

CERTIFICATE OF APPROVAL

for the Safe Transport of Radioactive Material



Package Type: IP-2
Package Reference: TC02

**THE CONTENTS OF THIS DOCUMENT MAY ONLY BE DISCLOSED TO PERSONS
AUTHORISED BY LLWR TRANSPORT & LOGISTICS TEAM**

Package Colloquial Name	Reusable Half Height ISO Container
Package Design Safety Report PDSR	RP_LLWRGR_MECH_00003_A
Package and Handling Instructions	OM_LLWRGR_MECH_0001_A
Maintenance Instruction	OM_LLWRGR_MECH_0002_B
Supplementary Instructions	N/A
Mode of Transport	Road, Rail and Sea
Permissible Gross Mass	35,000kg
Certificate Validity	Initial issue

1. Change Process

THE APPROVAL AUTHORITY MUST BE NOTIFIED OF ALL CHANGES BEFORE IMPLEMENTATION

This certificate seals both the package design and its principal documentation.

Any change to the design of the package or an update to the principal documentation can only be incorporated through either: -

- Certificate re-issue, or
- Modification Form issued by the LLWR Package Approval Authority.

Failure to obtain approval of any changes to the packaging or its principal documentation will render this Certificate invalid.

2. Approval

This is to certify that the LLWR Package Approval Authority has assessed this packaging and its permitted contents as complying with the relevant requirements of the International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Material.

In terms of the permitted radioactive contents, this package complies with the national and international regulations stated in this document.

It is the responsibility of the consignor to ensure that the package conforms fully to the design specification stated and the requirements of each section detailed in this certificate.

For materials with sub-hazards (as defined under the provisions of ADR), chemical compatibility is recommended to be confirmed by the DGSA of the consigning site before loading the contents.

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.

Note: Where additional permission is required or it is found that any section of this Package Approval Certificate cannot be complied with, advice shall be sought from the contract authority LLW Repository Ltd.

Contact Details:- transportandlogistics@llwrsite.com

On behalf of the LLWR Package Approval Authority.

Authorised By: Signed:



Date: 2nd March 2011

Approval Authority

Marc Flynn
Responsible Officer
Transport & Logistics
Low Level Waste Repository
Transport & Logistics Department
Drigg, Holmrook
Cumbria, CA19 1XH

3 Packaging

3.1 Specification

The TC02 design and internal restraint system is uniquely specified by the following documents

Component	Drawing List	Issue
TC02 ISO Container Packaging	SC LLWRGR MECH 00002	A
* LLWR/S1 (5te ½ size Stillage)	SC LLWRGR MECH 00004	A
* LLWR/L1 (5te ½ size Stillage Lifting Frame)	SC LLWRGR MECH 00005	A

* Use of customer designed Stillages and Stillage Lifting Frames is not permitted to be used without the consent of the Contact Authority. The Contract Authority will issue a "Restraint Frame/Stillage Compatibility Statement" if the non standard Stillage or Lifting Frame is found to be suitable.

3.2 Identification

Each package shall have the following unique identification mark:

Type IP-96/GB/TC02, Serial No TC02/001, 002, 003 etc.

3.3 Description and Dimensions

The TC02 is essentially a half height ISO freight container (ISO Container manufactured and tested to ISO 1496-1), it measures 6.058m x 2.438m x 1.325m high and consists of all welded carbon steel external frame and a stainless steel inner tub. The totally seal welded construction of the stainless steel inner tub fitted with a twin seal mounted HEPA filter and the stainless steel lid with two seals form the containment system.

3.4 Contents Restraint

Contents are restrained using a range of LLWR approved specially designed internal Stillages, fitted with an enclosed twist lock mechanisms allowing the Stillages to be fixed in position to the internal base using the eight quasi spaced anchor points.

4. Package Design Safety Report

The evidence against which the package design has been assessed as complying with the requirements of the IAEA Regulations is contained in Package Design Safety Report: RP_LLWRGR_MECH_00003_A and associated supporting documents, filed in LLWRTL/C1.

5. Permitted Contents

Very Low Level Waste (VLLW), Low Level Waste (LLW) as LSA-I, LSA-II, LSA-III or solid objects as SCO-I or SCO-II, as defined in IAEA TS-R-1 Regulations, in solid form contained in inner waste boxes or with additional LLW Repository authorisation, solid items directly placed on the Stillages wrapped in suitable semi-flexible packaging, subject to the restrictions on contents in section 6 and package restrictions in section 7.

LSA III material must also be within the dispersible criteria as defined in IAEA TS-R-1.

6. Restrictions on Contents

The contents must be limited such that the following restrictions are met.

- In addition to satisfying the criteria in section 5, that material shall conform to the acceptance criteria of the LLWR approved receiving facility, which is in force at the date of consigning.
- Only solid contents may be carried, however, liquids fully absorbed in a suitable matrix may be carried providing there is no free liquid.
- Contents in the form of LSA-II & LSA-III combustible solids are restricted to 100 A2
- Contents in the form of SCO are restricted to 100 A2
- Fissile material (as defined in IAEA TS-R-1) is limited to the quantities as defined in IAEA TS-R-1 paragraph 417.

- f) Any materials mixed together must be chemically compatible
- g) Materials having other hazardous characterisations such as substances, which are liable to spontaneous combustion or emit flammable gases on contact with air, water or other gases or substances which are chemically toxic or corrosive, must be in compliance with the relevant transport regulations for such dangerous goods.
- h) Contents must be loaded into the container, in strict adherence with section 8 of the Packing & Handling Instructions, see page 1 of this certificate.

7. Package Restrictions

The package design is authorised for transporting contents as described in section 5, subject to the restrictions on contents in section 6, with the following restrictions;

- a) Packages transporting contents classified as LSA III material must be transported under Exclusive Use.
- b) TC02 Packagings must have a valid Container Safety Convention (CSC) plate.
- c) Other than TC02/S1 & TC02/L1, Stillages and Stillage Lifting Frames are not permitted to be used without the consent of the Contract Authority.

8. Package Temperature Range

Ambient temperature range for this design is -40 °C to +38 °C.

9. Package Radiation Limits

9.1 Contents limit

The contents must be restricted such that the external radiation level at 3m from the unshielded material (contents) does not exceed 10mSv/hr.

9.2 Exclusive use Package Limits

The radiation levels for the package **under exclusive use** shall not exceed 10 mSv/h at any point on the external surface of the package, subject to compliance with the conveyance limits in section 10.1 of this certificate.

9.3 Not under Exclusive use Package Limits

The radiation levels for the package shall not exceed 2 mSv/h at any point on the external surface of the package.

10. Conveyance Radiation Limits

10.1 Exclusive Use Conveyance Limit

The radiation levels for the conveyance carrying the package as a freight container **under exclusive use** shall not exceed:

- a) 2 mSv/h at any point on the external surface of the conveyance including the upper and lower surfaces; and
- b) 0.1 mSv/h at any point 2 m from the vertical planes projected from the outer lateral surfaces (edges) of the conveyance

10.2 Not under Exclusive use Conveyance Limit

The radiation levels for the conveyance under shall not exceed:

- a) 2 mSv/h at any point on the outer surfaces of the *vehicle*, including the upper and lower surfaces; and
- b) 0.1 mSv/h at any point 2 m from the external surface of the conveyance

11. Transport Index Limits

A Multiplication factor of 3 must be applied as defined in Table 8 of TS-R-1. Any package having a TI greater than 10 shall be transported only under 'Exclusive Use'.

12. 'Exclusive Use' Shipments

Under 'Exclusive Use' the transport documents shall include the statement "EXCLUSIVE USE SHIPMENT".

13. Quality Assurance

As required by IAEA TS-R-1 paragraph titled "Quality Assurance" the packing, loading, unloading, inspection, maintenance, transport and in-transit storage must be carried out under a Quality Assurance programme to ensure compliance with the requirements of this Certificate of Approval and the National and International Regulations.

14. Maintenance

14.1 Turnaround Maintenance

The package must be subjected to the pre-despatch checks as listed in the Packaging & Handling Instructions; see page 1 of this certificate

14.2 Periodic Maintenance

This package shall be subjected to the periodic maintenance at intervals specified in the Maintenance Instructions, to assure the structure and the containment systems are effective; see page 1 of this certificate.

15 Contamination

Non-fixed contamination on the external surfaces of the package or conveyance used for transporting the package shall be kept as low as practicable and shall not exceed the limits specified below: -

- a) Beta emitters, gamma emitters and low toxicity alpha emitters – 4.0 Bq/cm².
- b) Alpha emitters other than those of low toxicity - 0.4 Bq/cm².

16. Markings, Labelling and Placards

Labelling and Marking of Packages and the Placarding of vehicles shall be carried out in accordance with the regulations listed in Section 18 of this Approval Certificate.

I.D. Marking must be displayed on the package in accordance with Fig.1



Fig.1

17. Storage and Dispatch

- a) Segregation during stowage is required from other dangerous goods, and from persons and undeveloped photographic films and plates.
- b) Provided that the average surface heat flux does not exceed 15 W/m² and that the immediately surrounding cargo is not in sacks or bags, a package may be carried or stored among packaged general cargo without any special stowage provisions.

18. Regulations and Codes of Practice Governing the Transport of Radioactive Material

Mode of Transport	United Kingdom Regulations
General	The Health and Safety at Work Act 1974. The Ionising Radiations Regulations 1999 (SI1999/3232). The Radioactive Material (Road Transport) Act 1991.
Road & Rail	The Carriage of Dangerous Goods and use of Transportable Pressure Equipment Regulations 2009 - SI 2009 No 1348.
Seaports and UK Territorial Waters	The Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997 SI 1997 No 2367 Merchant Shipping Notice No. MSN 1806M. The Carriage of Dangerous Goods and Marine Pollutants in Packaged form – Amendment 33-06 to the International Maritime Dangerous Goods (IMDG) Code.
Storage in Transit	Radioactive Substances Act 1993 Radioactive Substances (Storage in Transit) Exemption Order, 1962 SI 2646 and 2785
	International Regulations
General	IAEA, Regulations for the Safe Transport of Radioactive Material, TS-R-1 2009 Edition. UN Recommendations on the Transport of Dangerous Goods 2009 Edition (16 th Revised Edition).
Road	United Nations Economic Commission for Europe (UNECE) European agreement concerning the International Carriage of Dangerous Goods by Road (ADR) 2011 edition.
Rail	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) 2011 Edition.
Sea	International Maritime Dangerous Goods (IMDG) 2010 Edition with Amendment 35-10.

Note:

1. Notwithstanding the existence of international regulations, it is still necessary to take account of national and local regulations which may impose additional restrictions.
2. In regulations, etc., recently issued or about to be issued, radioactive materials are dangerous goods class 7 (in older international and some national regulations they are in class IVb or poisons, class D).
3. The United Kingdom regulations do not in all cases extend to Northern Ireland.

19. Emergency Responsea) Road, Rail and UK ports(i) RADSAFE member

In the event of an emergency RADSAFE shall be initiated quoting the Consignors site code and procedures set out in RADSAFE shall apply.

(ii) Non RADSAFE member

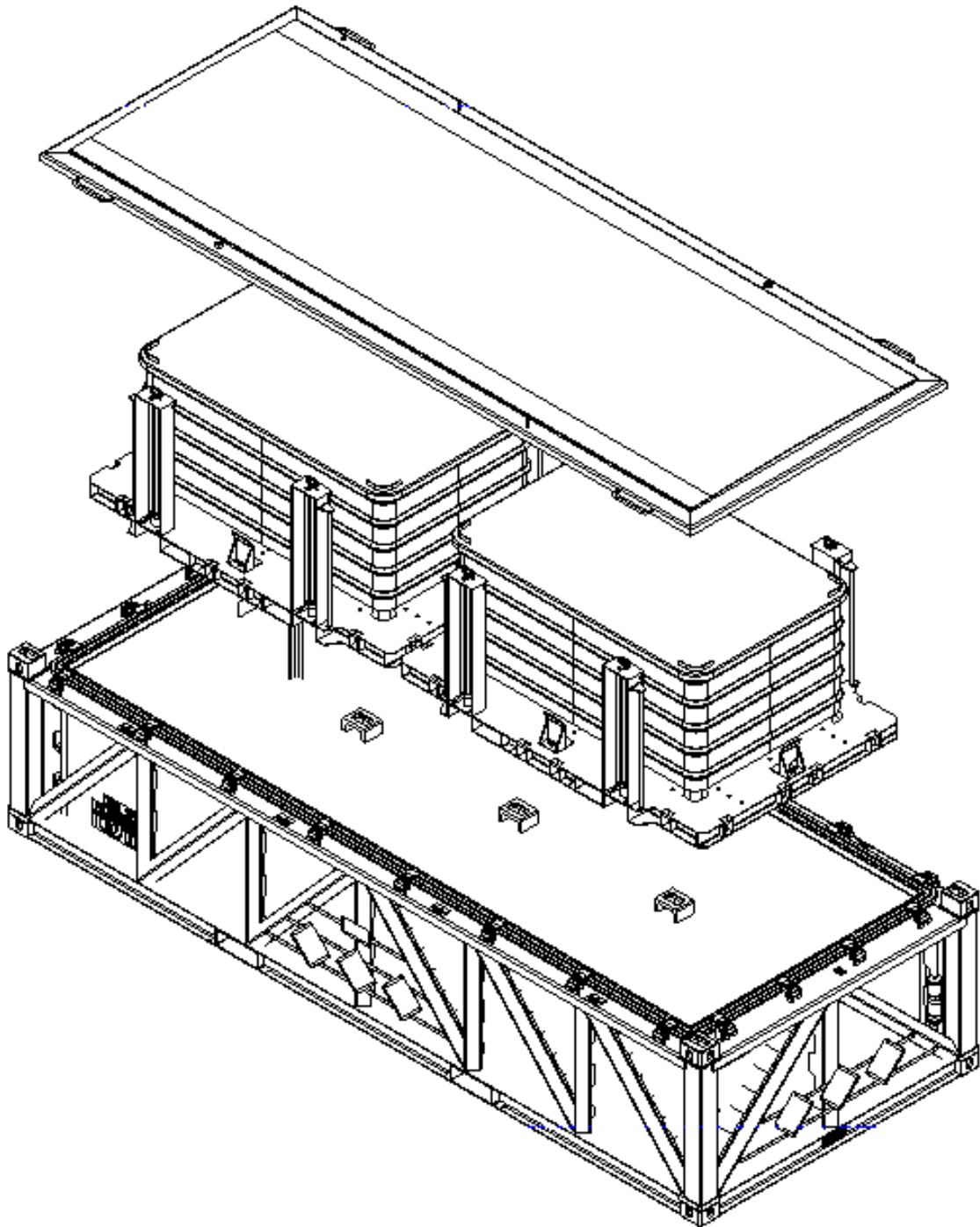
Before shipment takes place, the consignor shall have drawn up suitable emergency arrangement plans as required by TS-R-1 in paragraph titled "Emergency Response". In the event of an emergency these emergency plans shall be initiated and the police must be informed.

b) Sea

In the event of an emergency, the procedure set out in the IMDG Code as quoted in Section 18 of this certificate shall apply

- c) If RADSAFE, 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 Radioactively) establishment.

20. Package Illustration



Package Dimensions: designed 6.058m x 2.438m x 1.325m high

Maximum Gross Weight 35,000kgs

Weight of packaging (package without contents or Stillages): 4,100kg

Note - Inner waste boxes restrained on TC02/S1 (1/2 size) Stillages are for illustration purposes only