71-3087

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

1200 New Jersey Ave, S.E.
Washington, D.C. 20590

NOV 25 2014

Mark Lombard, Director
Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards (NMSS)
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Lombard:

In accordance with the Memorandum of Understanding between our agencies, I request that you review the attached Canadian Certificate of Approval No. CDN/2091/B(U) -96 (Rev. 0) for the ASPECT 12K package and make a recommendation concerning our revalidation of the package for import and export use.

To assist you in your review, I am providing an electronic copy of the documentation I have received from Source Production & Equipment Co., Inc. (SPEC) which includes the Safety Analysis Report for the ASPECT 12K transport package and the ASPECT 12K Operating Manual. Please note that SPEC has indicated that the application to the Canadian Nuclear Safety Commission was written in accordance with NUREG-1886, "Joint Canada - United States Guide for Approval of Type B(U) and Fissile Material Transportation Packages".

I request you provide an estimate of the time needed to complete your review. If you have any questions or need any additional safety information, please feel free to contact Michael Conroy of my staff at (202) 366-3597 or via email at Michael.Conroy@dot.gov.

Sincerely,

Richard W. Boyle, Acting Director
Division of Engineering and Research
Office of Hazardous Materials
Technology

Enclosures

NMSS01

Canadian Certificate No.: **CDN/2091/ B(U) -96 (Rev. 0)**
Issue Date: **Nov-19-2014**
Expiry Date: **Nov-30-2019**
CNSC File: **30-A14-1-0**

Certificate

CDN/2091/ B(U) -96 (Rev. 0)

Transport Package Design

The transport package design identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and Section 7 of the *Packaging and Transport of Nuclear Substances Regulations*, and to the 1996 Edition (Revised) of the IAEA *Regulations for the Safe Transport of Radioactive Material.*

REGISTRATION OF USE OF PACKAGES

All users of this authorization shall register their identity in writing with the Canadian Nuclear Safety Commission prior to the first use of this authorization and shall certify that they possess the instructions necessary for preparation of the package for shipment.

PACKAGE IDENTIFICATION

Designer:	**Aspect Technology Ltd.**
Make/Model:	**12K Transport Package, Maxibulk Inner Container; Minibulk Inner Container; 10 Channel Inner Container**
Mode of Transport:	**Air , Sea , Road , Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark **"CDN/ 2091/B(U) - 96 "**.

PACKAGE DESCRIPTION

The ASPECT 12K package, as shown in Aspect Technology Drawing Nos. B170100 (Rev. 7), B170101 (Rev. 4), B170210 (Rev. 4), and B170300 (Rev. 4) consists of cylindrical outer and inner containers. The outer container includes a steel drum of 1.2 mm wall thickness and a Kaolite 1600 liner. The cover of the drum is secured by a clamp ring fastened by a bolt. Additionally, four tabs are welded to the underside of the cover and are engaged by M8 bolts through the side wall of the container. A plastic or wire tamper seal is attached to the clamp ring. Kaolite 1600 liners fill inside the drum, leaving a cavity inside the Kaolite to hold the inner container. The dimensions of the cavity are approximately 181 mm in diameter and 286 mm in height. A stainless steel or galvanized steel support cylinder separates the inner container from the Kaolite liner. A ceramic insulator or aluminum spacers may be used inside the cavity to keep the inner container in place.

The source capsules act as the primary containment for the radioactive contents. The package contains one

of three possible inner containers; Maxibulk, Minibulk, or the 10-Channel. Each inner container consists of a stainless steel cylindrical shell and uses depleted uranium (DU) encased in stainless steel as shielding. Copper and brass are used to separate the depleted uranium from the stainless steel.

The Minibulk inner container is 140 mm in diameter, 180 mm in height with a cavity of 23.6 mm in diameter and 40 mm high, and weighs 37 kg including 31 kg of DU. The cavity inside the DU shield is lined with steel and the internal lid is closed with two M8 screws, while the external lid is closed with four M8 screws.

The Maxibulk inner container is 170 mm in diameter, 250 mm in height with a cavity of 31.6 mm in diameter and 72.5 mm high, and weighs 79 kg including 69 kg of DU. The cavity inside the DU shield is lined with steel and the internal lid is closed with two M8 screws, while the external lid is closed with four M8 screws.

The 10-Channel inner container is used as a source changer and is 180 mm in diameter, 280 mm high, and weighs 60 kg including 52 kg of DU. The DU shielding is made of two separate parts; the DU shield and the DU shield insert. There are ten channels in the DU to hold copper plated stainless steel source tubes. The special form sources, incorporated into source assemblies, are held in the tubes using hold down caps. The caps are covered by a lid held in place by an eyebolt.

An illustration of the package is shown on the attached Aspect Technology 12K Descriptive Assembly drawing.

Any modification to the package design must be submitted to the Canadian Nuclear Safety Commission for approval prior to implementation.

The configuration of the package with Maxibulk Inner Container is as follows:

Shape:	**Cylinder**	Shielding:	**Depleted Uranium**
Mass:	**149 kg**	Outer Casing:	**Steel**
Length:	**n/a**	Height:	**550 mm**
Width:	**n/a**	Diameter:	**390 mm**

The configuration of the package with Minibulk Inner Container is as follows:

Shape:	**Cylinder**	Shielding:	**Depleted Uranium**
Mass:	**107 kg**	Outer Casing:	**Steel**
Length:	**n/a**	Height:	**550 mm**
Width:	**n/a**	Diameter:	**390 mm**

The configuration of the package with the 10 Channel Inner Container is as follows:

Shape:	**Cylinder**	Shielding:	**Depleted Uranium**
Mass:	**130 kg**	Outer Casing:	**Steel**
Length:	**n/a**	Height:	**550 mm**
Width:	**n/a**	Diameter:	**390 mm**

AUTHORIZED RADIOACTIVE CONTENTS

Appendix 1 and Appendix 2 list the maximum authorized radioactive contents that may be transported in each package configuration. All radioactive contents must have a valid special form radioactive material certificate.

QUALITY ASSURANCE

Quality assurance for the design, manufacture, testing, documentation, use, maintenance and inspection of the package shall be in accordance with:

- Aspect Technology Ltd., Document "Aspect Technology Ltd. Quality Assurance Program"
- Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

SHIPMENT

The preparation for shipment of the package shall be in accordance with:

- Aspect Technology Ltd., Document "Aspect 12K operating manual, Rev. 5"
- Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

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.

Sylvain Faille

S. Faille
Designated Officer pursuant to paragraph 37(2)(a) of the Nuclear Safety and Control Act

Appendix 1

MaxiBulk and MiniBulk inner containers may contain one of the nuclear substances up to the corresponding maximum activity. The 10-Channel inner container may contain any of the nuclear substances as further specified in Appendix 2.

Isotope	MaxiBulk	MiniBulk	10-Channel
	Max Activity	Max Activity	Max Activity
	TBq	TBq	TBq
Iridium-192	250	81	56
Selenium-75	370	370	56
Ytterbium-169	56	56	56
Cesium-137	250	5.6	-
Cobalt-60	0.022	0.003	-

Appendix 2

The 10-Channel inner container can only hold the source assemblies listed in this Appendix and can hold up to 10 source assemblies each containing up to 5.6 TBq of Ir-192, Se-75 or Y-169.

Device	**Source Holder**	**Drawing**
GammaMat TSI Series	TI-GF7	H811.12-000
GammaMat TSI Series	TSI-GF7.8	H811.25-000
GammaMat SE/Rid-SE4P	SE-GM7	H811.30-000
GammaMat Hybrid	HY-GF7	Aspect 170233
Gilligan Eng. Viking	II-SA	CPPSII02A
Gilligan Eng. Viking V	V-SA	CPPSV02A
Gilligan Eng. Viking VI	VI-SA	CPPSVI02A
Gilligan Eng. Viking X	X-SA	CPPSX02A
Industrial Nuclear IR-100	32, 70400, C-376B, 87703, G-40T, G-40F	B912000
Sentinel 880 Series	A424-9, A424-25W, 91810, T-5, T-5F, C-337B, 7, 70200	D900000
Source Production Spec-15	G-60, 969	B912000
Source Production Spec 2-1	G-1F, G-1T, G-3F	B912000

NOTES

Revision 0: November 19, 2014. New Certificate.

Aspect Technology 12K Descriptive Assembly drawing

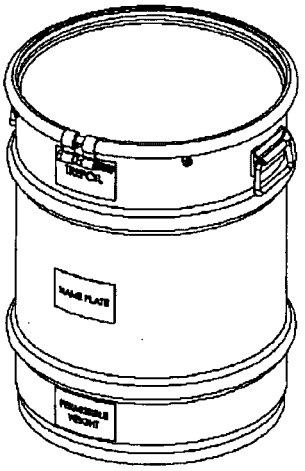

Figure 1.1 ASPECT 12K Package as presented for transport

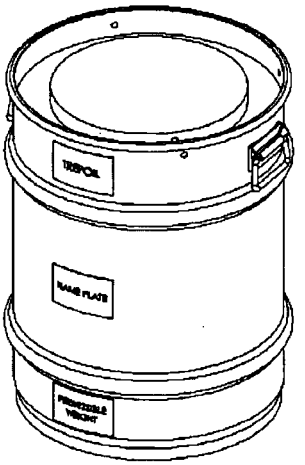

Figure 1.2 ASPECT 12K with cover removed

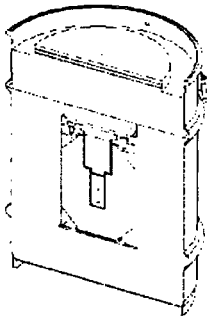

Figure 1.3 ASPECT 12K with inner maxiBulk container

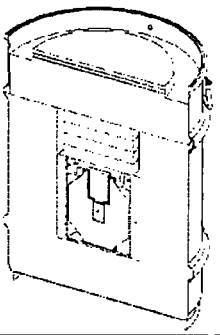

Figure 1.4 ASPECT 12K with inner miniBulk container

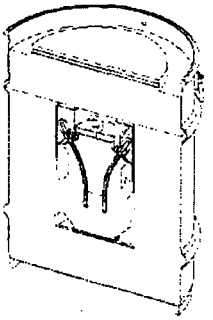

Figure 1.5 ASPECT 12K with inner 10-Channel container