Technical Considerations

The change to material SA-516 only allows a marginal increase in manganese content with an associated marginal reduction in carbon content. Metallurgically there is no deleterious effect, rather a slightly increased manganese content and decreased carbon content (Mn:C ratio) maintains, if not improves, the toughness properties of SA-516 Grade 70 steel. Furthermore, there is no change to the material strength, material density, or thermal properties of the material as indicated in the ASME 2007 and 2010 code years for SA-516. Therefore, none of the safety analyses are impacted by the minor change in manganese content, and there is no change to the properties used in the technical basis.

Additionally, the minor change in manganese and carbon content has been endorsed by ASME, which provides a high level of confidence in the quality and safety of the material.

4.0 Regulatory Considerations

Appendix B, Section 3.3 of the Holtec International CoC (72-1014), for all amendments 0 through 9, states in part that ASME Code 1995 edition, with 1997 Addenda is the governing code for the HI-STORM 100. As described above, Holtec is requesting an exemption from this condition, specifically the use of ASME 2007 and 2010 Code Section II for SA-516, Grade 70 material.

The specific requirements for granting exemptions to 10 CFR Part 72 licensing requirements are set forth in 10 CFR 72.7, Specific Exemptions, which reads as follows:

The Commission may, upon application by any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

Holtec International has reviewed 10 CFR 72 and determined that an exemption to a portion of 10 CFR 72.212(a)(2) and 10 CFR 72.214 are necessary to allow the use of the updated ASME Code. 10 CFR 72.212(a)(s) limits the storage of spent fuel to casks approved in 10 CFR 72 Subpart K. 10 CFR 72.214 states that these casks are “approved for storage under the conditions specified in their Certificates of Compliance.” Since use of the more recent revision of the ASME Code is not in accordance with the conditions currently described in the Holtec CoC, and an exemption should be granted to allow this specific use of the newer revision.

As discussed in the Section 3.0, Technical Considerations, the requested exemption to allow use of the 2007 and 2010 ASME Code, Section II specification for SA-516/516M, Grade 70 has no safety significance and therefore, will not endanger life and property or the common defense and security.

Compliance with the requirements of the ASME code, Section II, 1995 Edition with Addenda through 1997, as currently specified in the CoC would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Attachment 1 to Letter 5014780
Exemption Request for Use of ASME 2007/2010 for SA-516

5.0 Summary

As shown by the technical and regulatory considerations, an exemption to allow the use of the ASME Code, 2007 and 2010 edition, Section II specification for SA-516/516M, Grade 70 should be granted for the HI-STORM 100 and 100U Systems for all certified amendments.

6.0 References

[1] HI-2002444, *Holtec International Final Safety Analysis Report for the HI-STORM 100 Cask System*, Revision 12, March 12, 2014

Attachment 1 to Letter 5014780
Exemption Request for Use of ASME 2007/2010 for SA-516