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

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

# COMPETENT AUTHORITY CERTIFICATION FOR A TYPE B(U) RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/0788/B(U)-96, REVISION 2

## REVALIDATION OF UNITED KINGDOM COMPETENT AUTHORITY CERTIFICATE GB/3981A/B(U)-96

This certifies that the radioactive material package design described is hereby approved for use within the United States for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency[1] and the United States of America[2].

1. Package Identification - R7021.

2. Package Description and Authorized Radioactive Contents - as described in United Kingdom Certificate of Competent Authority GB/3981A/B(U)-96, Revision 3 (attached). Authorized radioactive contents must be in special form approved under the IAEA Regulations for the Safe Transport of Radioactive Materials.

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.

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[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.

**CERTIFICATE USA/0788/B(U)-96, REVISION 2**

d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations[1] 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.

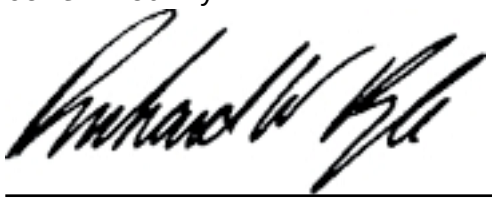
4. Special Condition - Tiedowns must be restricted to those described in RTM 141.

5. Marking and Labeling - The package shall bear the marking USA/0788/B(U)-96 in addition to other required markings and labeling.

6. Expiration Date - This certificate expires on October 31, 2021.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the October 05, 2016 petition by Reviss Services, Chesham, Buckinghamshire, England, , and in consideration of other information on file in this Office.

Certified By:



William Schoonover
Acting Associate Administrator for Hazardous Materials Safety

**Oct 25 2016**
(DATE)

Revision 2 - Issued to revalidate U.K. Certificate of Competent Authority No. GB/3981A/B(U)-96, Revision 3.

Office for Nuclear Regulation

# CERTIFICATE OF APPROVAL OF PACKAGE DESIGN FOR THE CARRIAGE OF RADIOACTIVE MATERIAL

This is to certify that for the purposes of the Regulations of the International Atomic Energy Agency

- The Competent Authority of Great Britain in respect of inland surface transport, being the Office for Nuclear Regulation;
- The Competent Authority of the United Kingdom of Great Britain and Northern Ireland in respect of sea transport, being the Secretary of State for Transport;
- The Competent Authority of the United Kingdom of Great Britain and Northern Ireland in respect of air transport, being the Civil Aviation Authority; and
- The Competent Authority of Northern Ireland in respect of road transport, being the Department of Agriculture, Environment and Rural Affairs - Northern Ireland

approve the package design specified in section 1 of this certificate, as submitted for approval by REVISS Service (UK) Ltd (see Section 5)

as: Type B(U)

by: all modes.

Packaging identification: R7021

Packages manufactured to this design meet the requirements of the regulations and codes on page 2, relevant to the mode of transport, subject to the following general condition and to the conditions in the succeeding pages of this certificate.

In the event of any alteration in the composition of the package, the package design, the management system(s) associated with the package or in any of the facts stated in the application for approval, this certificate will cease to have effect unless the Competent Authority is notified of the alteration and the Competent Authority confirms the certificate notwithstanding the alteration.

Expiry Date: This certificate cancels all previous revisions and is valid until the end of October 2021 (see Section 5).

COMPETENT AUTHORITY IDENTIFICATION MARK: GB/3981A/B(U)-96

Signature:

Date of Issue: 05 October 2016

Steve Vinton
Superintending Inspector
Office for Nuclear Regulation
Redgrave Court, Merton Road
Bootle, Merseyside
L20 7HS

on behalf of the Office for Nuclear Regulation; and the Secretary of State for Transport; the Civil Aviation Authority; and the Department of Agriculture, Environment and Rural Affairs - Northern Ireland.

***This certificate does not relieve the consignor from compliance with any requirement of the government of any country through or into which the package will be transported.***

## REGULATIONS GOVERNING THE TRANSPORT OF RADIOACTIVE MATERIALS

### INTERNATIONAL

International Atomic Energy Agency (IAEA)
SSR-6 Regulations for the Safe Transport of Radioactive Material 2012 Edition

United Nations Economic Commission for Europe (UNECE)
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) 2015 Edition

Intergovernmental Organisation for International Carriage by Rail (OTIF)
Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) 2015 Edition

International Maritime Organization (IMO)
International Maritime Dangerous Goods (IMDG) Code 2014 Edition incorporating Amendment 37-14

International Civil Aviation Organization (ICAO)
Technical Instructions for the Safe Transport of Dangerous Goods by Air 2015-2016 Edition

### UNITED KINGDOM

***ROAD***
GREAT BRITAIN ONLY:
The Energy Act 2013 (2013 c. 32); The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348); The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011 (SI 2011 No. 1885); The Energy Act 2013 (Office for Nuclear Regulation) (Consequential Amendments, Transitional Provisions and Savings) Order 2014 (SI 2014 No. 469)

NORTHERN IRELAND ONLY:
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (Northern Ireland) 2010, SR 2010 No 160; The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations (Northern Ireland) 2011, No 365

***RAIL***
GREAT BRITAIN ONLY:
The Energy Act 2013 (2013 c. 32); The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348); The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011 (SI 2011 No. 1885); The Energy Act 2013 (Office for Nuclear Regulation) (Consequential Amendments, Transitional Provisions and Savings) Order 2014 (SI 2014 No. 469)

***SEA***
British registered ships and all other ships whilst in United Kingdom territorial waters:
The Merchant Shipping Act 1995 (1995 c. 21); The Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997 (SI 1997 No. 2367); Merchant Shipping Notice MSN 1854 (M) The Carriage of Dangerous Goods and Marine Pollutants in Packaged Form: Amendment 37-14 to the International Maritime Dangerous Goods (IMDG) Code

***AIR***
The Air Navigation Order 2009 (SI 2009 No. 3015); The Air Navigation (Dangerous Goods) Regulations 2002 (SI 2002 No. 2786); The Air Navigation (Dangerous Goods) (Amendment) Regulations 2015 (SI 2015 No. 970)

## 1. DESIGN SPECIFICATION

### Package Design

1.1 The package design specification shall be in accordance with REVISS Services (UK) Ltd UK Type B(U) Design Approval Application For The R7021 Transport Container Issue 5, dated 10 November 2014, and modifications to the package design approved by the authorities named on page 1 of this certificate under the established modifications procedure.

### Design Drawings

1.2 The design is specified in the following drawings.

| Design No. | Title (number of components) | Drawing / Drawing List | Issue |
|---|---|---|---|
| 3981A | Package / 3981A (one)<br>Flask (one)<br>Closure (one) | R7021/001<br>R7021/002<br>R7021/003<br>(DL is QS7021 issue 9) | F, G & H<br>D, E & F<br>C, D & E |

### Package Description and Materials of Manufacture

1.3 The outer components of the R7021, a cylindrical, insulated jacket, a top shield (with energy absorbing structures and insulation), and a pallet, are constructed predominantly from carbon steel. There is also a stainless steel grill around the top of the jacket to restrict access to hot surfaces. The flask is a stainless steel, lead shielded, upright, finned cylinder with a conventional plug type closure in the top and thermal insulation built into its top and bottom corners. The closure has a vent point and the cavity has a drain tube to allow the flask to be operated in ponds as well as in cells. The cylindrical cavity holds encapsulated radioactive material in a basket. Although primarily intended to carry Special Form capsules, the flask has a containment system as it may also be used to carry non-Special Form encapsulated material. The closure and the vent and drain plugs are therefore equipped with testable O-ring seals. In addition, to prevent the migration of particulate material past the shielding, the top of the drain tube is fitted with a mesh filter and a spring gasket is used to seal the gap under the closure around the top of the cavity.

1.4 Containment is provided by either the Certified Special Form status of the contents or the flask which has a testable containment system.

1.5 See Appendix 1 for package illustration.

### Package Dimension and Weights

1.6 Nominal dimensions: 1260mm (width) x 1260mm (depth) x 1670mm (height).

1.7 Maximum authorised gross weight: 4600 kg

### Authorised Contents

1.8 State the authorised radioactive contents:

a) Generalised content type (see OP 381 issue 6 for more detail):

b) Encapsulated irradiation sources as Special Form (Co-60 and Cs-137) or non-Special Form Radioactive Material (Co-60).

c) The total activity of the contents shall not exceed 5.92 PBq for non-Special Form Co-60, 7.4 PBq for Special Form Co-60 or 7.4 PBq for Special Form Cs-137.

d) If package is transported by air activities are reduced to 1.2 PBq for non-Special Form Co-60, 1.2 PBq for Special Form Co-60 and 6.0 PBq for Special Form Cs-137.

e) The total rate of heat generation shall not exceed 2.46 kW for non-Special Form Co-60, 3.075 kW for Special Form Co-60 or 0.969 kW for Cs-137.

f) When loaded with more than 1.2 PBq of Cobalt 60 (equivalent to 0.498 kW heat generation rate), the package shall be transported under "Exclusive Use" conditions.

g) The package may be transported empty of contents.

**Restriction on Contents**

1.9 When the sources, together with the capsule holder, are loaded, they shall be located in the source cavity in such a way as to prevent gross movement during routine, normal and accident conditions of transport.

1.10 Air transport restrictions:

1.11 See 1.8(d) above

**Containment System**

1.12 For Special Form radioactive material the containment system is the contents. For non-Special Form radioactive material the containment system comprises the flask and closure inner surfaces, the closure fixings, the vent and drain plugs and the three inner O-ring seals.

1.13 Ambient temperature range for package design:

a) -40°C to +38°C.

## 2. USE OF PACKAGE

**Information Provided in Safety Report on Use of Packaging**

2.1 The packaging shall be used and handled in accordance with the document referred to in Section 1 and REVISS Services (UK) Limited, Operating and Maintenance Instructions, R7021 Transport Container, OP 381, Issue 6, dated 06 September 2016.

2.2 The packaging shall be maintained in accordance with the document referred to in Section 1 and REVISS Services (UK) Limited, Operating and Maintenance Instructions, R7021 Transport Container, OP 381, Issue 6, dated 06 September 2016.

**Actions Prior to Shipment**

2.3 Administrative controls shall ensure that the contents are in accordance with section 1 of this certificate, and that the consignor and consignee hold a copy of the instructions on the use of the packaging.

2.4 The package should be operated by personnel suitable trained in the relevant operating procedures.

**Supplementary Operational Controls**

2.5 The package shall not at any time be sheeted over or over-stowed by loose cargo.

**Emergency Arrangements**

2.6 Before shipment takes place, suitable emergency plans will have been drawn up, copies of which shall be supplied to the GB Competent Authority on demand.

2.7 Within Great Britain, if the consignor's own, or other approved emergency plans, cannot be initiated for any reason, then the police shall be informed immediately and requested to call NAIR (National Arrangements for Incidents involving Radioactivity).

## 3. MANAGEMENT SYSTEMS

3.1 The management system(s) assessed as adequate in relation to this design by the authorities named on page 1 of this certificate, at the date of issue, are as specified in R7021 Issue 5 referred to in Section 1 above, and comprise the following:

- REVISS Services' Quality Assurance Manual QM Issue 10 dated July 2015

3.2 No alteration may be made to any management system confirmed as adequate in relation to this design, unless:

a) the authorities named on page 1 of this certificate have confirmed the amended management system is adequate prior to implementation or use; or
b) the alteration falls within the agreed change control procedures set out in the management system(s).

3.3 Other management systems for design, testing, manufacture, documentation, use, maintenance, inspection, transport and in-transit storage operations may be used providing they comply with international, national or other standards for management systems agreed as acceptable by the authorities named on page 1 of this certificate.

## 4. ADMINISTRATIVE INFORMATION

### Related Approvals

4.1 This certificate forms the base approval of this design. There are no other related GB certificates.

### Packaging Serial Numbers

4.2 This design approval applies only to packaging serial numbers 3981/08 to 3981/12 inclusive.

4.3 For the purpose of compliance with ADR / RID, the owner of the packaging shall be responsible for informing ONR of the serial number of each packaging manufactured to this design.

## 5. CERTIFICATE STATUS

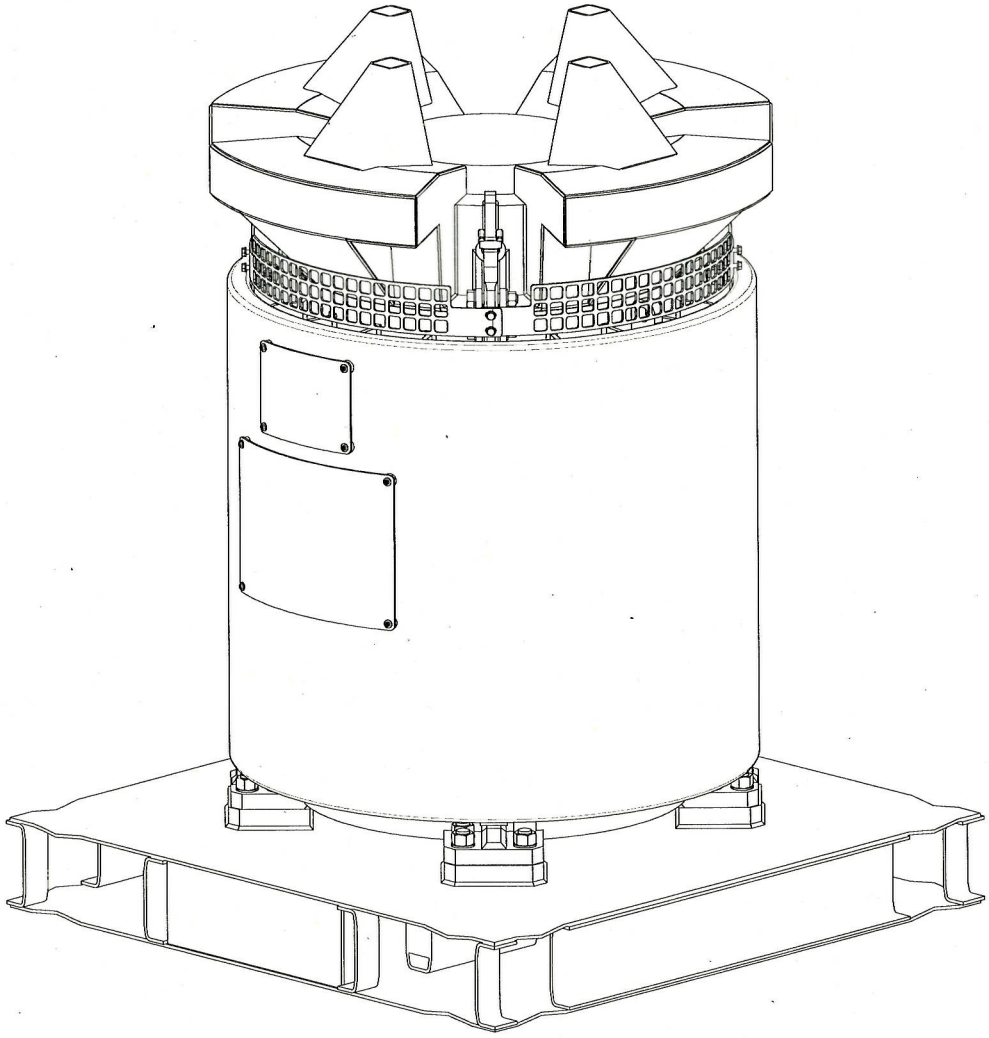
**Design approval issued to:**

REVISS Services (UK) Ltd
179 Brook Drive
Milton Park
Abingdon
Oxfordshire
OX14 4SD
United Kingdom

| Issue / Revision Number | Date of Issue | Date of Expiry | Reason for Revision |
|---|---|---|---|
| 1 | 06 October 2010 | 31 October 2015 | First approval |
| 2 | 23 December 2015 | 31 July 2016 | Short-term certificate |
| 3 | 05 October 2016 | 31 October 2021 | Renewal |

## APPENDIX 1 – PACKAGE ILLUSTRATION

**GB/3981A**



U.S. Department
of Transportation

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

**CERTIFICATE NUMBER:** USA/0788/B(U)-96, Revision 2

**ORIGINAL REGISTRANT(S):**

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