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

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/0337/B(U), REVISION 25

REVALIDATION OF UNITED KINGDOM COMPETENT AUTHORITY CERTIFICATE GB/2773A/B(U)

The Competent Authority of the United States certifies that the radioactive material package design described in this certificate satisfies the regulatory requirements for a Type B(U) package as prescribed in the regulations of the International Atomic Energy Agency[1] and the United States of America[2] The package design is approved for use within the United States for import and export shipments made in accordance with applicable international and domestic transport regulations.

1. Package Identification - Croft Associates Model 2773A (SAFSHIELD).

2. Package Description and Authorized Radioactive Contents - as described in United Kingdom Certificate of Competent Authority GB/2773A/B(U), Revision 11 (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 Engineering and Research, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.

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[1] "Regulations for the Safe Transport of Radioactive Material, 2018 Edition, No. SSR-6 (Rev. 1)" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

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

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.

d. Records of Management System activities required by Paragraph 306 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. For Elekta content, the package shall be used, handled and maintained in accordance with CPI 006 Issue Y "Packing and Handling Instructions for Package Design No. GB/2773A Elekta Contents", dated 29 August 2024 and CSP 002 Issue Q, "Serviceability Checks for Packaging Design No. GB/2773A and Subsequent Variants", dated 29 August 2024.

b. Within the 12-month period prior to shipment of normal form material, the flask's seal must be tested to demonstrate that the leak rate does not exceed 1 x 10-7 ref-cm3/sec. Prior to each shipment of normal form material, the flask's seal shall show no leakage when tested to a sensitivity of at least 1 x 10-3 ref-cm3/sec.

5. Marking and Labeling - The package shall bear the marking USA/0337/B(U) in addition to other required markings and labeling.

6. Expiration Date - This certificate expires on June 30, 2030. Previous editions which have not reached their expiration date may continue to be used.

CERTIFICATE USA/0337/B(U), REVISION 25

This certificate is issued in accordance with paragraph(s) 810 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the May 28, 2025 petition by Croft Associates Limited, Abingdon, Oxfordshire, UK, and in consideration of other information on file in this Office.

Certified By:

June 25, 2025

for William Quade
Acting Associate Administrator for
Hazardous Materials Safety

(DATE)

Revision 25 - Issued to correct references in paragraph 4(a) of US endorsement of United Kingdom Certificate GB/2773A/B(U), Revision 11.

GB/2773A/B(U) (Rev.11)

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 Croft Associates Limited (see Section 4.3)

as: Type B(U)

by: road, rail, sea and air.

Packaging identification: SAFSHIELD – Package Design No.2773A

Packages manufactured to this design meet the requirements of the regulations and codes on pages 3 and 4, 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 is effective from 1 July 2025 and expires on 30 June 2030 (see Section 4.3).

COMPETENT AUTHORITY IDENTIFICATION MARK: GB/2773A/B(U)

Signature: Date of Issue: 22 May 2025

Ian Barlow, Head of Transport Competent Authority

Office for Nuclear Regulation
Redgrave Court, Merton Road
Bootle, Merseyside
L20 7HS

on behalf of the Office for Nuclear Regulation; 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 2018 Edition

United Nations Economic Commission for Europe (UNECE)
Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) 2023 Edition (until 30 June 2025) or Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) 2025 Edition

Intergovernmental Organisation for International Carriage by Rail (OTIF)
Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) 2023 Edition (until 30 June 2025) or Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) 2025 Edition

International Maritime Organization (IMO)
International Maritime Dangerous Goods (IMDG) Code 2022 Edition incorporating Amendment 41-22 (until 31 December 2025) or International Maritime Dangerous Goods (IMDG) Code 2024 Edition incorporating Amendment 42-24

International Civil Aviation Organization (ICAO)
Technical Instructions for the Safe Transport of Dangerous Goods by Air 2025-2026 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 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)

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 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 (Carriage of Dangerous Goods and Harmful Substances) (Amendment) Regulations 2024 (SI 2024 No. 636)

AIR

The Air Navigation Order 2016 (SI 2016 No. 765); The Air Navigation (Dangerous Goods) Regulations 2002 (SI 2002 No.2786)

1. DESIGN SPECIFICATION

Package Design

1.1 The package design specification shall be in accordance with Croft Associates Ltd DSR GB/2773A/B(U)-18 'Design Safety Report for Package Design No. 2773A' Issue R dated 30th August 2024, 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
2773A	Drawing List for Design No. 2773A Packagings – All Builds	DL-1C-7266	E

Package Description and Materials of Manufacture

1.3 The packaging consists of casket model number 2773 and shielding flask model number 2774. The casket 2773 consists of a double skinned low carbon steel base assembly and a double skinned carbon steel cover assembly. The cover assembly is fastened to the base assembly with stainless steel studs and nuts. The cavity between the double skin of the base assembly and cover assembly is filled with Thermal Insulating and Shock Absorbing Foam (TISAF). Flask 2774 consists of a double skinned austenitic stainless-steel skin with the cavity filled with lead shielding. The flask is closed by bolting the closure flange to the top flange. Inner and outer O-rings are fitted to the top flange to facilitate a leak tight closure. The packaging is designed for the carriage of radioactive materials that are contained in special form capsules. See Appendix 1 for package illustration.

Package Dimension and Weights

1.4 Nominal dimensions: Diameter 1036 mm, Length 1396 mm

1.5 Maximum authorised gross weight: 4070 kg

Authorised Contents

1.6 The authorised radioactive contents are solid, special form cobalt-60 capsules, with a maximum activity of 488.4 TBq per package and 2.22 TBq per capsule.

Restriction on Contents

1.7 The maximum number of special form cobalt-60 capsules to be transported in a single package is 402.

1.8 The total rate of heat generation shall not exceed 462 W in a single package.

Containment System

1.9 The containment system consists of the inner O-ring seal, the body shell and the lid of the flask design (No. 2774) as shown in Appendix 2.

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 CPI 006 Issue Y 'Packing and Handling Instructions for Package Design No GB/2773A Elekta Contents' dated 29th August 2024.

2.2 The packaging shall be maintained in accordance with CSP 002 Issue Q 'Serviceability Checks for Packaging Design Number GB/2773A and Subsequent Variants' dated 29th August 2024.

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, carrier and consignee hold a copy of the certificate and instructions on the use of the packaging.

Emergency Arrangements

2.4 Before shipment takes place, adequate emergency arrangements must be made, copies of which shall be supplied to the GB Competent Authority on demand.

2.5 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.

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 Design Safety Report for Package Design No. 2773A reference DSR GB/2773A/B(U)-18 Issue R dated 30th August 2024, referred to in Section 1 above, and comprise the following:

- Croft Associates Quality Management System.

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

Packaging Serial Numbers

4.1 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.

4.2 Casket design number 2773 serial numbers 6 and 11 and flask design number 2774 serial numbers 6 and 8 are excluded from this approval.

4.3 CERTIFICATE STATUS

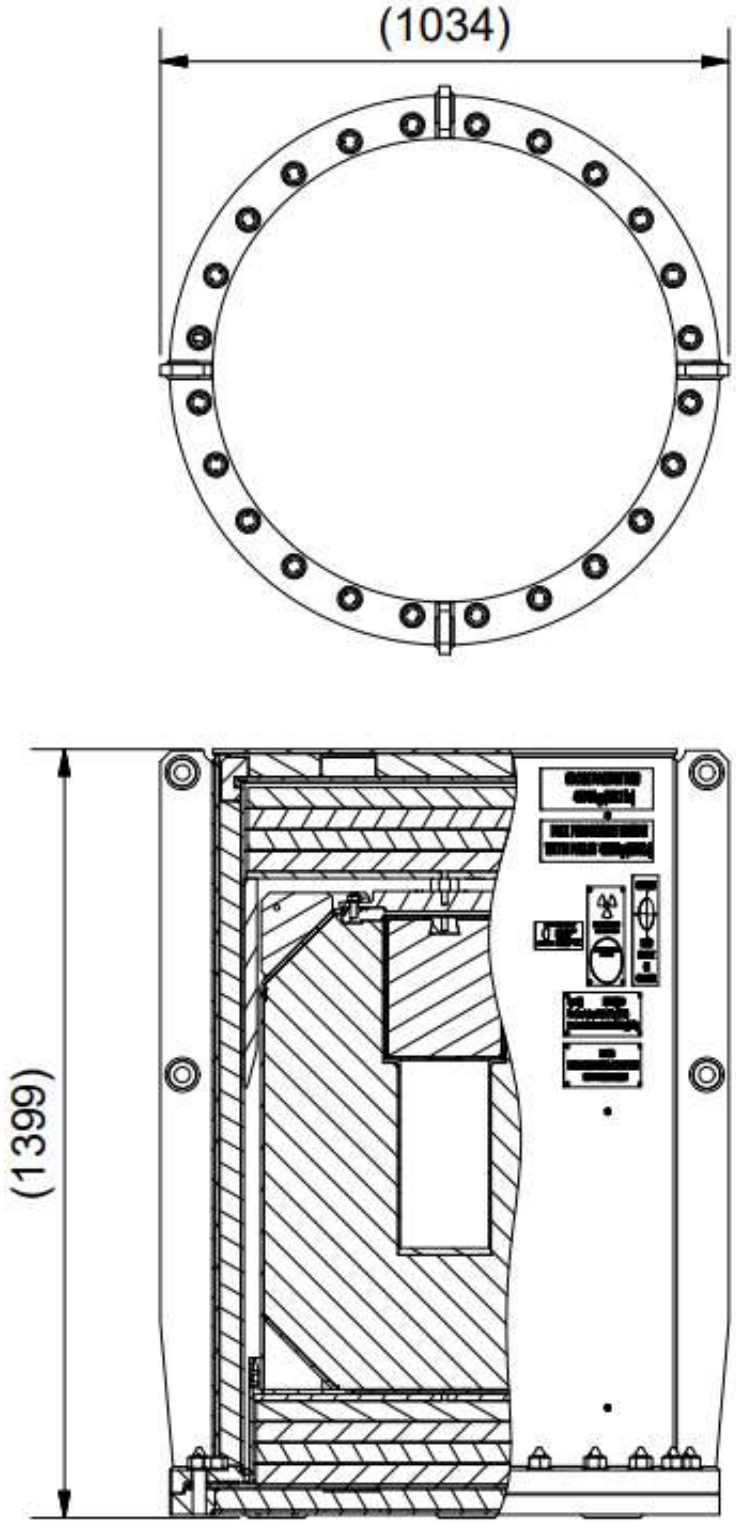
Design approval issued to:

Croft Associates Limited
F4 Culham Science Centre
Culham, Abingdon
Oxon, United Kingdom
OX14 3DB

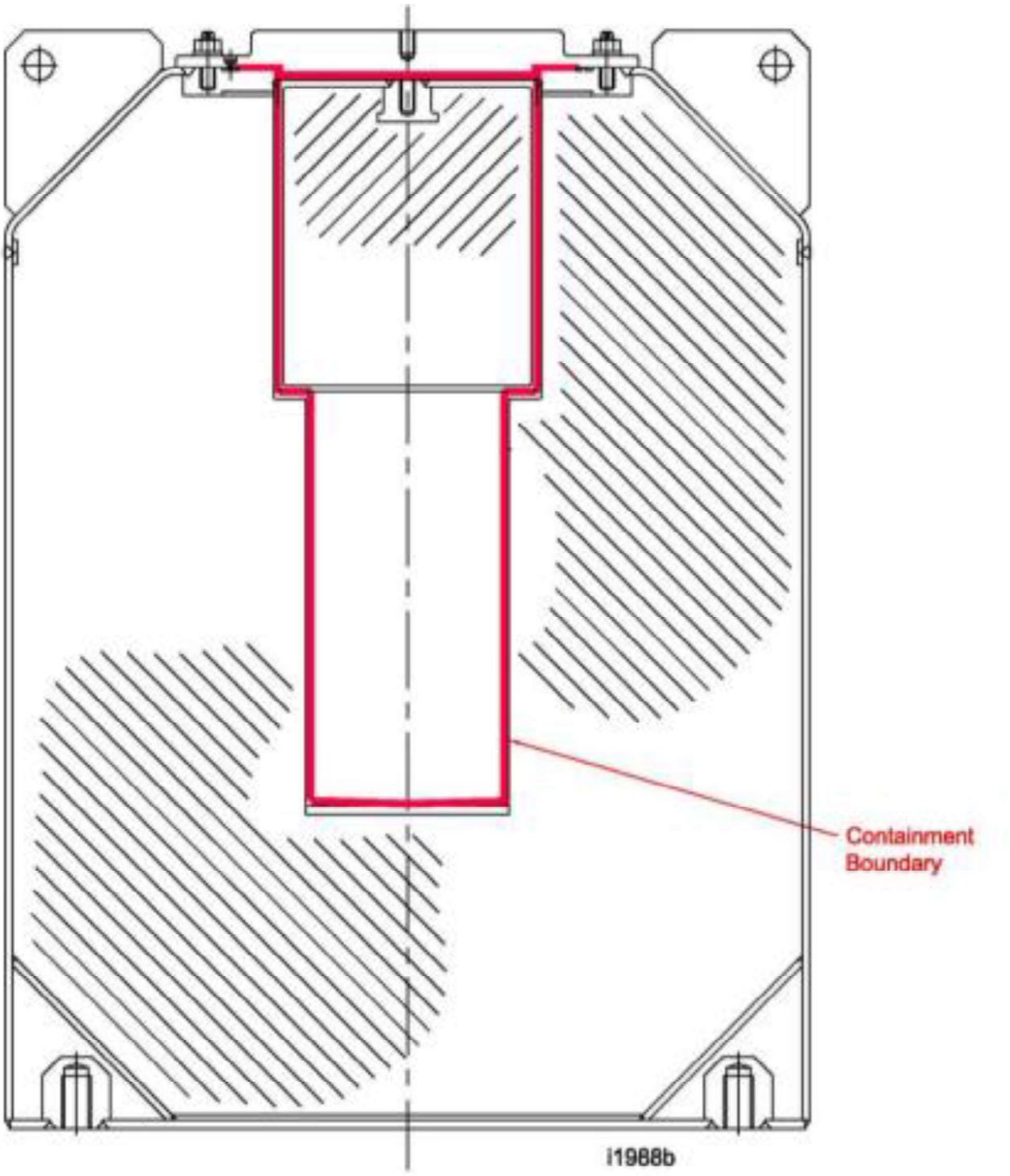
Issue / Revision Number	Date of Issue	Date of Expiry	Reason for Revision
Issue 1	25 September 2003	30 September 2006	Design approval issued under new regulations.
Issue 1	14th September 2006	31 December 2006	Extension of Issue 1 certificate.
Issue 2	02 January 2007	31 December 2009	Renewal and Update of Documentation.
Issue 2	19 November 2009	30 September 2010	Extension of Issue 2 certificate.
Issue 3	11 June 2010	30 June 2015	Renewal and update of documentation.
Issue 4	25 June 2015	30 June 2020	Renewal an update of documentation. Introduction of source holder and restriction of contents
Issue 5	17 December 2015	30 June 2020	Approval of Modification CN043
Rev.6	30 June 2017	30 June 2020	Approval of Modification CN047 (Introduction of CNL content)

Rev.7	28 September 2018	30 June 2020	Approval of Modification CN051 (Increase to Elekta content) and incorporation of CN052 (Asymmetric loading of CNL capsules) into DSR
Rev.8	23 June 2020	30 June 2021	1-year extension
Rev.9	19 April 2021 [commencement 1 July 2021]	30 June 2025	Renewal and update of documentation.
Rev.10	27 July 2023	30 June 2025	Approval of Modification CN073 (Updated special form Co-60 capsule design with minor dimensional change).
Rev.11	22 May 2025 [commencement 1 July 2025]	30 June 2030	5-year renewal. Removal of CNL content.

Appendix 1 – Package Illustration



Appendix 2 – Containment System



U.S. Department of
Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

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

CERTIFICATE NUMBER: USA/0337/B(U)-96

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