

CERTIFICATE OF APPROVAL for the Safe Transport of Radioactive Material



**Package Type: IP-2
Package Reference: TC05**

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

Package Colloquial Name	Multi Use ISO Skip MkII
Operating Instruction	OM_0102940_MECH_00006_C
Maintenance Instruction	Incorporated into the Operating Instruction
Supplementary Instructions	N/A
Mode of Transport	Road, Rail and Sea
Permissible Gross Mass	17000 kg
Certificate Validity	This certificate expires on the date shown above.

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 it is found that any section of this Package Approval Certificate cannot be complied with, advice shall be sought from LLWR.

Contact Details: - transportandlogistics@llwrsite.com

On behalf of the LLWR Package Approval Authority.

Authorised By: Signed:  Date: 1/12/2009

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

TC05 design review (during 2009) resulted in a number of minor operability and manufacturing changes to the design. All modifications have been implemented on containers at serial number 0022 onwards; The packaging is uniquely specified by the following documents:

- SC_0102940_MECH_00012_B. Containers with serial numbers 0001 to 0021
- SC_0102940_MECH_00011_F. Containers with serial number 0022 onwards

3.2 Identification

Each package shall have the following unique identification mark:
Type IP-2/GB/TC05/IP-96, Serial No. 0075/0001, 0075/0002 etc.

3.3 Description and Dimensions

The package consists of a specially designed 3.4m long x 1.95m wide x 1.739m high container (ISO Container manufactured and tested to ISO 1496-1) of all welded carbon steel construction and fitted with a bolted top opening lid, a hinged tipper door that forms one of the end walls and two loading hatches-one in each end wall.

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_0102940_MECH_00016_C

5. Permitted Contents

Very Low Level Waste (VLLW) or Low Level Waste (LLW) as LSA-I, LSA-II, LSA-III, SCO-I or SCO-II as defined in IAEA TS-R-1 Regulations, in solid form, bagged waste, wrapped items or loose material, 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 specification 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.

Fissile material (as defined in IAEA TS-R-1) is limited to the quantities as defined in IAEA TS-R-1 paragraph titled "Exceptions from the requirements for packages containing fissile material"

Any materials mixed together must be chemically compatible.

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.

Contents must be loaded into the container, in strict adherence with section 8.7 of the Operating and Maintenance Instruction as detailed in section 1 of this certificate.

6. Package Restrictions

Packages transporting contents classified as LSA III material must be transported under Exclusive Use.

7. Package Temperature Range

Ambient temperature range for this design is -10°C to +38°C.

8. Package Radiation Limits

The contents must be restricted such that the following radiation limits are met:

- a) The external radiation level at 3m from the unshielded material does not exceed 10mSv/hr.
- b) The radiation levels for the **package** shall not exceed 2 mSv/h at any point on the external surface of the package.

9. Conveyance Radiation Limits

The radiation levels for the conveyance/freight container **not under exclusive use** shall not exceed:

- a) 0.1 mSv/h at any point 2 m from the external surface of the conveyance.
- b) 2 mSv/h at any point on the external surface of the conveyance.

The radiation levels for the conveyance/freight container under **exclusive use** shall not exceed:

- a) 2 mSv/h at any point on the outer surfaces of the *vehicle*, including the upper and lower surfaces.
- b) 0.1 mSv/h at any point 2 m from the vertical planes projected from the outer edges of the conveyance.

10. Transport Index Limits

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

11. 'Exclusive Use' Shipments

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

12. Quality Assurance

The packaging has been designed and approved in accordance with the manufacture, loading, handling, inspection, maintenance, testing, 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.

As required by IAEA TS-R-1 paragraph titled "Quality Assurance" the use, maintenance, inspection, transport and in-transit storage shall be carried out in accordance with a Quality Assurance Programme, to ensure compliance with the requirements of this Certificate of Approval, and the National and International regulations.

When transporting the TC05 within the UK the Quality Plan supplied by the Container Operator shall be used.

13. Contamination

Non-fixed contamination on the external surfaces of the package or vehicle 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.

14. 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 17 of this Approval Certificate.

Note – I.D. Markings must be displayed on the packaging in accordance with Fig.1. Note - to obtain new packaging marking decals contact LLWR Transport & Logistics.



Fig.1

15. 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.

16. 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
General	International Regulations IAEA, Regulations for the Safe Transport of Radioactive Material, TS-R-1 2005 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) 2009 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) 2009 Edition.
Sea	International Maritime Dangerous Goods (IMDG) 2008 Edition with Amendment 34-08.

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.

17. Emergency Response

a) 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

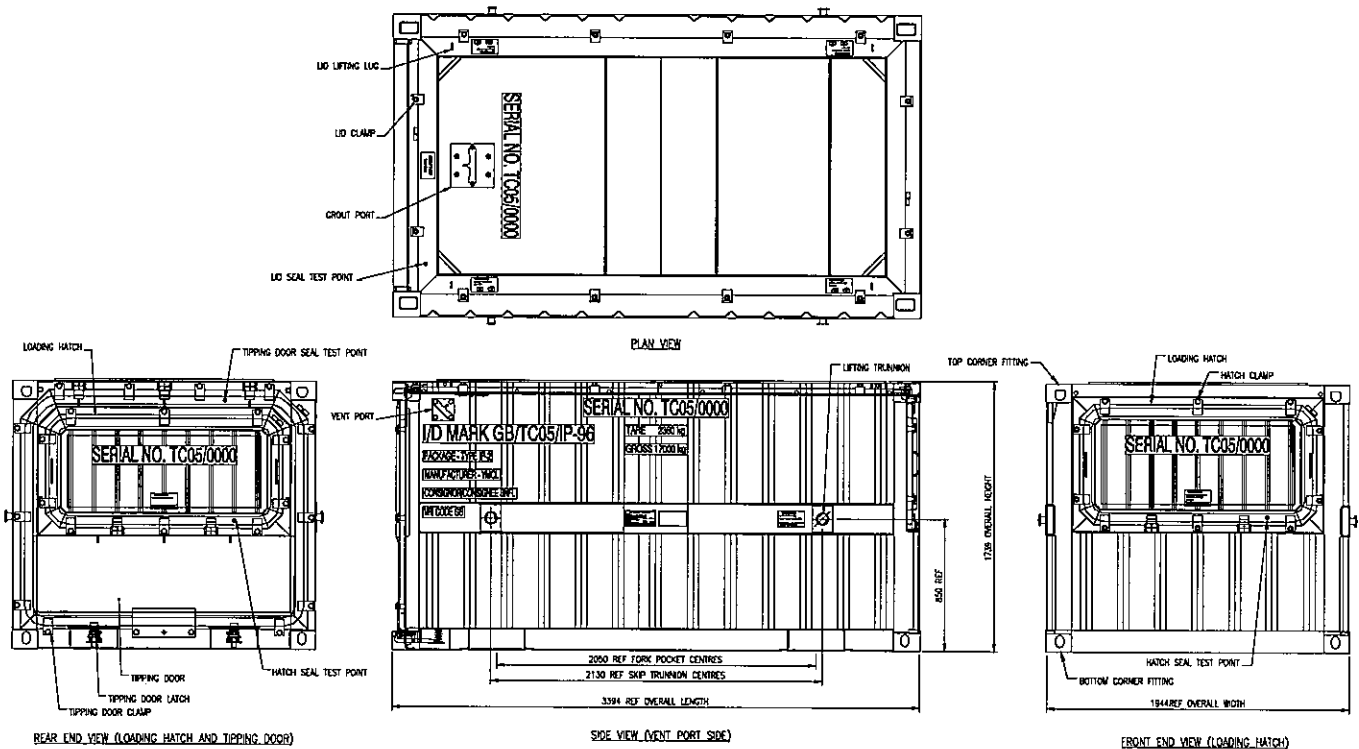
Before shipment takes place, the consignor shall have drawn up suitable emergency arrangement plans as required by TS-R-1 in paragraph titled "Emergency Response". In the event of an emergency these emergency plans shall be initiated and the police must be informed.

b) Sea

(i) In the event of an emergency, the procedure set out in the IMDG Code as quoted in Section 16 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.

18 Package Illustration



Packaging, dimensions: designed 3.4m long x 1.95m wide x 1.739m high

Weight of packaging (package without contents): 2360kg

Maximum gross weight of package: 17000 kg