

**CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES**

1. a. CERTIFICATE NUMBER 9186	b. REVISION NUMBER 15	c. DOCKET NUMBER 71-9186	d. PACKAGE IDENTIFICATION NUMBER USA/9186/B(U)F-96	PAGE 1	PAGES OF 5
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2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. 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

- a. ISSUED TO (*Name and Address*)

U.S. Department of Energy
Division of Naval Reactors
Washington, DC 20858
- b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION
Safety Analysis for Shipping S8G Power Units in the S-6213 Container, Rev. 7, dated June 16, 1975, as supplemented; and Safety Analysis for Shipment of S6W Shipboard Power Units in the Model 2 S-6213 PUSC, as supplemented.

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

- (1) Model Nos.: Model 1, S-6213 Power Unit Shipping Container
Model 2, S-6213 Power Unit Shipping Container

(2) Description

A power unit shipping container (PUSC) for shipment of a power unit complete with control rods and control rod drive mechanisms installed.

The Model 1 S-6213 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 and 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 except for the longest control rod drive mechanisms (S8G Power Unit Type B only). A lower support adapter is installed in the barrel end of the container during shipment of the S6W prototype power unit and the S6W shipboard power unit. A shipping/lifting ring, a flange adapter, and a lower support adapter are installed in the container during shipment of the S9G shipboard power unit.

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5.(a) Packaging (Continued)

(2) Description (Continued)

The PUSC is shipped in the horizontal position on a support frame which is secured to a specially built flatbed rail car. The PUSC, including frame and contents, weighs approximately 490,000 pounds for shipments of Type A and B, S8G power units.

The weight of the PUSC, including frame and contents is approximately 438,900 pounds for shipment of the S6W prototype power unit, 429,900 pounds for shipment of the S6W shipboard power unit, and 329,000 pounds for shipment of the S9G shipboard power unit.

(3) Drawings

The Model 1 and Model 2 S-6213 PUSC are constructed in accordance with the Drawings included in the applications (see references, below).

5.(b) Contents

(1) Type and form of material

- (i) Unirradiated Naval Reactors Type A or B S8G power unit as described in Chapter 5 of the application and containing uranium enriched in the U-235 isotope.
- (ii) Unirradiated S6W advanced fleet reactor prototype power unit or unirradiated S6W advanced fleet reactor shipboard power unit as described in Chapter 6 of "S6W Prototype Power Unit in S-6213 Power Unit Shipping Container Safety Analysis Report" WAPD-REO(c)1219, Revision 1, and containing uranium enriched in the U-235 isotope.
- (iii) Unirradiated S6W high performance fleet core shipboard power unit, as described in addendum to Chapter 6 of "S6W Shipboard Power Unit in S-6213 Power Unit Shipping Container Safety Analysis Report For Packaging," WAPD-REO(c)-1457 and WAPD-REO(c)-1566, and containing uranium enriched in the U-235 isotope.
- (iv) Unirradiated S9G shipboard power unit, as described in Chapter 6 of "S9G Shipboard Power Unit in S-6213 Power Unit Shipping Container Safety Analysis Report For Packaging," Revision 2, and containing uranium enriched in the U-235 isotope.

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5.(b) Contents (Continued)

(2) Maximum quantity of material per package

For the Model 1 S-6213 PUSC:

One Type A S8G Power Unit, or
One Type B S8G Power Unit, or
One S6W Advanced Fleet Reactor Prototype Power Unit, or
One S6W Advanced Fleet Reactor Shipboard Power Unit, or
One S6W High Performance Fleet Core Shipboard Power Unit, or
One S9G Shipboard Power Unit.

For the Model 2 S-6213 PUSC:

One S6W Advanced Fleet Reactor Shipboard Power Unit, or
One S6W High Performance Fleet Core Shipboard Power Unit, or
One S9G Shipboard Power Unit.

5.(c) Criticality Safety Index (CSI):

Minimum CSI to be shown on
label for nuclear criticality control: 100

6. All control rods shall be restrained in the power unit fuel cells by the control rod holddown latches.
7. Transport by air of fissile material is not authorized.
8. For the Model 1 S-6213 PUSC, 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.
 - (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) following the fourth shipment^{*}, and
 - (3) after every second shipment^{*} following the fourth shipment

* This requirement shall not be construed to require an inspection if previous shipment had been inspected in accordance with (8(a)(1)) above.

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8. (b) The nondestructive examination in accordance with a 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
- (iii) NAVSHIPS 250-1500-1, "Welding Standard," Section 12.5

(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, Section 12.4, 12.4.1 (General), 12.4.3 (Dry powder), 12.4.3.3.2.1 (Yoke Technique) using direct or rectified current.

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

- (1) Paragraph UA-93(a), Appendix VIII, Division 1, Section VIII, ASME Code (with 7(b)(2)(i), above), or
- (2) Paragraphs UA-72 and UA-73, Appendix VI, Division 1, Section VIII, ASME Code (with 7(b)(2)(i), above), or
- (3) Class 1 acceptance criteria of NAVSEA 0900-LP-003-8000, "Surface Inspection Acceptance Standards for Metal," with Change 2, July 1, 1974 (with 7(b)(1)(ii) or 7(b)(2)(ii), above), or
- (4) NAVSHIPS 250-1500-1, Section 10.3.2 (with 7(b)(1)(iii) or 7(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 in accordance with 10 CFR §71.95.

9. Expiration date: March 31, 2012.

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REFERENCES

For the Model 1 S-6213 PUSC:

U.S. Naval Reactors application dated July 24, 1975.

Supplements dated: June 3, 1977; July 24, 1978; Naval Reactors letter G#C89-2838, dated May 22, 1989; Naval Reactors letter G#C90-03664, dated September 5, 1990; Naval Reactors letter G#92-03563, dated June 17, 1992; and Naval Reactors letter G#C92-03714, dated October 2, 1992; Naval Reactors letter G#97-03425, dated February 7, 1997; Naval Reactors letter G#C97-03614, dated September 29, 1997; Naval Reactors letter G#01-03619, dated December 11, 2001; Naval Reactors letter G#06-04833, dated December 18, 2006; and Naval Reactors letter G#C08-00667, dated March 13, 2008.

For the Model 2 S-6213 PUSC:

U.S. Naval Reactors application G#C91-11165, dated December 19, 1991.

Supplements dated: Naval Reactors letter G#92-03563, dated June 17, 1992; and Naval Reactors letter G#C92-03714, dated October 2, 1992; Naval Reactors letter G#97-03425, dated February 7, 1997; Naval Reactors letter G#C97-03614, dated September 29, 1997; Naval Reactors letter G#01-03619, dated December 11, 2001; Naval Reactors letter G#06-04833, dated December 18, 2006; and Naval Reactors letter G#C08-00667, dated March 13, 2008.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

Eric J. Benner, Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Dated November 6, 2008