U.S. Department
of Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

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

COMPETENT AUTHORITY CERTIFICATION FOR A TYPE B(U) RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/0670/B(U)-96, REVISION 5

REVALIDATION OF UNITED KINGDOM COMPETENT AUTHORITY CERTIFICATE GB/3746B/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 - Model 3746B.

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

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 Conditions -

a. 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.

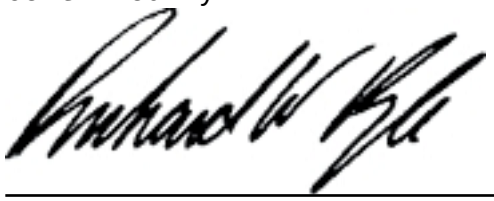
b. Although the United Kingdom certificate authorizes several configurations, the only configuration authorized by this certificate is the P523 lid/retaining strap; the P500 lead pot; the P954 depleted uranium insert; and the P524 4 hole lead insert.

5. Marking and Labeling - The package shall bear the marking USA/0670/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/0670/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:



Mar 06 2009

Robert A. Richard (DATE)
Deputy Associate Administrator for Hazardous Materials Safety

Revision 5 - Issued to revalidate United Kingdom Certificate of Approval No. GB/3746B/B(U)-96, Issue 2, including Mod 1, Issue 1. Certificate and Mod are attached.

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: 3746B

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/3746B/B(U)-96

UNITED KINGDOM COMPETENT AUTHORITY FOR THE TRANSPORT
14 FEB 2008
OF RADIOACTIVE MATERIALS

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 3746B QSA/001 Issue 2 dated 28 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
3746	Outer / Steel Drum with Cork Spacers / One	) DL A70000 sheet 1	D
		) DL A70000 sheet 2	C
		) DL A70000 sheet 3	A
3018	Inner / Lead Pot Lid and Shielding inserts (as required) / One.	) DL A70000 sheet 4	A
		) DL A70000 sheet 5	A
		) DL A70000 sheet 6	A
IAEA SFC (C)	Any IAEA Special Form Capsule / one, two, three or four.	) DL A70000 sheet 7	A
		) DL A70000 sheet 8	A
		) DL A70000 sheet 9	D

[(C) = Containment System)]

1.2 Authorised Contents

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

a) The maximum activity of Iridium 192 in the package shall not exceed: 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:

15.2 TBq when a DU core shield is used
11.9 TBq when a Tungsten core shield is used
4.64 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: 54.3 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 129 Issue 4 dated 28 January and QCP382 Issue 4 dated 23 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: -

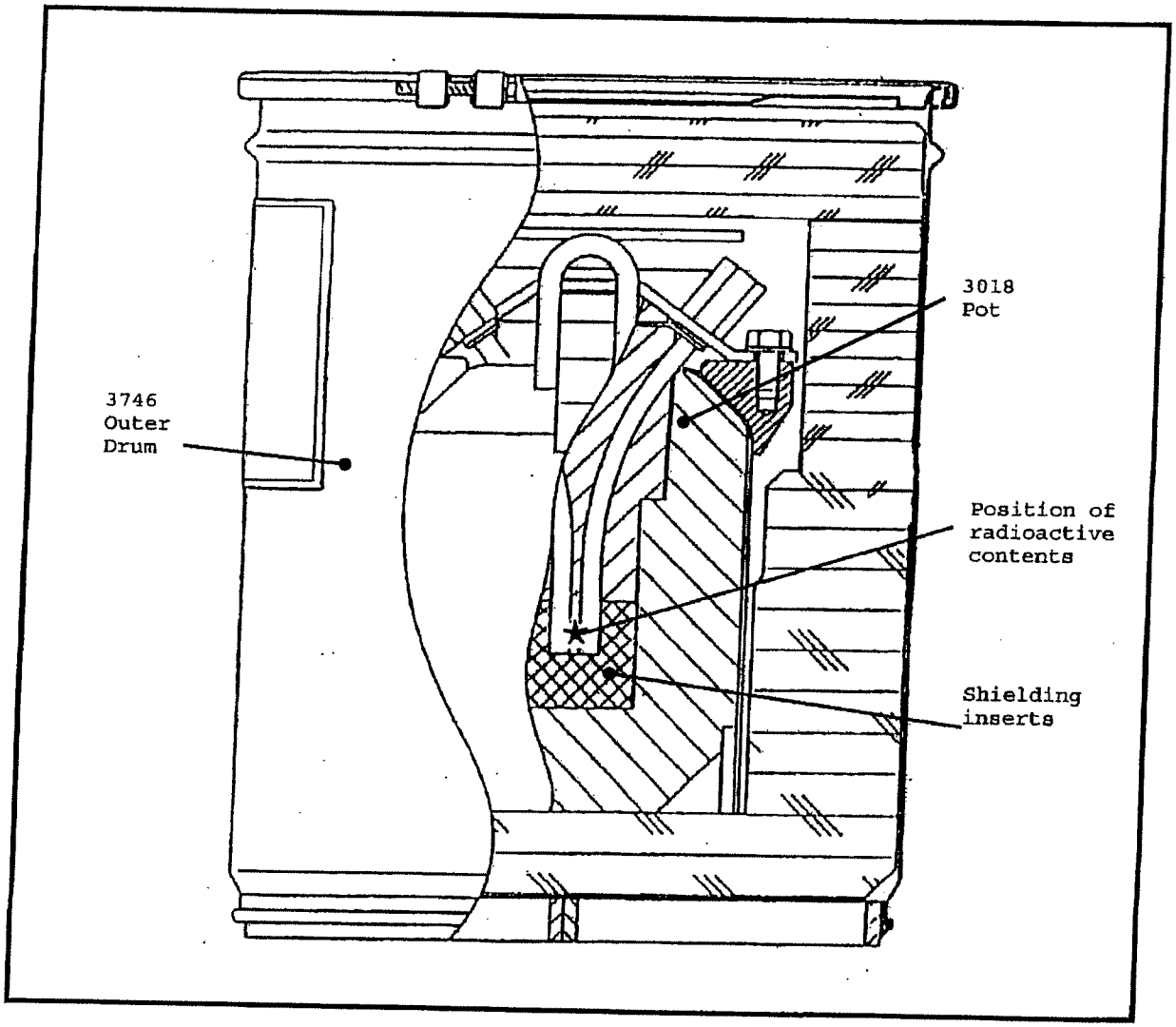
Certificate Reference & Issue	Certificate Type	Expiry Date
GB/3746A/B(U)-96 Issue 3	Design	February 2013

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

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.

5. PACKAGE ILLUSTRATION



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/3746B/B(U)-96 Issue 1	06 February 2004	End of February 2007	First issue under new regulations
GB/3746B/B(U)-96 Issue 2	As stamp on front page	End of February 2013	Renewal and change of ownership

Modification Application
For Transport Container 3746B

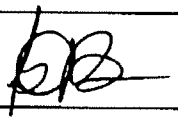
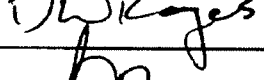
July 2008

QSA GLOBAL

Title	**Modification Application for Transport Container 3746B**
Confidentiality, copyright and reproduction	Copyright QSA Global. Distributed only on the basis of strict confidentiality. Confidentiality to be maintained. Enquiries about copyright and reproduction should be addressed to the Commercial Manager, QSA Global.

QSA Global Inc.
40 North Avenue
Burlington, MA 01803
USA
tel +1 781 272 2000
fax +1 781 359 9179

QSA Global is the trading name of QSA Global Inc.
QSA Global is certificated to ISO 9001: 2000

	Name	Signature	Date
Author	J Benn		03/07/08
Reviewed by	D Rogers		03/07/2008
Approved by	J Benn		03/07/08

CONTENTS

MODIFICATION APPLICATION FOR TRANSPORT CONTAINER 3746B

1 Introduction

This application is for a modification to the approved design of Transport Container 3746B, license number GB/3746B/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 3746B.

Competent Authority mark

GB/3746B/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 0666W (Type A) and later as 3605B (Type B). Design ownership subsequently passed to AEA Technology who made no changes in the re-designation from 3605B to 3746B 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 3746B.

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 3605B and AEA Technology 3746B 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 3746B 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 382. It is proposed it now includes polyester powder coating.

Note that this modification has been previously approved 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^3 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 3746B:

(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 382 is raised to issue 5.

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/3746B/B(U)-96
Safety documentation reference:	QSA/001 Issue 2
Modification category and justification:	Category C modification. Minor modification not primarily affecting the assessed package safety.
Detail of modification:	QCP 382 is raised to issue 5 to permit polyester powder coating of drum and lid.
Applicants name:	QSA Global Inc. 40 North Avenue Burlington, MA 01803 USA
Prepared by / date:	03/07/08
Reviewed by / date:	03/07/2008

Competent Authority's comments and signature:	Authorisation stamp:
Category C Modification. Satisfactory.	UNITED KINGDOM COMPETENT AUTHORITY FOR THE TRANSPORT 5 JAN 2009 OF RADIOACTIVE MATERIALS

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/0670/B(U)-96, Revision 5

ORIGINAL REGISTRANT(S):

Ms. Lori Podolak
Product Licensing Specialist
QSA Global, Inc.
40 North Avenue
Burlington, MA 01803

Ms. Cathleen Roughan
Director, Regulatory Affairs and QA
QSA Global, Inc.
40 North Avenue
Burlington, MA 01803

Mr. Michael Fuller
Regulatory Compliance Associate
QSA Global, Inc.
40 North Avenue
Burlington, MA 01803

REGISTERED USER(S):

Mr. Mike Godin
RAM Transport Specialist
AECL
Chalk River Laboratories
Chalk River
, K0J 1J0
CANADA

Mr. Brian Gale
Compliance Program Authority
AECL
Nuclear Materials Mgmt and Transport
Chalk River Laboratories
Chalk River, Ontarion K0J 1J0
Canada

Mr. Bernie MacDonald
AECL
Nuclear Materials Mgmt and Transport
Chalk River Laboratories
Chalk River, Ontario K0J 1J0
Canada

Ms. Rita Cadoreth
AECL
Nuclear Materials Mgmt and Transport
Chalk River Laboratories
Chalk River, Ontario K0J 1J0
Canada