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 FISSILE RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/0577/AF-96, REVISION 6

REVALIDATION OF FRENCH COMPETENT AUTHORITY CERTIFICATE F/358/AF-96

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 AF 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 - COG-OP-30B.

2. Package Description and Authorized Radioactive Contents - as described in French Certificate of Competent Authority F/358/AF-96, Revision Hw (attached). Contents are restricted to those listed in Appendix 3, 4, 5 and 6 of the French Certificate of Competent Authority No. F/358/AF-96, Revision Hw (attached).

3. Criticality - The minimum criticality safety index is 0.0 for contents specified in certificate appendices.

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 Engineering and Research, (PHH-23), Pipeline and Hazardous

[1] "Regulations for the Safe Transport of Radioactive Material, 2012 Edition, No. SSR-6" published by the International Atomic Energy Agency (IAEA), Vienna, Austria.

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

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.

d. This certificate provides no relief from the limitations for transportation of plutonium by air in the United States as cited in the regulations of the U.S. Nuclear Regulatory Commission 10 CFR 71.88.

e. 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.

5. Special Conditions -

a. Cylinders used under this certificate must have been designed and manufactured in compliance with the ANSI N14.1 standard in effect at the time of manufacture.

b. Cylinders used under this certificate must be operated, maintained and handled in accordance with the ANSI N14.1 standard in effect at the time of shipment.

c. Rail transport of packages approved by this certificate must be conducted with the longitudinal axis of the package oriented perpendicular to the direction of travel.

d. Stacking of the packages approved by this certificate is not permitted during transport.

6. Marking and Labeling - The package shall bear the marking USA/0577/AF-96 in addition to other required markings and labeling.

7. Expiration Date - This certificate expires on May 31, 2027.

CERTIFICATE USA/0577/AF-96, REVISION 6

This certificate is issued in accordance with paragraph(s) 816 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 21, 2023 petition by TN Americas LLC, Columbia, MD, and in consideration of other information on file in this Office.

Certified By:

for William Schoonover
Associate Administrator for Hazardous Materials Safety

December 05, 2024
(DATE)

Revision 6 - Issued to endorse French Certificate of Approval No. F/358/AF-96, Revision Hw.

AUTORITÉ DE SÛRETÉ NUCLÉAIRE
Direction du transport et des sources

CERTIFICATE OF APPROVAL OF PACKAGE DESIGN

The competent French authority,

In view of the L.595-1 article of the environmental code;

In view of the application submitted by Orano NPS in letter CCOR-21-000208-029 dated April 30, 2021;

In view of Orano NPS safety analysis report DOS-20-034609 Version 2.0 dated April 07, 2022;

In view of public consultation results carried out from March 07, 2022 to March 21, 2022;

Certifies that package design **COG-OP-30B** described in Appendix 0 at revision w, comprising a 30B container placed in a COG-OP-30B overpack and filled with uranium hexafluoride or uranium hexafluoride heels enriched to a maximum of 5% U-235 as described in Appendices 3 to 6 at revision w, is compliant as a **Type A package design for fissile material,** in compliance with the requirements of the regulations and agreements and listed below:

- Regulations for the Safe Transport of Radioactive Material, International Atomic Energy Agency Safety Standards Series no. SSR-6, 2012 edition;
- European agreement concerning the international carriage of dangerous goods by road (ADR);
- Regulations concerning the international carriage of dangerous goods by rail (RID);
- European agreement concerning the international carriage of dangerous goods by inland waterways (ADN);
- International Maritime Dangerous Goods Code (IMO IMDG code);
- French ministerial order of November 23, 1987 (amended) concerning the safety of vessels, division 411 of the attached regulations (RSN order);
- French ministerial order of May 29, 2009 (amended) concerning the overland carriage of dangerous goods ("TMD order").

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.

This certificate expires on May 31, 2027.

Registration no.: **CODEP-DTS-2022-018449**

Montrouge, April 28, 2022

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CERTIFICATE ISSUES

Issue	Expiry date	Type of issue	Certificate reference	Revision index												
				Text	0	1	2	3	4	5	6	7	8	9	10	11	12
31.01.12	31.05.17	Renewal	B(U)F-96	Fp	p									p	p	p	
31.01.12	31.05.17	Renewal	AF-96	Fq	q					q		q					
31.01.12	31.05.17	Renewal	IF-96	Fr	r	r		r									
23.05.17	31.05.22	Renewal	B(U)F-96	Gs	s									s	s	s	
23.05.17	31.05.22	Renewal	AF-96	Gt	t					t		t					
23.05.17	31.05.22	Renewal	IF-96	Gu	u	u		u									
28.04.22	31.05.27	Renewal	B(U)F-96	Hv	v							v	v	v	v	v	v
28.04.22	31.05.27	Renewal	AF-96	Hw	w			w	w	w	w						
28.04.22	31.05.27	Renewal	IF-96	Hx	x	x	x										

APPENDIX 0

PACKAGING COG-OP-30B

1. DESCRIPTION OF PACKAGING

The packaging comprises a type 30B cylinder and a protective overpack known as the « COG-OP-30B » overpack.

The maximum weight of the package comprising the COG-OP-30B overpack containing a type 30B cylinder filled with uranium hexafluoride is 4232 kg.

1.1 Description of the COG-OP-30B overpack

The cylindrical overpack is in two halves which close round the 30B cylinder; they are held together by ten latches (Figures 0.1 and 0.2). Each half comprises two stainless steel half-shells, each containing non-corrosive phenolic foam providing thermal protection.

The ends of each half-shell comprise balsa wood and red cedar wood, that are aimed to the absorption during drops in normal and accident conditions of transport.

Working outwards from the inside, the overpack is closed at the ends by a stainless steel plate followed by the same phenolic foam as in the radial part for thermal protection, and finally by an outer stainless steel plate.

The overpack design is as described in Chapter 0 of safety analysis report DOS-20-034609 Version 2.0; the main dimensions are as follows:

- Overall dimensions :
  - Length : 2 420 ± 12 mm ;
  - Width : 1 340 ± 8 mm ;
  - Height : 1 356 ± 8 mm.
- Cavity dimensions :
  - Diameter : 780 ± 6 mm ;
  - Length : 2 100 ± 12 mm.

The maximum weight of the overpack is 1295 kg.

1.2 Description of the 30B cylinder

The 30B cylinder (Figure 0.3) is a cylindrical tank made of carbon steel, closed at each end by a dished end. All design, manufacturing, use and servicing operations for 30B cylinders, as well as their valve and plug, must be in compliance with standards ISO 7195 or ANSI N14. The main dimensions of the 30B cylinder are as follows:

- total nominal length : 2070 mm ;
- nominal outside diameter : 762 mm ;
- nominal weight of cylinder : 635 kg;
- minimum free volume in cavity : 736 liters;
- minimal thickness : 7.94 mm.

1.3 Handling and stowing elements of the overpack

There are two options for the package described in figure 0.2:

- in case of option n° 1, the package is provided with forklift pockets ;
- in case of option n° 2, forklift pockets are part of the transport cradle.

The overpack is stowed on the conveyance in a cradle. The cradle is not attached to the overpack.

Handlings of the package with its cradle by using the two shackles and by using the stacking supports are forbidden.

The shackles attached to the upper part of the overpack are made inoperative during transports.

2. SAFETY FUNCTIONS

The **containment** is provided by the 30B cylinder.

The **radiation protection** is provided by the 30B cylinder and the metal envelope of the overpack.

The **criticality-safety protection** is provided by the confinement system described in Chapter 0 of the safety analysis report.

The **internal heat dissipation** is provided by the 30B cylinder.

The **protection against impact** is provided in particular by the shock absorbing materials in the overpack.

The **protection against fire** is provided mainly by the phenolic foam in the overpack.

3. MEASURES TO BE TAKEN BY THE CONSIGNOR PRIOR TO SHIPMENT OF PACKAGE

The packaging must be used according to procedures which comply with the instructions for use in Chapter 6A of the safety analysis report, referenced DOS-20-034609-009 Version 2.0.

Before sealing the COG-OP-30B packaging, the consignor must ensure that there is no sign of impact or damage on the valve.

4. MAINTENANCE PROGRAM

Packaging maintenance is carried out in accordance with the provisions in Chapter 7A of the safety analysis report, referenced DOS-08-00117711-700 Revision 4.

5. NOTIFICATION

Whenever a packaging is taken out of service or changes hands, ASN must be notified at the mailing address dts-transport@asn.fr. The owner relinquishing the packaging shall communicate the name of the new owner.

6. QUALITY ASSURANCE SYSTEM

The quality assurance system principles to be applied for the design, manufacture, inspection, testing, maintenance and use of the package shall comply with those described in Chapter 8A of the safety analysis report, referenced DOS-20-034609-003 Version 2.0.

FIGURE 0.1

COG-OP-30B OVERPACK DRAWING

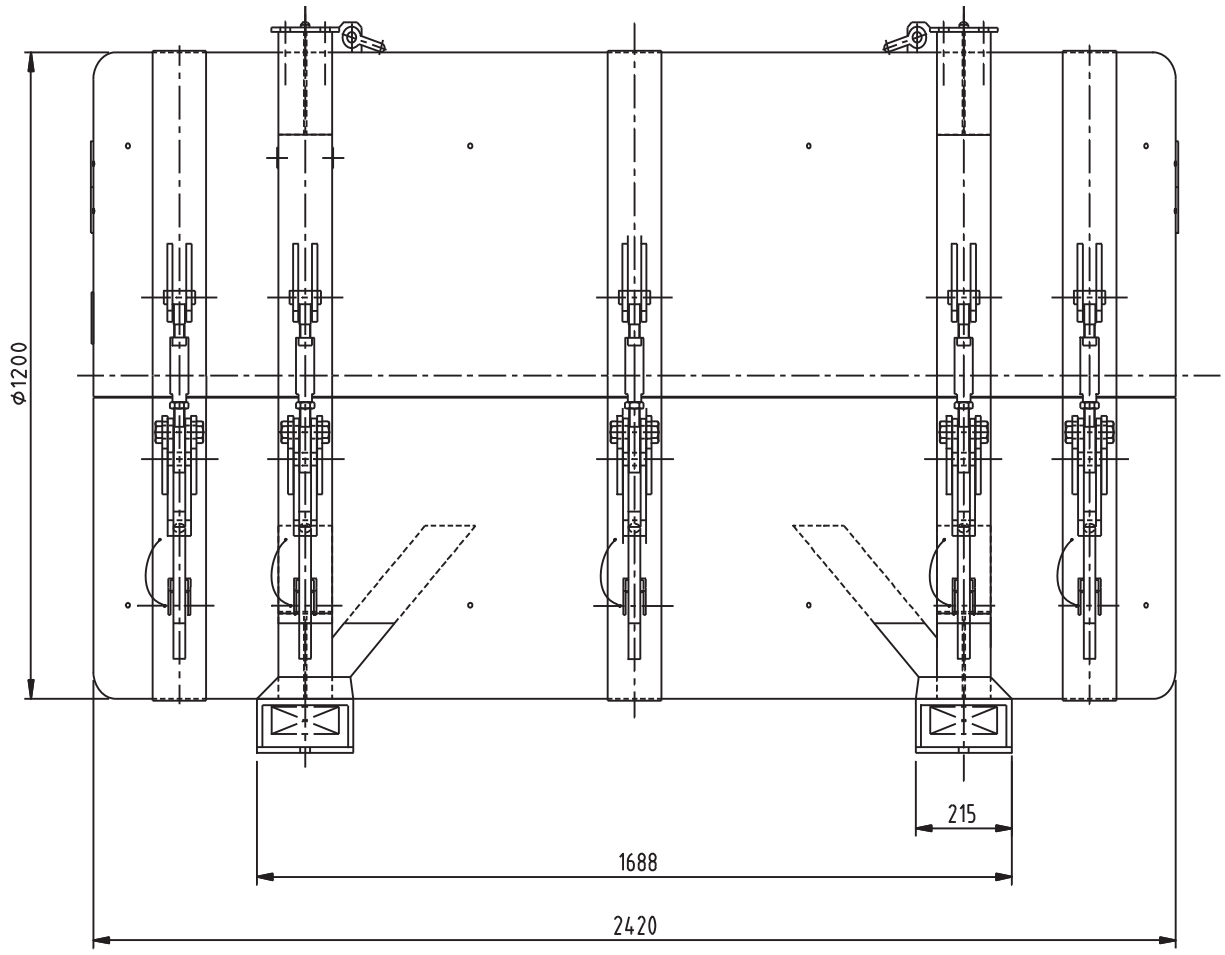


FIGURE 0.2

COG-OP-30B OVERPACK DRAWING

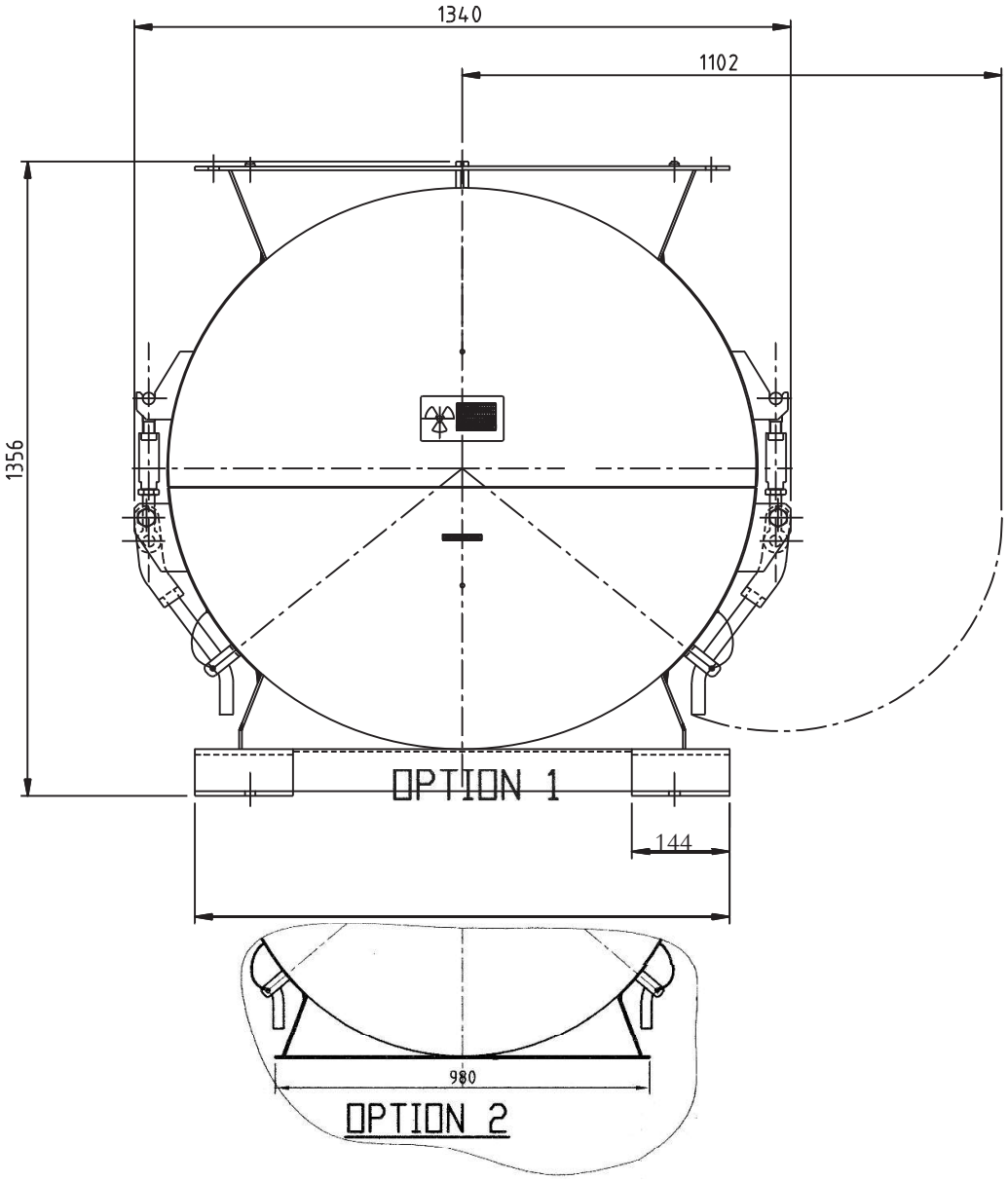
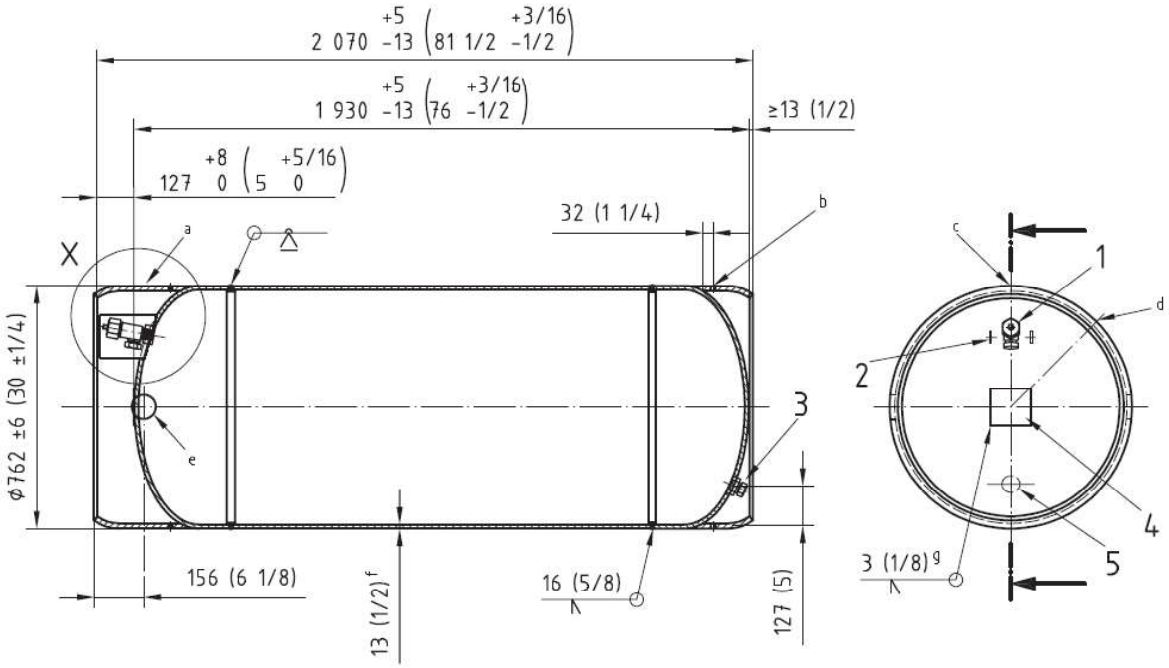


FIGURE 0.3

30B CYLINDER DRAWING



NOTA : Valve cover wich is present on the drawing is not left on the cylinder in the COG-OP-30B overpack.

APPENDIX 3

URANIUM HEXAFLUORIDE (UF_6) ENRICHED TO A MAXIMUM 5 % URANIUM-235

The safety analysis report justifying the authorized content is referenced DOS-20-034609 Version 2.0 dated April 07, 2022.

1. DESCRIPTION OF RADIOACTIVE CONTENT

The authorized radioactive content meets in particular the following conditions:

- The content complies with the definition of Enriched Commercial Grade UF_6 as given in standards ASTM C996-10, ASTM C996-15 or ASTM C996-20 ;
- The authorized weight of UF_6 in a filled 30B cylinder is between 455 kg and 2277 kg;
- The ^{235}U enrichment must not exceed 5%;
- The content activity must not exceed 1 A_2 taking into account the ageing of the content between the end of 30B cylinder filling and the end of transport.

The content complies, during filling of the cylinder, with the following characteristics:

Radionuclide	Maximum content (µg/g of U)
^{232}U	$1\ 10^{-4}$
^{236}U	500
^{99}Tc	$1\ 10^{-2}$

Radionuclide	Maximum content (µg/g of ^{235}U)
^{234}U	$11\ 10^{3}$

2. SUBCRITICALITY MAINTAIN

The subcriticality maintain is justified in Chapter 5A of the safety analysis report referenced DOS-20-034609 Version 2.0.

The confinement system considered is described in Chapter 0 of the safety analysis report.

Criticality Safety Index (CSI) : 0

APPENDIX 4

URANIUM HEXAFLUORIDE (UF_6) HEELS

The safety analysis report justifying the authorized content is referenced DOS-20-034609 Version 2.0 dated April 07, 2022.

1. DESCRIPTION OF RADIOACTIVE CONTENT

The authorized radioactive content meets in particular the following conditions:

- The radioactive content of the 30B cylinder comprises heels of uranium hexafluoride UF_6 and its daughter products in various chemical forms, in whatever proportions remain after emptying, with a maximum enrichment in ^{235}U of 5%;
- The authorized weight of heels must not exceed 11.34 kg;
- The content activity must not exceed 1 A_2.

During the last[1] filling of the cylinder, the UF_6 was in compliance with the definition of "Enriched Commercial Grade UF_6" as given in standards ASTM C996-10, ASTM C996-15 or ASTM C996-20 and the maximum contents in radionuclide complied with the following criteria:

Radionuclide	Maximum content (µg/g of U)
^{232}U	$1\ 10^{-4}$
^{236}U	500
^{99}Tc	$1\ 10^{-2}$

Radionuclide	Maximum content (µg/g of ^{235}U)
^{234}U	$11\ 10^{3}$

2. SUBCRITICALITY MAINTAIN

The subcriticality maintain is justified in Chapter 5A-1 of the safety analysis report referenced DOS-20-034609 Version 2.0.

The confinement system considered is described in Chapter 0 of the safety analysis report.

Criticality Safety Index (CSI) : 0

[1] The cylinder having been emptied, it is the filling which precede this emptying.

APPENDIX 5

URANIUM HEXAFLUORIDE (UF_6) HEELS

The safety analysis report justifying the authorized content is referenced DOS-20-034609 Version 2.0 dated April 07, 2022.

3. DESCRIPTION OF RADIOACTIVE CONTENTS

The authorized radioactive content meets in particular the following conditions:

- The radioactive content of the 30B cylinder comprises heels of uranium hexafluoride UF_6 and its daughter products in various chemical forms, in whatever proportions remain after emptying, with a maximum enrichment in ^{235}U of 5%;
- The authorized weight of heels must not exceed 11.34 kg;
- The content activity must not exceed 1 A_2 taking into account the ageing of the content between the end of 30B cylinder filling and its emptying (cylinder with heels) which must not exceed six months;
- The uranium can come from reprocessed uranium.

The maximum contents in radionuclide complies with the following criteria:

Radionuclide	Maximum content (µg/g of U)
^{232}U	$2\ 10^{-2}$
^{234}U	$1.5\ 10^{3}$
^{236}U	$2\ 10^{4}$
^{99}Tc	5

Gamma radiations due to fission products must not exceed $4.4.10^5$ MeV.Bq/kgU.

The maximum activity for actinides (Np + Pu) is 3300 Bq/kgU.

4. SUBCRITICALITY MAINTAIN

The subcriticality maintain is justified in Chapter 5A-1 of the safety analysis report referenced DOS-20-034609 Version 2.0.

The confinement system considered is described in Chapter 0 of the safety analysis report.

Criticality Safety Index (CSI) : 0

APPENDIX 6

URANIUM HEXAFLUORIDE (UF_6) HEELS

The safety analysis report justifying the authorized content is referenced DOS-20-034609 Version 2.0 dated April 07, 2022.

1. DESCRIPTION OF RADIOACTIVE CONTENTS

The authorized radioactive content meets in particular the following conditions:

- The radioactive content of the 30B cylinder comprises heels of uranium hexafluoride UF_6 and its daughter products in various chemical forms, in whatever proportions remain after emptying, with a maximum enrichment in ^{235}U of 5%;
- The authorized weight of heels must not exceed 11.34 kg;
- The content activity must not exceed 1 A_2 taking into account the ageing of the content between the end of 30B cylinder filling and its emptying (cylinder with heels);
- The uranium can come from reprocessed uranium.

The maximum contents in radionuclide complies with the following criteria:

Radionuclide	Maximum content (µg/g of U)
^{232}U	$3\ 10^{-2}$
^{234}U	$1.8\ 10^{3}$
^{236}U	$2.768\ 10^{4}$
^{99}Tc	5

Gamma radiations due to fission products must not exceed $4.4.10^5$ MeV.Bq/kgU.

The maximum activity for actinides (Np + Pu) is 3300 Bq/kgU.

2. SUBCRITICALITY MAINTAIN

The subcriticality maintain is justified in Chapter 5A-1 of the safety analysis report referenced DOS-20-034609 Version 2.0.

The confinement system considered is described in Chapter 0 of the safety analysis report.

Criticality Safety Index (CSI) : 0

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Pipeline and Hazardous Materials Safety Administration

CERTIFICATE NUMBER: USA/0577/AF-96

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