



U.S. Department
of Transportation
**Pipeline and
Hazardous Materials
Safety Administration**

**COMPETENT AUTHORITY CERTIFICATION
FOR A TYPE B(U)
RADIOACTIVE MATERIALS PACKAGE DESIGN
CERTIFICATE USA/9320/B(U)-96, REVISION 2**

East Building, PHH-23
1200 New Jersey Avenue Southeast
Washington, D.C. 20590

This certifies that the radioactive material package design described has been certified by the Competent Authority of the United States as meeting the regulatory requirements for a Type B(U) packaging for radioactive material as prescribed in the regulations of the International Atomic Energy Agency¹ and the United States of America².

1. Package Identification - MIDUS.
2. Package Description and Authorized Radioactive Contents - as described in U.S. Nuclear Regulatory Commission Certificate of Compliance No. 9320, Revision 2 (attached).
3. General Conditions -
 - a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.
 - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.
 - c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

¹ "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency(IAEA), Vienna, Austria.

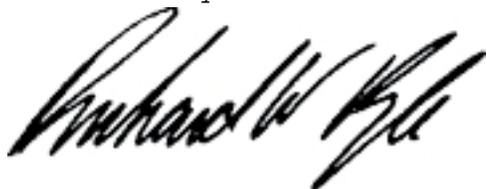
² Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

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- d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations¹ shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.
4. Marking and Labeling - The package shall bear the marking USA/9320/B(U)-96 in addition to other required markings and labeling.
5. Expiration Date - This certificate expires on May 31, 2017.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.471 of Title 49 of the Code of Federal Regulations, in response to the March 19, 2012 petition by Energy Solutions, Columbia, SC, and in consideration of other information on file in this Office.

Certified By:



Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

Mar 30 2012
(DATE)

Revision 2 - Issued to endorse U.S. Nuclear Regulatory Commission Certificate of Compliance 9320, Revision 2.

**CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIAL PACKAGES**

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
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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*)
EnergySolutions Spent Fuel Division
2105 South Bascom Ave., Suite 230
Campbell, CA 95008
- b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION
EnergySolutions Spent Fuel Division application dated
June 20, 2008.

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 No.: MIDUS
- (2) Description

A depleted-uranium shielded package for the transport of medical isotopes. The package has two primary components: (1) an inner cask assembly that provides containment of the radioactive material and radiation shielding, and (2) an overpack that provides impact and thermal protection.

The cask assembly consists of the cask body, closure lid, shield plug, and shield lid. The cask body is a monolithic, machined 2.5-mm thick stainless steel containment vessel, surrounded by approximately 62 mm of depleted uranium gamma shielding, and a 4-mm thick stainless steel outer shell. The containment system closure lid is a 19-mm thick stainless steel plate which is attached to the cask body by 8, M10 X 1.5 X 30 socket head cap screws. The containment system is sealed by two concentric ethylene propylene O-rings, and the lid is equipped with a leak test port. A stainless steel clad depleted uranium shield plug in the cask cavity and a shield lid that is installed over the closure lid provide shielding at the top end of the package. The overpack base and lid are constructed of thin stainless steel shells filled with rigid polyurethane foam. The overpack lid is attached to the base by eight recessed alloy steel bolts. The overpack lid is equipped with four stainless steel lugs for lifting and tie-down, and the overpack base has a bottom flange with four lugs that may also be used for tie-down.

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5.(a) (2) Description (Continued)

The approximate dimensions and weight of the package are:

Overall package outer diameter	520 mm
Overall package height	551 mm
Cask assembly diameter	225 mm
Cask assembly height	347 mm
Cask cavity inner diameter	85 mm
Cask cavity inner height	134 mm
Maximum package weight	330 kg

(3) Drawings

The packaging is constructed and assembled in accordance with EnergySolutions Drawing Nos.:

TYC01-1601, Sheets 1 and 2, Rev. 0	General Arrangement of Packaging and Contents
TYC01-1602, Sheets 1 through 4, Rev. 1	General Arrangement of Cask Assembly
TYC01-1603, Sheets 1 through 3, Rev. 1	General Arrangement of Overpack Assembly
TYC01-1604, Sheets 1 through 3, Rev. 1	Containment System
TYC01-1605, Sheets 1 and 2, Rev. 0	Closure Devices
TYC01-1606, Sheets 1 through 3, Rev. 0	Gamma Shielding
TYC01-1607, Sheets 1 and 2, Rev. 0	Heat Transfer Features
TYC01-1608, Sheet 1, Rev. 0	Energy Absorbing Features
TYC01-1609, Sheets 1 and 2, Rev. 0	Lifting and Tie-Down Devices

(b) Contents

(1) Type and form of material

Molybdenum-99 with its daughter products as sodium molybdate (NaNO₃ 1M / NaOH 0.2M) in liquid form.

The liquid may be contained within product bottles, consisting of stainless steel flasks with stainless steel caps, with or without elastomeric seals. Various stainless steel components may be used as dunnage. The total volume of the payload hardware may not exceed 125 ml (as indicated by a maximum mass of 1.0 kg).

(2) Maximum quantity of material per package

4,400 Ci molybdenum-99. The maximum specific activity is 60 Ci/ml Mo-99. The product volume may vary from 0 to 150 ml.

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6. In addition to the requirements of Subpart G of 10 CFR Part 71:
- (a) The package shall be prepared for shipment and operated in accordance with the Package Operations in Section 7.0 of the application. Optional polymeric dunnage may be placed in the space between the cask assembly and the overpack.
 - (b) The package must meet the Acceptance Tests and Maintenance Program in Section 8.0 of the application.
7. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.
8. Revision No. 1 of this certificate may be used until February 28, 2013.
9. Expiration date: May 31, 2017.

REFERENCES

EnergySolutions Spent Fuel Division application dated June 20, 2008.

Supplement dated February 3, 2012.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION



Christine Lipa, Acting Chief
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Date: February 22, 2012



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION REPORT
Docket No. 71-9320
Model No. MIDUS Transportation Package
Certificate of Compliance No. 9320
Revision No. 2

SUMMARY

By application dated February 3, 2012, EnergySolutions requested renewal of Certificate of Compliance No. 9320, for the Model No. MIDUS package. The certificate has been renewed for a five year term.

EVALUATION

By application dated February 3, 2012, EnergySolutions requested renewal of Certificate of Compliance No. 9320, for the Model No. MIDUS package.

EnergySolutions has reviewed Chapters 7 and 8 of the application pertaining to the operating procedures, acceptance tests, and maintenance programs and determined that they are complete and accurate and do not require revision.

The staff reviewed the documents referenced in the certificate and determined that the documentation was available and complete. The staff also reviewed the operating and maintenance procedures for the package and found them to be adequate.

CONCLUSION

The certificate has been renewed for a five year term that expires on May 31, 2017. This change does not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9320, Revision No. 2 on February 21, 2012.



U.S. Department
of Transportation

East Building, PHH-23
1200 New Jersey Avenue SE
Washington, D.C. 20590

**Pipeline and
Hazardous Materials
Safety Administration**

CERTIFICATE NUMBER: USA/9320/B(U)-96, Revision 2

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