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 FISSILE RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/0563/AF-96, REVISION 2

REVALIDATION OF UNITED KINGDOM COMPETENT AUTHORITY CERTIFICATE GB/3516A/AF-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 - 3516 Uranic Materials Container.

2. Package Description and Authorized Radioactive Contents - as described in United Kingdom Certificate of Competent Authority GB/3516A/AF-96, Issue 3 (attached).

3. Criticality - The minimum criticality safety index is 1.66. The maximum number of packages per conveyance is determined in accordance with Table X of the IAEA regulations cited in this certificate.

4. 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.

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.

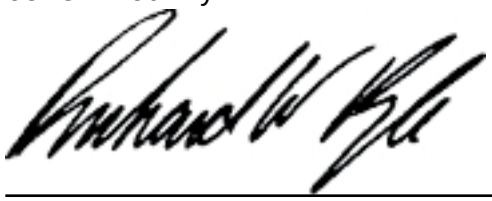
5. Special Condition - The package is not authorized for transport by air.

6. Marking and Labeling - The package shall bear the marking USA/0563/AF-96 in addition to other required markings and labeling.

7. Expiration Date - This certificate expires on August 31, 2018.

This certificate is issued in accordance with paragraph 814 of the IAEA Regulations and Section 173.472 and 173.473 of Title 49 of the Code of Federal Regulations, in response to the March 10, 2014 petition by Westinghouse, 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

Sep 19 2014
(DATE)

Revision 2 - Issued to revalidate UK Certificate of Approval GB/3516A/AF-96, Issue 3 and to extend the expiration date.

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

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 Secretary of State for Energy and Climate Change;**
- **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; and**
- **The Competent Authority of Northern Ireland in respect of road transport, being the Department of the Environment (Northern Ireland)**

approve the package design as specified in Section 1 of this certificate, as applied for by International Nuclear Services (see Section 6)

as Type AF

by road and rail in Great Britain, road in Northern Ireland and sea.

Packaging Identification: Uranic Materials Container

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 Health and Safety Executive (Office for Nuclear Regulation) is notified of the alteration and the Health and Safety Executive (Office for Nuclear Regulation) confirms, on behalf of the relevant Competent Authority, the certificate notwithstanding the alteration.

Expiry Date: This certificate is valid until the **end of August 2018** (see Section 6).

COMPETENT AUTHORITY IDENTIFICATION MARK:

GB/3516A/AF-96

Signature

Date of Issue: 28 February 2014

George Sallit, HM Deputy Chief Inspector
Health and Safety Executive (Office for Nuclear Regulation)
4S.G Redgrave Court
Merton Road
Bootle
Merseyside L20 7HS

on behalf of the Secretary of State for Energy and Climate Change,
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.

Serial No. 2014/28709

REGULATIONS GOVERNING THE TRANSPORT OF RADIOACTIVE MATERIALS

INTERNATIONAL

International Atomic Energy Agency (IAEA)
TS-R-1 Regulations for the Safe Transport of Radioactive Materials 2009 Edition.

International Maritime Organisation (IMO)
International Maritime Dangerous Goods (IMDG) Code Amendment 36-12.

United Nations Economic Commission for Europe (UNECE)
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) 2013 Edition.

Intergovernmental Organisation for International Carriage by Rail (OTIF)
Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) 2013 Edition.

UNITED KINGDOM

ROAD

GREAT BRITAIN ONLY
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009, SI 2009 No. 1348 as amended by the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011, SI 2011 No. 1885.

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

RAIL

GREAT BRITAIN ONLY
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009, SI 2009 No. 1348 as amended by The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011, SI 2011 No. 1885.

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 MSN 1835 (M), "The Carriage of Dangerous Goods and Marine Pollutants in Packaged Form: Amendment 36-12 to the International Maritime Dangerous Goods (IMDG) Code".

1. PACKAGE DESIGN SPECIFICATION

The package design specification shall be in accordance with Springfields Fuels Ltd (Westinghouse) Transport Report No. 126 Issue 2 "Design Safety Report in Support of Competent Authority Approval for Fuel Transport Container Package Design No. 3516A Type A(F) & Type I(F)" dated 07 December 2012; INS letter 1308.3516.02 dated 27 August 2013; INS letter 140213516.03 dated 26 February 2014; 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 Design

Design No.	Title (number of components)	Drawing / Document List
3516 3544	Outer / 3516 Transport Package (one) Inner / Pail (up to nine per package)	DRG/3516 Issue 11 DOC/3516 Issue 8

a) The containment system is defined as the pail, pail lid and clamp band as specified in drawing PK324038 Issue G.

1.2 Authorised Contents

a) Not exceeding 229.5kg of solid uranium oxide compounds in the form of powder, granules or residues.

b) The maximum mass of uranium oxide per pail will depend on enrichment as described in Section 1.3(a) and shall not exceed 25.5kg.

c) The total activity of the contents shall not exceed one A_2.

d) The mass of contents shall be such that the gross mass of the package is greater than 500kg.

1.3 Fissile Material Restrictions

Unless the contents of the package and / or consignment meet the requirements of paragraph 672 of IAEA TS-R-1 2009 Edition, the packages shall comply with the following fissile material approval:

Fissile Material Approval A1

a) Fissile material: Up to nine pails containing uranium oxide compounds enriched up to 4.95wt% U-235/U. The mass of uranium oxide per pail is limited as follows:

Enrichment:	max. 4.95wt%	max. 22.0kg
(U-235/U)	max. 4.50wt%	max. 25.5kg

b) Conditions:
(i) Uranium carbides, hydrides, nitrides and metallic uranium shall not be carried.
(ii) Beryllium, graphite and substances enriched in deuterium shall not be carried.
(iii) Substances having a higher hydrogen density than water shall not be present, however, this does not preclude the use of up to 256g of polyethylene per pail for wrapping or packing.

c) **CRITICALITY SAFETY INDEX (CSI) = 1.66**

d) Criticality safety submissions: Sellafield Ltd report 3516A/CR01 Issue 04, dated 01 August 2012 (Part III of the design safety report referred to in Section 1 above); and Sellafield Ltd Criticality Design Memorandum CDSA/DESM/0813/1911, 3516A/CR01/M01 (Issue 01) dated August 2013.

e) This package has been shown to be sub-critical following water ingress as required by Paragraphs 677 and 678 of IAEA TS-R-1 2009 Edition. Special features to exclude water are not therefore required.

f) The criticality safety case (see (d)) assumes that the fissile material is unirradiated in order to maximise neutron multiplication (this does not preclude the use of reprocessed material).

g) Air transport restrictions: The package has not been shown to be subcritical under the conditions specified in IAEA TS-R-1 2009 Edition paragraph 680. The package may not, therefore, be transported by air.

h) The confinement system of the package comprises the nine stainless steel inner pails, the boron neutron absorber, the thermal barrier and the stainless steel inner and outer containers, as illustrated in Section 5.

GENERAL NOTES ON INTERPRETATION

I. Only the fissile materials specified in sub-paragraph (a) above are permitted to be present, other than in trace quantities, that is to say up to either a total of 1g per package or a concentration of 0.1% by mass of the total fissile nuclides present, whichever is the lesser.

II. Nuclides other than those defined in IAEA TS-R-1 2009 Edition paragraph 222 as fissile materials are not restricted unless so specified above.

III. Where parameters are not qualified as maxima, minima or ranges, the values given are to be within the tolerances specified on the relevant drawings.

1.4 Package Dimensions and Weights

a) Nominal dimensions of 3516 container: 962mm square plan x 690mm high (see Section 5 for package illustration).

b) Maximum authorised gross weight: 693kg.

2. USE OF PACKAGE

2.1 Use of Packaging

a) The package shall be used in accordance with packing instructions drawing PK325692 Issue F and shall be maintained in accordance with document FEMCS2105 Issue E.

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 operating and handling procedures shall be in accordance with Part II, Section 4 of the design safety report referred to in Section 1 above.

2.3 Supplementary Operational Controls

a) Supplementary operational controls are not required.

2.4 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 implement NAIR (National Arrangements for Incidents involving Radioactivity).

2.5 Ambient Temperature Range for Package Design

a) -40°C to +38°C.

3. QUALITY ASSURANCE

3.1 The quality assurance programmes assessed as adequate in relation to this design by the authority named on page 1 of this certificate, at the date of issue, are as specified in the design safety report (as amended by INS letter 1308.3516.02 dated 27 August 2013) referred to in Section 1 above, and comprise the following:

a) Advance Uranium Asset Management System Manual – UAM/0000 Issue 5; and

b) International Nuclear Services and Pacific Nuclear Transport Ltd - Management Systems Manual – INS PNTL MSM PROM 000 - M01; and

c) Springfields Fuels Ltd Site System Manual SSI 268 dated 30/05/13; and

d) any other quality assurance programmes for design; testing; manufacture; documentation; use; maintenance and inspection; and transport and in-transit storage operations, providing they comply with national or international standards for quality assurance agreed as acceptable by the authority named on page 1 of this certificate.

3.2 Any quality assurance programmes not made available for assessment by the authority named on page 1 of this certificate prior to the date of issue of this certificate and applicable to any stage of design; testing; manufacture; documentation; use; maintenance and inspection; and transport and in-transit storage operations, must, prior to their implementation or use, be submitted to and confirmed as adequate by the authority named on page 1 of this certificate.

3.3 No alteration may be made to any quality assurance programme(s) confirmed as adequate in relation to this design, unless:

a) the authority named on page 1 has confirmed the amended QA programme is adequate prior to implementation or use; or

b) the alteration falls within the agreed change control procedures set out in the programme(s).

4. ADMINISTRATIVE INFORMATION

4.1 Other Related Certificates (alternative radioactive contents)

a) This certificate forms the base approval of this design. At the time of issue of this certificate, there were no other related UK certificates using the 3516 outer packaging.

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 GB Ports, and The Dangerous Substances in Harbour Areas Regulations (Northern Ireland) 1991, SR 1991 No. 509 apply to NI Ports.

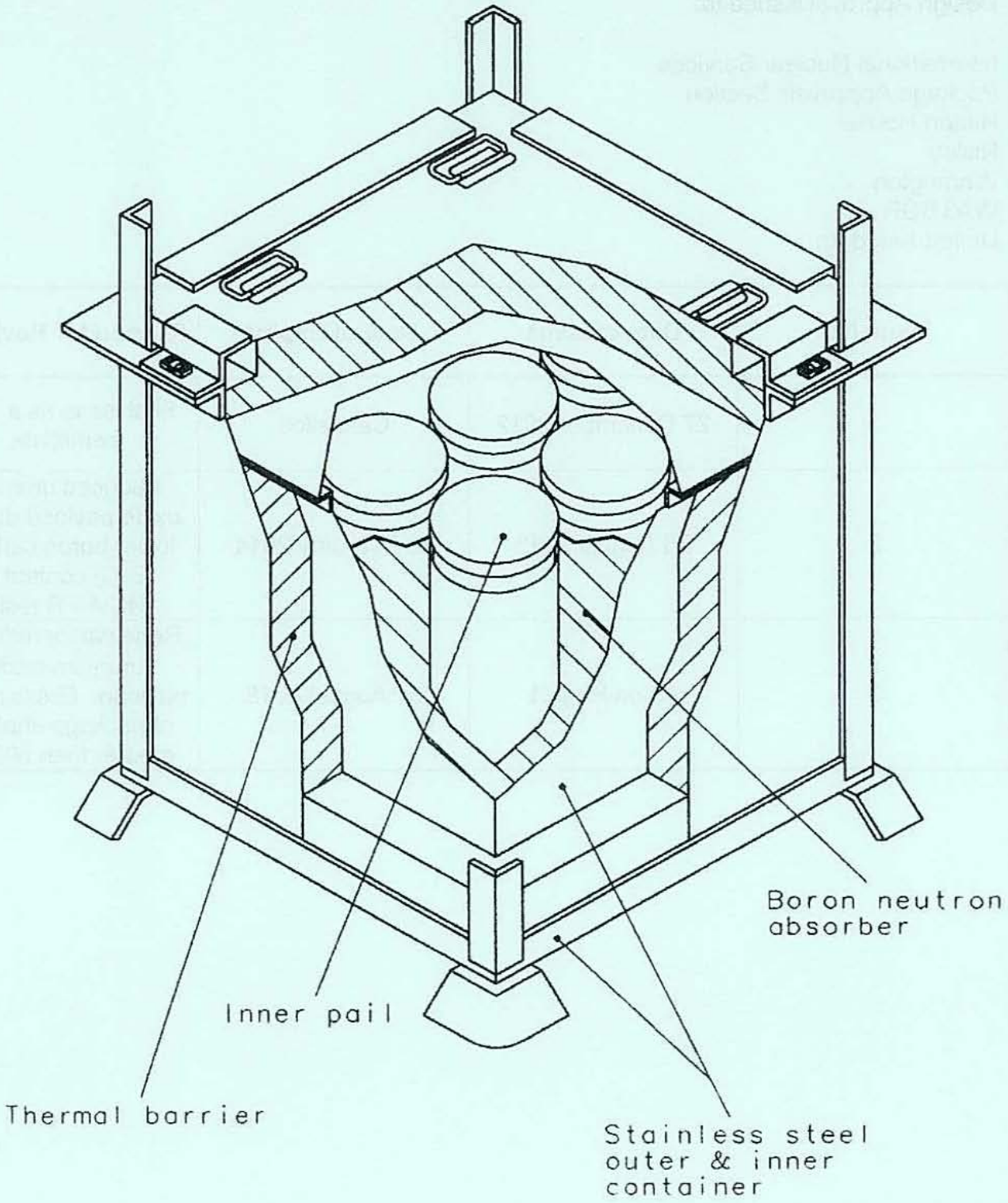
4.3 Non-fissile or Fissile Excepted

a) If the actual content carried in the package is non-fissile or fissile excepted material, then this design may be regarded as a Type A package that does not require Competent Authority approval.

4.4 Packaging Serial Numbers

a) For the purpose of compliance with ADR / RID / IMDG, the owner of the packaging shall be responsible for compliance with ADR / RID / IMDG 6.4.23.15.

5. PACKAGE ILLUSTRATION



6. CERTIFICATE STATUS

Design Approval issued to:

International Nuclear Services
Package Approvals Section
Hinton House
Risley
Warrington
WA3 6GR
United Kingdom

Issue No.	Date of Issue	Date of Expiry	Reason for Revision
1	27 December 2012	Cancelled	First issue as a '-96' certificate
2	28 August 2013	28 February 2014	Reduced uranium oxide payload due to lower boron carbide (B_4C) content of NS-4-FR resin
3	As on Page 1	31 August 2018	Renewal for reduced uranium oxide payload. Gross mass of package shall be greater than 500kg.

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/0563/AF-96, Revision 2

ORIGINAL REGISTRANT(S):

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