71-9186

Department of Energy
Washington, DC 20585

NR:RR:WASandman G#11-04084
September 20, 2011

Catherine Haney
Director, Office of Nuclear Material Safety and Safeguards
Nuclear Regulatory Commission
Washington, DC 20555

S-6213 POWER UNIT SHIPPING CONTAINER - NUCLEAR REGULATORY COMMISSION CERTIFICATE OF COMPLIANCE USA/9186/B(U)F-96; REQUEST FOR RENEWAL

Background: The Navy currently uses the S-6213 Power Unit Shipping Container to ship VIRGINIA-class power units from the Navy's core vendor to the two shipyards that build VIRGINIA-class submarines, Electric Boat—Groton and Northrop Grumman Shipbuilding—Newport News. The container is also authorized to ship SEA WOLF-class power units. The Program owns three S-6213 Power Unit Shipping Containers. Two of those are model 1 containers, and the other is a model 2 container. The two models are nearly identical except the model 1 containers are made of carbon steel and the model 2 container is made of HY-80 steel. The model 1 containers were fabricated in the late 1970s, and the model 2 container was fabricated in 1993.

Request for NRC Renewal: This letter requests renewal of the Nuclear Regulatory Commission (NRC) Certificate of Compliance (CoC) for the S-6213 Power Unit Shipping Container, USA/9186/B(U)F-96. The NRC CoC expires on March 31, 2012. Naval Reactors has reviewed the safety and operational documentation for the three S-6213 Power Unit Shipping Containers, and there have been no operational experiences or container modifications that would preclude continued use of these containers. The enclosure to this letter provides a draft revision 12 to the DOE-Naval Reactors CoC for your review. There are no technical changes to the DOE-NR CoC. There are three editorial changes:

a. Revision 12 of the CoC deletes the statement that the S6W shipboard power unit is not authorized for shipment in the model 1 container. Instead, the authorized contents section now

NMSS01

states that the S6W shipboard power unit is only authorized for shipment in the model 2 container.

b. To simplify the CoC, the requirement to perform a nondestructive weld examination of the model 1 container has been consolidated to state that the examination shall be performed in accordance with the technical manual for the S-6213 container. The weld examination requirements contained in the technical manual are identical to the requirements that were previously documented in the CoC. This change is consistent with how other technical requirements are enforced for the S-6213 container and other Program shipping containers. In addition, the CoC no longer requires a determination of the "g" forces that the package or packaging has been subject to during transport. Instead, a weld examination is performed prior to each loaded shipment of the container.

c. Consistent with other Program CoCs, the following statement has been added to the CoC: "Transport by air of fissile material is not authorized."

If you have any questions, please do not hesitate to call me at (202) 781-6166.

B. K. Miles
Naval Reactors

Enclosure: (1) DOE-NR CERTIFICATE OF COMPLIANCE FOR THE S-6213 POWER UNIT SHIPPING CONTAINER, USA/9186/B(U)F-96, REVISION 12 (DRAFT)

Copy to:
V. Ordaz, Director, Spent Fuel Storage & Transportation, NMSS, NRC
D. Weaver, Licensing & Inspection Directorate, SFST, NMSS, NRC
C. Staab, LID, SFST, NMSS, NRC
General Manager, KAPL
Manager, Reactor Servicing Operation (RSO), KAPL
Manager, Fleet/Prototype Refueling (F/PR), RSO, KAPL
Manager, Shipping Container Analysis, F/PR, RSO, KAPL
B. D. Shantz, Shipping Container Analysis, F/PR, RSO, KAPL
KAPL ADSARS

ENCLOSURE (1)

DOE-NR CERTIFICATE OF COMPLIANCE FOR THE S-6213 POWER UNIT SHIPPING CONTAINER, USA/9186/B(U)F-96, REVISION 12 (DRAFT)

DOE F 5822.1
(5-85)
(Formerly EV-618)

U. S. DEPARTMENT OF ENERGY

CERTIFICATE OF COMPLIANCE

For Radioactive Materials Packages

OMB Approval
No. 1910-2000

1a. Certificate Number	1b. Revision No.	1c. Package Identification No.	1d. Page No.	1e. Total No. Pages
USA/9186/B(U)F-96 (DOE-NR)	~~11~~12 (DRAFT)	USA/9186/B(U)F-96 (DOE-NR)	1	43

2. PREAMBLE

2a. This certificate is issued under the authority of 49CFR Part 173.7(d).

2b. The packaging and contents described in item 5 below, meets the safety standards set forth in subpart E, "Package Approval Standards" and subpart F, "Package, Special Form, and LSA-III Tests" Title 10, Code of Federal Regulations, Part 71.

2c. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. This certificate is issued on the basis of a safety analysis report of the package design or application

(1) Prepared by *(Name and address)*:	(2) Title and Identification of report or application:	(3) Date
Bettis Atomic Power Laboratory P. O. Box 79 West Mifflin, PA 15122-0079 Knolls Atomic Power Laboratory P. O. Box 1072 Schenectady, NY 12301-1072	Safety Analysis Report for Shipping the S6W Shipboard Power Unit or the S9G Power Unit in the S-6213 Power Unit Shipping Container	May 28, 1975

4. **CONDITIONS**
This certificate is conditional upon the fulfilling of the applicable Operational and Quality Assurance requirements of 49CFR Parts 100-199 and 10CFR Part 71, and the conditions specified in item 5 below.

5. Description of Packaging and Authorized Contents, Model Number, Criticality Safety Index for Criticality Control, Other Conditions, and References:

S-6213 Power Unit Shipping Container

a. Models: Model 1, S-6213 Power Unit Shipping Container
Model 2, S-6213 Power Unit Shipping Container

b. Description of Packaging

The Model 1 S-6213 power unit shipping container (PUSC) consists of a carbon steel cylindrical shell approximately 9-1/4 feet in outside diameter by 39-1/2 feet long, including hemispherical steel end impact limiters, with 10-3/4 foot outside diameter central flanges joining the barrel and cover halves. The Model 2 S-6213 PUSC is of the same design as the Model 1, except that the primary container material is HY-80 steel. A power unit is supported in the PUSC by a centrally-located thick circular steel plate (PU head) which is clamped between the central mating flanges of the PUSC fastened by 94, 2-inch diameter high strength studs. The upper and lower extremities of the power unit cantilever into the barrel and cover halves without additional support. A lower support adapter, which has a 1.0-inch diametric clearance with the core barrel in normal shipping conditions and limits core barrel deflection in accident conditions, is installed in the barrel-end of the container for the S6W shipboard power unit shipment. A shipping/lifting ring, a flange adapter, and a lower support adapter are installed in the container during shipment of the S9G power unit.

6a. Date of Issuance: ~~December 2, 2008~~	6b. Expiration Date: ~~March 31, 2012~~

FOR THE U.S. DEPARTMENT OF ENERGY

7a. Address *(of DOE Issuing Office)*	7b. Signature, Name and Title *(of DOE Approving Official)*
Naval Reactors U. S. Department of Energy Washington, D. C. 20585	S. J. Trautman Deputy Director, Naval Reactors

5. (Continued)

The PUSC is shipped in the horizontal position on a support frame which is secured to a specifically built flatbed railcar. The nominal loaded weight for the S6W shipboard power unit shipment is approximately 378,100 pounds. The nominal loaded weight of the S9G power unit shipment is approximately 329,000 pounds.

c. Authorized Contents

For the Model 1 and Model 2 S-6213 PUSC, one S9G power unit (Next Generation Reactor), containing uranium enriched in the U-235 isotope.

For the Model 2 S-6213 PUSC, one S6W shipboard power unit (Advanced Fleet Reactor) ~~or one S9G power unit (Next Generation Reactor),~~ containing uranium enriched in the U-235 isotope.

d. Criticality Safety Index

CSI = 100

e. Other Conditions (Restrictions)

1. Model 1 S-6213 PUSCs serial numbers 1 and 2 were fabricated prior to August 31, 1986, but meet the requirements of a B(U)F-96 container and therefore are authorized packaging per 10CFR71.19(e).

~~2. The S6W shipboard power unit (Advanced Fleet Reactor) authorized content shipped in the Model 1 S-6213 PUSC is designated as B( )F, and is not certified for use after September 30, 2008.~~

~~3.~~2. The S6W shipboard power unit (Advanced Fleet Reactor) authorized content shipped in the Model 2 S-6213 PUSC is designated as B(U)F.

3. For the Model 1 S-6213 PUSC, a nondestructive examination of the entire length of both inner and outer surfaces of the four tie-down support bracket-to-container wall butt welds shall be conducted prior to each loaded shipment as documented in the S-6213 PUSC Technical Manual (NAVSEA 0989-055-4000). ~~in addition to the requirements of Subpart G of 10 CFR Part 71, a determination shall be made, for each shipment, of the "g" forces that the package or packaging has been subjected to during transport.~~

4. Transport by air of fissile material is not authorized.

~~(a) A nondestructive examination of the entire length of both inner and outer surfaces of the four tie-down support bracket-to-container wall butt welds shall be conducted:~~

~~(1) if the packaging (with or without contents) has been subjected to "g" forces in excess of 2 g's in any direction through the center of gravity of the package since the last inspection, and~~

~~(2) after every second shipment.*~~

~~(b) The nondestructive examination in accordance with written procedure may be by either:~~

~~(1) The liquid penetrant method in accordance with:~~

~~(i) Article 6, Section V, ASME Code, or~~

~~(ii) MIL-STD-271E, "Nondestructive Testing Requirements for Metals," Section 5, October 31, 1973, or~~

5. (Continued)

~~(iii) NAVSHIPS 250-1500-1, "Welding Standard", Section 12.5~~

~~*This requirement shall not be construed to require an inspection if the previous shipment has been inspected in accordance with (e.4(a)(1)) above.~~

~~5. (Continued)~~

~~(2) or the magnetic particle method in accordance with:~~

~~(i) Article 7, Section V, ASME Code (Yoke Technique; Dry Particle Method; direct or rectified current), or~~

~~(ii) MIL-STD-271E, Section 4: specifically 4.3.1 (General) and 5.6.1 (coatings), 4.3.3 (Dry Powder), 4.3.3.3.6 (Continuous) and 4.3.3.3 (Procedure) as excepted by using direct or rectified current 4.3.3.3.3 (Yoke Technique), 4.3.2.5 (sensitivity and cleaning), and 4.3.1.3 (smoothness), or~~

~~(iii) NAVSHIPS 250-1500-1, Sections 12.4, 12.4.1 (General), 12.4.3 (Dry Powder), 12.4.3.5.2 (Yoke Technique) using direct or rectified current.~~

~~(3) If any indications, as defined in accordance with either:~~

~~(i) Paragraph UA-93(a), Appendix VIII, Division 1, Section VIII, ASME Code (with e.2(b)(1)(i), above), or~~

~~(ii) Paragraphs UA-72 and UA-73, Appendix VI, Division 1, Section VIII, ASME Code (with e.2(b)(2)(i), above), or~~

~~(iii) Class 1 acceptance criteria of NAVSEA 0900-LP-003-8000, "Surface Inspection Acceptance Standards for Metals," with Change 2, July, 1974 (with e.2(b)(1)(ii) or e.2(b)(2)(ii), above), or~~

~~(iv) NAVSHIPS 250-1500-1, Section 10.7 (with e.2(b)(1)(iii) or e.2(b)(2)(iii), above), as noted,~~

~~are detected, the packaging shall be repaired and reinspected prior to use and shall be inspected prior to each shipment thereafter. Any defects shall be reported to the Office of Naval Reactors, U.S. Department of Energy.~~

f. References

None

g. Additional Information

For the Model 1 S-6213 PUSC, Nuclear Regulatory Commission concurrence with revised tie-down support bracket weld nondestructive inspection requirements is contained in their memorandum FCTR:JEJ 71-9186 dated August 9, 1978. Nuclear Regulatory Commission concurrence that the shipment of the S6W shipboard power unit (Advanced Fleet Reactor) complies with the requirements of Title 10, Code of Federal Regulations, Part 71 is contained in their memorandum dated January 16, 1991. Nuclear Regulatory Commission concurrence that the shipment of the S9G power unit complies with the requirements of Title 10, Code of Federal Regulations, Part 71 is contained in their memorandum dated August 21, 1998.

5. (Continued)

For the Model 2 S-6213 PUSC, Nuclear Regulatory Commission concurrence that the shipment of S6W shipboard power units (Advanced Fleet Reactor) complies with the requirements of Title 10, Code of Federal Regulations, Part 71 is contained in their memorandum SGTB:DTH 71-9186 dated March 11, 1992. Nuclear Regulatory Commission concurrence that the shipment of the S9G power unit complies with the requirements of Title 10, Code of Federal Regulations, Part 71 is contained in their memorandum dated August 21, 1998.

For the Model 1 and Model 2 S-6213 PUSC, Nuclear Regulatory Commission concurrence that the shipment of the S9G power unit complies with the requirements of Title 10, Code of Federal Regulations, Part 71 is contained in their memorandum dated November 6, 2008. The NRC reviewed a material fracture toughness evaluation submitted via G#C08-00667 dated March 13, 2008 and concluded that the evaluation justified upgrade of the Package Identification Number suffix designation to B(U)F-96.