



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/0700/B(U)-96, REVISION 3

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

REVALIDATION OF UNITED KINGDOM COMPETENT AUTHORITY  
CERTIFICATE GB/3746A/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<sup>1</sup> and the United States of America<sup>2</sup>.

1. Package Identification - Model 3746A.
2. Package Description and Authorized Radioactive Contents - as described in United Kingdom Certificate of Competent Authority GB/3746A/B(U)-96, Issue 1 (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.

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<sup>1</sup> "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.

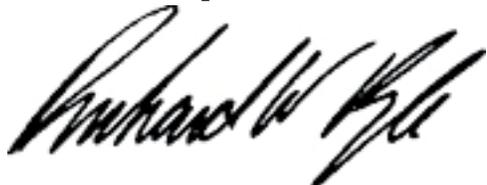
<sup>2</sup> Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

**CERTIFICATE USA/0700/B(U)-96, REVISION 3**

- d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations<sup>1</sup> 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 Conditions -
- a. Although the United Kingdom certificate authorizes several package configurations, the package must be shipped using one of the following inserts and is restricted to the activities listed.
- | Insert Model | Shield Material  | Maximum Activity    | Maximum Activity |
|--------------|------------------|---------------------|------------------|
| Q0014(a)     | Tungsten         | 11.9 Tbq(321.3 Ci)  | 12.0 Tbq(324 Ci) |
| J19          | Tungsten         | 11.9 Tbq(321.3 Ci)  | 12.0 Tbq(324 Ci) |
| J48          | Depleted Uranium | 15.3 Tbq (413.1 Ci) | 12.0 Tbq(324 Ci) |
- b. Mod 1, Issue 1 approved by the United Kingdom Competent Authority is approved for use under the terms of this certificate. A copy of the modification is attached.
5. Marking and Labeling - The package shall bear the marking USA/0700/B(U)-96 in addition to other required markings and labeling.
6. Expiration Date - This certificate expires on February 28, 2013. On March 09, 2009, this certificate supersedes all previous revisions of USA/0700/B(U)-96.

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 February 03, 2009 petition by QSA Global, Inc., Burlington, MA, and in consideration of other information on file in this Office.

Certified By:



Robert A. Richard  
Deputy Associate Administrator for Hazardous Materials Safety

**Mar 06 2009**  
(DATE)

Revision 3 - Issued to revalidate United Kingdom Certificate of Approval No. GB/3746A/B(U)-96, Issue 3, including Mod 1, Issue 1. Certificate and Mod are attached.



Reference: GB/3746A/B(U)-96

Issue 3

Page 1 of 7 pages

## Certificate of Approval of Package Design for the Carriage of Radioactive Materials

THIS IS TO CERTIFY that the Secretary of State for Transport being, for the purposes of the Regulations of the International Atomic Energy Agency, the Competent Authority of Great Britain in respect of inland surface transport and of the United Kingdom of Great Britain and Northern Ireland in respect of sea and air transport and the Department of the Environment for Northern Ireland being the Competent Authority of Northern Ireland in respect of inland surface transport, have approved the Package design as specified in section 1 of this certificate, as applied for by QSA Global Inc. (see section 6)

as Type B(U)

by road, rail, sea and air

**Packaging Identification: 3746A**

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 quality assurance programme(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 is valid until the end of February 2013

**COMPETENT AUTHORITY IDENTIFICATION MARK:** GB/3746A/B(U)-96



  
Transport Radiological Adviser  
Department for Transport  
Great Minster House  
76 Marsham Street  
London SW1P 4DR

*On behalf of the Secretary of State for Transport,  
and the Department of the Environment for 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 AND CODES OF PRACTICE GOVERNING THE TRANSPORT OF RADIOACTIVE MATERIALS

**INTERNATIONAL**

International Atomic Energy Agency (IAEA)

TS-R-1 Regulations for the Safe Transport of Radioactive Materials 2005 Edition.

International Maritime Organisation (IMO)

International Maritime Dangerous Goods (IMDG) Code Amendment 33-06.

International Civil Aviation Organisation (ICAO)

Technical Instructions for the Safe Transport of Dangerous Goods by Air 2007-2008 Edition.

United Nations Economic Commission for Europe (UNECE)

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) 2007 Edition.

Intergovernmental Organisation for International Carriage by Rail (OTIF)

Convention concerning International Carriage by Rail (COTIF) Appendix B. Uniform Rules concerning the Contract for International Carriage of Goods by Rail (CIM) Annex 1 Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) 2007 Edition.

**UNITED KINGDOM**

**ROAD**

**GREAT BRITAIN ONLY.**

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2007, SI 2007 No 1573.

**NORTHERN IRELAND ONLY.**

The Radioactive Substances (Carriage by Road) Regulations (Northern Ireland) 1983, SR 1983 No 344. The Radioactive Substances (Carriage by Road) (Amendment) Regulations (Northern Ireland) 1986, SR 1986 No 61.

**RAIL**

**GREAT BRITAIN ONLY.**

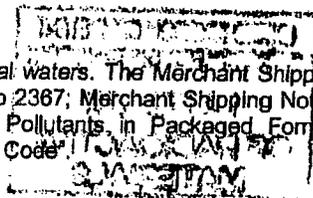
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2007, SI 2007 No 1573.

**SEA**

British registered ships. All other ships whilst in United Kingdom territorial waters. The Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997, SI 1997 No 2367; Merchant Shipping Notice No MSN 1806 M, "The Carriage of Dangerous Goods and Marine Pollutants in Packaged Form - Amendment 33-06 to the International Maritime Dangerous Goods (IMDG) Code".

**AIR**

The Air Navigation Order 2005, SI 2005 No 1970. The Air Navigation (Dangerous Goods) Regulations 2002, SI 2002 No 2786. The Air Navigation (Dangerous Goods) (Amendment) Regulations 2007, SI 2007 No 28.



## 1. PACKAGE DESIGN SPECIFICATION

The Package Design Specification shall be in accordance with QSA Global application for type B(U) Approval for container 3746A QSA/019 Issue 4 dated 31 January 2008 and modifications to the package design approved by the authority named on page 1 of this certificate under the established modifications procedure.

### 1.1 Specification of Packaging

Design No.	Title / No. of Components	Drawing List	Issue
3746A	Outer - Steel Drum with Cork Spacers / One.	) DL A70209 sheet 1	B
		) DL A70209 sheet 2	D
		) DL A70209 sheet 3	C
3015	Inner - Lead Pot, Lid and Shielding inserts (as required) / One.	) DL A70209 sheet 4	B
		) DL A70209 sheet 5	B
		) DL A70209 sheet 6	C
IAEA SFC	Any IAEA Special Form Capsule / (see section 4.2b) One or more.	) DL A70209 sheet 7	A
		) DL A70209 sheet 8	A

### 1.2 Authorised Contents

Metallic Iridium or Selenium intermetallic alloy encapsulated as IAEA Special Form Material.

- a) The maximum activity of Iridium 192 carried in the package is dependant on the package make-up, the following limits shall not be exceeded when using the following inserts:
  - 15.3 TBq when a DU core shield is used
  - 14.7 TBq when a Tungsten core shield is used
  - 4.25 TBq when a Lead core shield is used
- b) The maximum activity of Selenium 75 carried in the package is dependant on the package make-up, the following limits shall not be exceeded when using the following inserts:
  - 12.0 TBq when a DU core shield is used
  - 12.0 TBq when a Tungsten core shield is used
  - 12.0 TBq when a Lead core shield is used
- c) When any combination of the radionuclides referred to in paragraphs 1.2 a) and 1.2 b) is to be carried the activity shall be limited such that the sum of the proportionate amounts of each radionuclide present with respect to the quantities shown does not exceed one.

### 1.3 Package Dimensions and Weights

- a) Nominal Dimensions: 325mm diameter x 405mm high (see section 5 for package illustration)
- b) Maximum authorised gross weight: 54 kg

## 2. USE OF PACKAGE

### 2.1 Use of packaging

- a) The packaging shall be used, handled and maintained in accordance with the requirements of HPI 133 Issue 6 dated 27 November 2007 and QCP406 Issue 5 dated 30 January 2008.

### 2.2 Actions prior to shipment

- a) 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.
- b) The package is not required to reach thermal equilibrium prior to shipment.

### 2.3 Emergency Arrangements

- a) Before shipment takes place, the consignor shall have drawn up suitable emergency plans, copies of which shall be supplied to the UK Competent Authority on demand.
- b) 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 the local NAIR (National Arrangements for Incidents involving Radioactivity) establishment.

## 3. QUALITY ASSURANCE

### 3.1 Quality assurance programmes applicable to this design are:

- a) QSM-1: QSA Global Inc. Quality Service Manual; and
- b) any other quality assurance programmes associated with the design, manufacture, testing, documentation, use, maintenance and inspection, and for transport and in-transit storage operations, which must also comply with national or international standards for quality assurance which are acceptable to the authority named on page 1 of this certificate.

- 3.2 No alterations shall be made to the quality assurance programmes associated with this design and approved by the authority named on page 1 of this certificate unless that alteration has the prior approval of said authority, or it falls within the agreed change control procedures of that programme.
- 3.3 No quality assurance programme shall be used at any stage of the design, manufacture, testing, documentation, use, maintenance and inspection, and for transport and in-transit storage operations, unless said programme forms part of or is the quality assurance programme approved by the authority named on page 1 of this approval certificate.

#### 4. ADMINISTRATIVE INFORMATION

##### 4.1 Other related certificates (alternative radioactive contents)

- a) This certificate forms the base approval of this design. Other related UK certificates using the 3746 outer are shown below: -

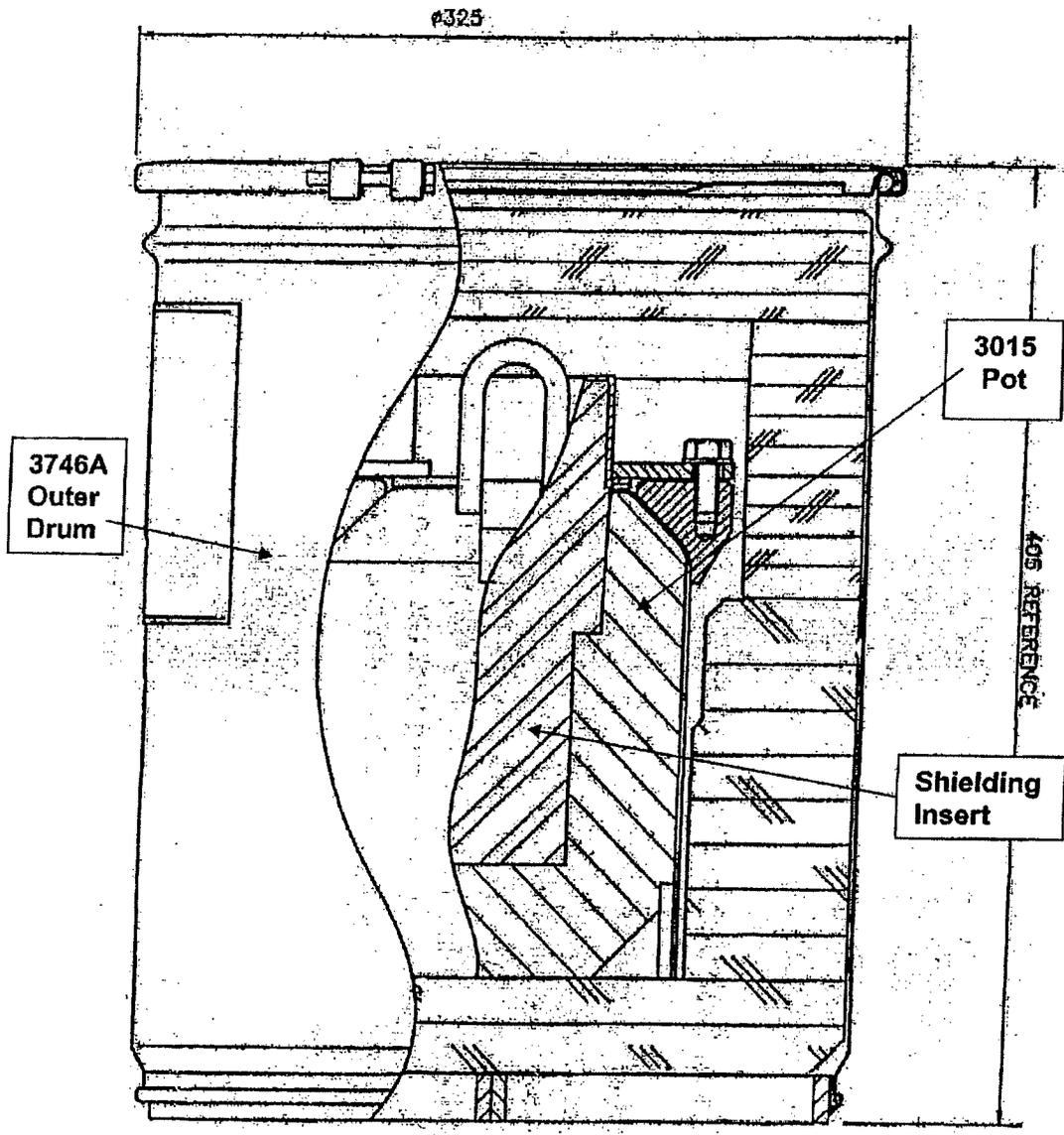
Certificate Reference & Issue	Certificate Type	Expiry Date
GB/3746B/B(U)-96 Issue 2	Design	February 2013

The list in 4.1(a) was complete at the time of compilation of this design approval certificate. Other related certificates may exist.

##### 4.2 Additional Technical Data / Information

- a) At the time of compilation of this design approval certificate, The Ionising Radiations Regulations 1999, SI 1999 No 3232 and Approved Code of Practice apply, with regard to radiation protection, to all modes of transport and The Dangerous Substances in Harbour Areas Regulations 1987, SI 1987 No 37, apply in UK Ports.
- b) In all cases where IAEA Special Form Material is specified in section 1 of this certificate, the consignor shall be in possession of a Valid Competent Authority Certificate for said material.

5. PACKAGE ILLUSTRATION  
GB/3746A/B(U)-96



**6. CERTIFICATE STATUS**

Design Approval Issued to:-  
QSA Global Inc  
40 North Avenue  
Burlington, MA 01803  
USA

Issue No.	Date of Issue	Date of Expiry	Reason for Revision
GB/3746A/B(U)-96 Issue 1	10 September 2004	End of September 2007	First issue under new regulations
GB/3746A/B(U)-96 Issue 2	24 September 2004	End of September 2007	Correction to specification of package
GB/3746A/B(U)-96 Issue 3	As stamp on front page	End of February 2013	Change of ownership and renewal

**Modification Application  
For Transport Container 3746A**

**July 2008**

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## **MODIFICATION APPLICATION FOR TRANSPORT CONTAINER 3746A**

### **1 Introduction**

This application is for a modification to the approved design of Transport Container 3746A, license number GB/3746A/BU-96. It is proposed to apply a polyester powder coating to the drum when the original nickel coating requires repair. Details and justifications for this are presented in the application.

The format for the application is in accordance with Part X of 'Guide to an Application for UK Competent Authority Approval of Radioactive Material in Transport – IAEA 1996 Regulations' (DETR/RMTD/0003 January 2001).

### **2 Administrative Information**

#### **2.1 Package title**

Transport Container 3746A.

#### **Competent Authority mark**

GB/3746A/B(U)-96.

#### **2.2 Addresses**

##### **2.2.1 Applicant**

The Applicant is:

QSA Global Inc.  
40 North Avenue  
Burlington, MA 01803  
USA

Communications regarding the Application should be addressed to:

Mr J Benn  
High Technology Sources Ltd.  
Unit 6, Moorbrook  
Southmead Industrial Estate  
Didcot  
Oxfordshire  
OX11 7HP

Telephone      01235 514202  
Facsimile      01235 514219  
E-mail          jon@hightechsource.co.uk

### **2.2.2 Designer**

The packaging was originally designed by Amersham Laboratories (now GE Amersham) in the late 1970's and variations of the original design have been operating ever since. Initially, the packaging was known as 0666 (Type A) and later as 3605A (Type B). Design ownership subsequently passed to AEA Technology who made no changes in the re-designation from 3605A to 3746A except for applying a new identification label. Although the design is now owned by QSA Global no changes have been made so the designer is:

GE Amersham  
White Lion Road  
Amersham  
Buckinghamshire, HP7 9LL

However, QSA Global has sole rights to the design and is the Design Authority for 3746A.

### **2.2.3 Location of packaging during modification**

The container may be inspected by arrangement with the applicant, see paragraph 2.2.1.

### **2.3 Category of modification**

Category C modification. Minor change to approved design not primarily affecting assessed package safety.

### **2.4 Serial number notification**

QSA Global maintains a register of unique serial numbers allocated to their packagings. A register also provides a cross-reference between the Amersham 3605A and AEA Technology 3746A serial numbers.

The UK Competent Authority may review the registers on request.

### **2.5 Expiry date of current certificate**

February 2013

### **2.6 Date approval required**

31 September 2008

### **2.7 Date of application**

30 June 2008

## **3 Modification Details**

### **3.1 General description of modification**

The 3746A comprises a nickel plated, carbon steel drum carrying a lead pot in a cork liner. The container is 325mm diameter by 405mm high and has a maximum gross weight of 54kg. When the nickel plating on the drum is damaged it must be scrapped. At present there is no repair process specified in the inspection procedure, QCP 406. It is proposed it now includes polyester powder coating.

Note that this modification has been previously approved for the similar 3746B by the DfT under AEAT concession applications QSA:PDN 049 (dated Sep 2004) for package Serial No. 017 and QSA:PDN 053 (dated Feb 2005) for package Serial No. 023.

**3.2 Justification of preservation of design intent**

The design intent is to have a readily applied, robust and durable anti-corrosion system for the steel drum. Polyester powder coating fulfils this intent.

**3.2.1 Weight**

The coating will increase the weight of the drum by approximately 100g (polyester has a density of 1.7 g/cm<sup>3</sup> and the coating has a nominal thickness of 70 µm). This will not require any modification of the lifting or tie-down calculations or the weight marking.

**3.2.2 Compatibility with radioactive contents**

Not applicable - the polyester is applied to the drum only.

**3.2.3 Containment**

Not applicable - the packaging containment system is the special form approved material and is not affected by the proposed modification.

**3.2.4 Radiation**

Not applicable - there will be no effect on the radiation shield, which is the lead pot located inside the drum.

**3.2.5 Normal conditions of transport**

The polyester powder coating will not affect the performance of the 3746A:

- (i) It will have no affect on the mechanical performance as it is so thin and light.
- (ii) It will have no affect on internal temperatures due to self heating as it is so thin.
- (iii) It will not affect insolation temperatures as its emissivity is similar to nickel plating.

**3.2.6 Accident conditions of transport**

The thin polyester coating will not affect the impact test performance and will rapidly burn off in the fire test.

**3.2.7 Decontamination**

Polyester powder coatings are readily decontaminated as they are impermeable and have a high resistance to abrasion and to most chemicals.

**3.3 Revisions to original application**

QCP 406 is raised to issue 6.

**3.4 Justification of category**

The modification provides a means of prolonging the service life of the package by reinstating its corrosion resistance. It does not affect or degrade any safety aspect of the design.

## QSA Global Type B(U) Modification

Competent Authority design number: GB/3746A/B(U)-96

Safety documentation reference: QSA/019 Issue 4

Modification category and justification: Category C modification. Minor modification not primarily affecting the assessed package safety.

Detail of modification: QCP 406 is raised to issue 6 to permit polyester powder coating of drum and lid.

Applicants name: QSA Global Inc.  
40 North Avenue  
Burlington, MA 01803  
USA

Prepared by / date: Reviewed by / date:

*[Signature]* 03-07-08

*[Signature]* 03/07/2008

<p>Competent Authority's comments and signature:</p> <p>Category C Modification Satisfactory</p>	<p>Authorisation stamp:</p> <div data-bbox="1019 1388 1339 1591" style="border: 1px solid black; padding: 5px; text-align: center;"><p>UNITED KINGDOM COMPETENT AUTHORITY FOR THE TRANSPORT - 6 JAN 2009 OF RADIOACTIVE MATERIALS</p></div>
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U.S. Department  
of Transportation

**Pipeline and  
Hazardous Materials  
Safety Administration**

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

**CERTIFICATE NUMBER:** USA/0700/B(U)-96, Revision 3

**ORIGINAL REGISTRANT(S):**

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