



DOCUMENT NO.: FBP-WM-PRO-00273	REV. NO. 10	EFFECTIVE DATE: <u>3/16/23</u>
TITLE: Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment	<u>5</u> YR PERIODIC REVIEW DATE: <u>3/16/28</u>	
	APPROVED BY: Lindsay Adkins DATE: 3/16/23 (Signature on File)	

USE CATEGORY:	INFORMATION USE	Page 1 of 23
SME: Randy Barr	Writer: Joyce Netter	

### Level 2 Administrative Procedure

Revision	Record of Issue/Revision	Affected Pages
10	Minor Revision/Periodic Review. Updated to current template and format. Added new Appendix A, <i>Regulatory Requirements Flow Down</i> , and associated reference step in the Purpose Section.	All

Previous Record of Issue/Revision information is available from the history files.

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF<sub>6</sub>) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 2 of 23</b>

## CONTENTS

1.0	PURPOSE .....	3
2.0	SCOPE AND APPLICABILITY .....	3
3.0	GENERAL INFORMATION .....	4
4.0	USE REFERENCES .....	5
5.0	RESPONSIBILITIES.....	5
5.1	Transportation Specialist (TS) .....	5
5.2	Operations .....	6
5.3	Operations Supervisor.....	6
5.4	NMC&A.....	6
5.5	Logistics Coordinator (LC).....	7
5.6	Radiological Control Technician (RCT).....	7
5.7	Plant Shift Superintendent (PSS) .....	7
6.0	ACTIONS .....	8
6.1	Prior to Shipment of UF <sub>6</sub> Cylinders .....	8
6.2	14 Ton UF <sub>6</sub> Cylinders for Shipment .....	9
6.3	Obtaining and Releasing Carrier Driver and Final Paperwork Processing .....	12
7.0	RECORDS .....	14
7.1	Records Generated .....	14
7.2	Requirements .....	14
8.0	DEFINITIONS/ACRONYMS .....	14
8.1	Definitions.....	14
8.2	Acronyms .....	14
9.0	SOURCE REFERENCES .....	15
Appendix A	REGULATORY REQUIREMENTS FLOW DOWN.....	17
Attachment A	INSPECTION REGULATORY COMPLIANCE CHECKLIST .....	18
Attachment B	FBP UF <sub>6</sub> SHIPMENT DOCUMENT FOLDER CHECKLIST .....	20
Attachment C	CI-48 VISUAL INSPECTION AND CLOSURE VERIFICATION .....	21
Attachment D	P-48 VISUAL INSPECTION AND CLOSURE VERIFICATION .....	22
Attachment E	KEVIL KOUGAR VISUAL INSPECTION AND CLOSURE VERIFICATION..	23

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF<sub>6</sub>) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 3 of 23</b>

## 1.0 PURPOSE

- 1.1 This procedure provides guidance for establishing a uniform set of actions and instructions for making shipments of UF<sub>6</sub> cylinders and cylinder overpacks from Portsmouth and other off-site facilities (i.e., DUF<sub>6</sub> Conversion Services Paducah). A Shipment Document Folder (SDF) is compiled to document required paperwork.
- 1.2 When properly implemented, the protocols and methods described in this procedure partially meet the intent of FBP-PM-PDD-00001, *Integrated Safety Management System* (ISMS), requirements for:
  - Hazardous Material Identification
  - Classification
  - Containerization
  - Hazard Communication
  - Personnel Training
- 1.3 Department of Energy (DOE) is provided with approved carriers through the Motor Carrier Evaluation Program (MCEP) for off-site shipments and continue to meet the following requirements:
  - Proof of U.S. citizenship for the off-site transport vehicle drivers
  - Carrier utilizes satellite tracking and/or maintains cellular telephone contact including the requirement that the driver must contact carrier dispatch at regular intervals.
  - If required, en route security measures briefing and written instructions are provided to drivers; ensure drivers understand these instructions and sign a copy; Transportation retains a copy of signed instructions in the SDF.
  - Consignee notification upon receipt discrepancies of shipment.
- 1.4 This document implements applicable regulatory requirements. They are listed in Appendix A, *Regulatory Requirements Flow Down*.

## 2.0 SCOPE AND APPLICABILITY

- 2.1 This Level 2 procedure applies to personnel employed by or contracted to Fluor-BWXT Portsmouth, LLC (FBP) at the Portsmouth Gaseous Diffusion Plant (PORTS) involved with making shipments of UF<sub>6</sub> cylinders.
- 2.2 This procedure also applies to personnel employed by or contracted to FBP performing work at the other off-site facilities when shipping UF<sub>6</sub> cylinders from non-FBP facilities.

<b>TITLE:</b>  <b>Preparing Uranium Hexafluoride (UF<sub>6</sub>) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 4 of 23</b>

**2.3** The actions and instructions set forth in this procedure will demonstrate UF<sub>6</sub> cylinders meet required Department of Transportation (DOT), Nuclear Regulatory Commission (NRC), state and local regulations for transportation in commerce.

**2.4** This procedure does not apply to turnkey transportation operations.

### **3.0 GENERAL INFORMATION**

**3.1** The compilation of the applicable forms in the SDF for a given shipment will demonstrate programmatic and project compliance with applicable DOT, NRC, American National Standards Institute (ANSI) N14.1, United States Enrichment Corporation (USEC) 651, and Environmental Protection Agency (EPA) regulations.

**3.2** Personnel designated to perform transportation inspections per Federal Motor Carrier Safety Regulations (FMCSR) shall be trained and qualified in accordance with FBP-WM-PL-00051, *Transportation Training Plan*.

**3.3** Quality Assurance (QA) interacts with management to identify activities to be monitored or processes to be assessed and provides independent oversight of shipments intended for transportation in commerce.

**3.4** Safe conditions at the project site are established by initiating FBP-QP-PRO-00020, *Problem Reporting & Issues Management*, upon discovery of events, such as:

- Safety concerns
- Employee injury or illness
- Damage to shipping container or package requiring rejection of the shipment or repair prior to shipment
- Potential Occurrence Reportable issues
- Change of project conditions
- Violations of Environment, Safety, Health & Quality (ESH&Q) program requirements, or other relevant issues
- Events due to nonconforming item, such as a container or package, then FBP-QA-PRO-00128, *Control of Nonconforming Items*, must also be adhered to

**3.5** DOE/PORTS is notified if any of the following events occur pertaining to the shipments of UF<sub>6</sub> in cylinders:

- Nonconforming conditions are identified affecting the quality of previously shipped cylinder
- Identification of motor carrier discrepancy, non-compliance, or inadequate performance has been identified

<b>TITLE:</b>  <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 5 of 23</b>

- Motor carrier transportation incident or emergency situation

- 3.6** Use CI-48, in accordance with TFR-DE-2015-0108, *Technical & Functional Requirements for CI-48 (Uranium Hexafluoride Cylinder Overpack Self-Certification Report)*.
- 3.7** Use P-48, in accordance with TFR-DE-2015-0199, *Technical & Functional Requirements for P-48 Uranium Hexafluoride Cylinder Overpack Self-Certification Report*.
- 3.8** Personnel designated to generate/sign shipping papers and/or perform regulatory evaluations must successfully complete Advanced DOT training in accordance with FBP-WM-PL-00051.

#### **4.0 USE REFERENCES**

- A.** FBP-BS-PRO-00062, *Records Management Process*
- B.** FBP-EM-PRO-00050, *Response to an Off-Site Transportation Incident*
- C.** FBP-MC-PRO-00067, *Nuclear Material Container Transfers*
- D.** FBP-NO-PRO-00117, *Shipping and Receiving Large UF6 Cylinders X-344*
- E.** FBP-PM-PDD-00001, *Integrated Safety Management System*
- F.** FBP-QA-PRO-00128, *Control of Nonconforming Items*
- G.** FBP-QP-PRO-00020, *Problem Reporting & Issues Management*
- H.** FBP-RP-PRO-00036, *Radiological Surveys for the Receipt, Transport, and Movement of Radioactive Materials*
- I.** FBP-RP-PRO-00176, *Radiological Survey Performance*
- J.** FBP-RP-PRO-00177, *Documentation of Radiological Surveys*
- K.** FBP-WM-PL-00051, *Transportation Training Plan*
- L.** FBP-WM-PRO-00044, *Preparing Off-Site Shipments of Hazardous Materials*

#### **5.0 RESPONSIBILITIES**

##### **5.1 Transportation Specialist (TS)**

- 5.1.1** Ensures hazardous material is properly classified, characterized, and packaged in accordance with State and Federal regulations for transport.
- 5.1.2** Ensures hazardous material is loaded, secured, and transported in accordance with State and Federal regulations.

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 6 of 23</b>

- 5.1.3 Interfaces with Operations and Nuclear Materials Control & Accountability (NMC&A) for off-site shipment schedules.
- 5.1.4 Supplies Operations with required marking, labeling, and placards.
- 5.1.5 Acts as the shipper for “Fluor-BWXT Portsmouth, LLC on behalf of the U.S. Department of Energy”.
- 5.1.6 Interacts and interfaces with PORTS, and other off-site facilities in support of the packaging and preparations for shipping.
- 5.1.7 Includes PSS and Transportation Manager in shipment notification distribution.

## 5.2 Operations

- 5.2.1 Fills the cylinders.
- 5.2.2 Selects the cylinders based on NMC&A schedule for shipment.
- 5.2.3 Coordinates packaging and transportation requirements with the TS.
- 5.2.4 Ensures material is acceptable for transfer to receiving facility.
- 5.2.5 Fills each sample cylinder for onsite analytical data or receiving facility analytical data, as required.
- 5.2.6 Loads and unloads cylinders.
- 5.2.7 Closes packaging in accordance with manufacturers’ requirements, as applicable.

## 5.3 Operations Supervisor

- 5.3.1 Directs the inbound receipt and inspection of cylinders.
- 5.3.2 Ensures the cylinders are marked and labeled as directed by the TS.
- 5.3.3 Directs the loading of the cylinders for each shipment.
- 5.3.4 Schedules inbound and outbound surveys and radiological readings.

## 5.4 NMC&A

- 5.4.1 Provides FBP-MC-PRO-00067-F04, *Shipment Worksheet*
- 5.4.2 Provides FBP-MC-PRO-00067-F03, *Nuclear Material Tally-Out sheet*
- 5.4.3 Provides DOE/NRC – FORM 741, *Nuclear Material Transaction Report*

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 7 of 23</b>

**5.4.4** Reviews the chronological sequence of transactions and updates Portsmouth Materials Accountability System (PORTSMAS) records for each cylinder and sample cylinder shipped.

**5.4.5** Off-site facility NMC&A provides Off-site Shipping Authorization (Shipment Worksheet equivalent) per their procedures.

**5.4.6** Off-site facility NMC&A transmits 741 to receiving facility NMC&A per their procedures.

## **5.5 Logistics Coordinator (LC)**

**5.5.1** Acts as primary interface with motor carrier. The TS may function as LC for off-site locations.

**5.5.2** Interfaces with TS and Operations for tractor, trailer inbound and out bound inspections, and radiological surveys.

## **5.6 Radiological Control Technician (RCT)**

**5.6.1** Performs FBP-RP-PRO-00176, *Radiological Survey Performance*.

**5.6.2** Performs FBP-RP-PRO-00177, *Documentation of Radiological Surveys*.

**5.6.3** Completes Radiological Survey Form.

**5.6.4** Off-site facility Health and Safety Technicians (HSTs) completes Survey Forms. HST performs surveys and provides documentation, as required, to FBP Transportation Specialists per their procedures.

## **5.7 Plant Shift Superintendent (PSS)**

**5.7.1** Serves as the 24-hour point of contact for emergency information for off-site transportation incidents.

**5.7.2** Notifies appropriate managers of an off-site transportation incident. Activates Transportation Assistance Team.

**5.7.3** Maintains (at least 5 days) copy of Bill of Lading (BOL) and Emergency Response Guide (ERG) for off-site shipments.

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF<sub>6</sub>) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 8 of 23</b>

## 6.0 ACTIONS

### 6.1 Prior to Shipment of UF<sub>6</sub> Cylinders

#### LC or TS

- 6.1.1 Order conveyance in conjunction with the shipment schedule.

#### RCT

##### **NOTE**

For shipments from off-site facilities, the respective facility HST will complete Radiological Surveys, and provide a copy to FBP Transportation.

- 6.1.2 Complete cylinder surveys for off-site shipment and report on Radiological Survey Forms per FBP-RP-PRO-00036, *Radiological Surveys for the Receipt, Transport, and Movement of Radioactive Materials*, and provide a copy to the TS.

- 6.1.3 Complete Trailer Inbound Survey and report on Radiological Survey Form per FBP-RP-PRO-00036, and provide a copy to the TS.

#### NMC&A

- 6.1.4 Provide Operations and Transportation with a copy of FBP-MC-PRO-00067-F03, *Nuclear Material Tally-Out* sheet.

- 6.1.5 Provide Operations and Transportation with a copy of FBP-MC-PRO-00067-F04, *Shipment Worksheet*.

#### TS

##### **NOTE**

Off-site carrier services must be properly registered by DOT.  
Road transport of Hazardous Materials including hazardous and/or radioactive waste shall be conducted by trucking companies approved through the USDOE MCEP.

- 6.1.6 Use of DOT International Atomic Energy Agency (IAEA) Certified Packagings (DOE Order 460.1D), as applicable:
- A. FBP or FBP contractors must be registered users before the IAEA packaging is used.



<b>TITLE:</b>  <b>Preparing Uranium Hexafluoride (UF<sub>6</sub>) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 9 of 23</b>

- B.** FBP is a registered user of Model 48X and 48Y cylinders *Competent Authority Certification Certificate* USA/0592/H (M)-96. Model 48Y cylinders shall be used to ship the UF<sub>6</sub> to the receiving facility. FBP is also a registered user of Kevil Kougat *Competent Authority Certification Certificate* USA/0819/H (M)-96. This package will be used to ship 48G or H cylinders.

## 6.2 14 Ton UF<sub>6</sub> Cylinders for Shipment

### NOTE

UF<sub>6</sub> cylinders must meet applicable DOE Orders, Title 10, Title 49 CFR requirements and ANSI N14.1 in such areas as packaging, design, fabrication, and procurement. This standard also defines the requirements for in-service inspections, cleanliness, and maintenance for packagings in service.

### NMC&A

- 6.2.1** Provide Operations and TS the cylinders that will make up a shipment.
- 6.2.2** Issue completed DOE/NRC Form 741 to the receiving facility within one business day.
- 6.2.3** Provide TS with the following required information for the proposed shipment, as applicable:
- A.** NMC&A Off-Site Shipping Authorization with correct cylinder number and approval signatures.

### NOTE

**IF** the shipment contains 0.5 gram uranium enriched in <sup>235</sup>U (special nuclear material) **or** 500 grams of depleted/normal uranium (source material), **THEN** a 741 form will be provided by NMC&A.

- B.** Provide DOE/NRC – FORM 741.

### TS

### NOTE

A calculation can be made using the certified water weight of the cylinder; this weight could be higher. Weights are documented and put in SDF folder. 49CFR 173.420 (a) (5) allows The volume of solid uranium hexafluoride, except solid depleted uranium hexafluoride, at 20 °C (68 °F) may not exceed 61% of the certified volumetric capacity of the packaging.

- 6.2.4** Confirm 48G cylinder does not exceed the Fill Limit of 26,840 lbs.
- 6.2.5** Confirm 48H cylinder does not exceed the Fill Limit of 27,030 lbs.

<b>TITLE:</b>  <b>Preparing Uranium Hexafluoride (UF<sub>6</sub>) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 10 of 23</b>

**6.2.6** Confirm 48Y cylinder does not exceed the a Fill Limit of 27,560 lbs.

**NOTE**

Action steps and checklists from 6.2.7 thru 6.2.22 are not required to be performed in the exact order as listed.

**6.2.7** Assign BOL number and record shipment information into the Shipment Log. (If broker is used, assign our BOL number and reference the brokers BOL number in the Shipment Log.)

**6.2.8** Generate/obtain the following documentation and place into the SDF, as applicable:

- Cylinder Radiological Survey Form
- Applicable off-site facility Radiological Survey Forms
- Shipping Paper BOL and ERG with proper shipping name
- FBP-MC-PRO-00067-F04
- FBP-MC-PRO-00067-F03
- FBP-WM-PRO-00273-F01, *Inspection Regulatory Compliance Checklist*
- Reviewed and Final copy of DOE/NRC Form 741 from NMC&A and PORTSMAS Report, if applicable
- 48G and 48H cylinder inspection report per ANSI 14.1 (performed by QA off-site)
- CI-48, P-48, or Kevlar Kougat inspection and closure documentation provided by off-site facility procedures.
- NMC&A Off-site facility Shipper Authorization Form (*Shipment Worksheet* equivalent)
- Cold pressure check (off-site only) performed and verified @ 68 degrees F to be less than 14.7 psia (101.3 k Pa) or less than 30 inches of Hg (Mercury)
- Shipment Summary
- Shipment email notification to include BOL/ERG attachment and distribution to PSS, FBP Transportation Manager, and other applicable persons.
- FBP-WM-PRO-00273-F02, *FBP UF<sub>6</sub> Shipment Document Folder Checklist* (affix to front of SDF file folder)
- FBP-WM-PRO-00044-F05, *Truck Inspection Checklist*

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 11 of 23</b>

- FBP-WM-PRO-00044-F09, *Trailer Inspection Checklist*
- FBP-WM-PRO-00273-F03, *CI-48 Visual Inspection and Closure Verification*
- FBP-WM-PRO-00273-F04, *P-48 Visual Inspection and Closure Certification*
- FBP-WM-PRO-00273-F05, *Kevik Kougat Visual Inspection and Closure Verification*

**6.2.9** Review and resolve any issues with the shipment prior to leaving the site.

**NOTE**

For CI-48, P-48, or Kevik Kougat shipments from off-site facilities, the TS may mark and label package.

**6.2.10** Provide Supervisor with DOT, NRC markings and labels for application on containers or packages, as required.

**Supervisor**

**6.2.11** Attach Tamper Indicating Device (TID) to Valve Protection Assembly

**6.2.12** Mark and label containers in accordance with Transportation instructions.

**TS**

**6.2.13** Perform a walk-down to visually inspect the integrity of the cylinder or overpack and appropriate application of markings and labels.

**6.2.14** Using BOL, verify labels isotope, activity, and Transport Index (TI).

**6.2.15** In the BOL remarks section, verify applicable TID, plug TID cylinder/package number.

**6.2.16** Mark gross weight in kgs on cylinder.

**6.2.17** Schedule inbound/outbound Radiological surveys as reported on Radiological Survey Form per FBP-RP-PRO-00036, of the transport vehicle.

**6.2.18** Verify that cylinder overpack visual integrity inspection and closure verification has been performed by operations or off-site facility functions. If operations does not complete integrity or closure documentation, the TS should perform these tasks and complete the applicable forms and place into the SDF:

- FBP-WM-PRO-00273-F03
- FBP-WM-PRO-00273-F04

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF<sub>6</sub>) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 12 of 23</b>

- FBP-WM-PRO-00273-F05

### **Supervisor**

- 6.2.19** Complete FBP-MC-PRO-00067-F04.
- 6.2.20** Load the conveyance per FBP-NO-PRO-00117, *Shipping and Receiving Large UF<sub>6</sub> Cylinders X-344*.
- 6.2.21** Complete FBP-MC-PRO-00067-F03.

### **RCT**

#### **NOTE**

Off-site facility HSTs will perform and document Inbound and Outbound Radiological Survey Forms in accordance with facility procedures.

- 6.2.22** Perform Inbound and Outbound Radiological Surveys utilizing Radiological Survey Form per FBP-RP-PRO-00036, which have been signed by RP Supervisor.

### **6.3 Obtaining and Releasing Carrier Driver and Final Paperwork Processing**

#### **TS**

- 6.3.1** Verify driver's Commercial Driver's License (CDL) with proper endorsement, is valid, and medical card is current.
- A. IF** CDL or medical card has expired, **THEN** immediately contact LC for resolution with carrier.
- B. IF** satisfactory resolution is not obtained, **THEN** do not proceed; and contact Transportation Manager.
- 6.3.2** Attach TID on package for off-site shipments.
- 6.3.3** Record the TID number(s) on the BOL in Remarks section.

### **Supervisor**

- 6.3.4** Placard the transport vehicle/conveyance.

#### **TS**

- 6.3.5** Review shipping documents with the driver of the transport vehicle.
- 6.3.6** Obtain Inbound and Outbound Radiological Surveys signed by the Supervisor, as reported on the Radiological Survey Form per FBP-RP-PRO-00036.
- 6.3.7** Obtain Inbound and Outbound off-site facility Radiological Survey Forms when shipping from non-FBP facilities.

<b>TITLE:</b>  <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 13 of 23</b>

**NOTE**

Certifications/signatures must be made legibly by a principal, officer, partner, or employee of the shipper, or his agent. They may be legibly signed manually, or other mechanical means, by qualified TS, and state "Fluor-BWXT Portsmouth LLC, on behalf of the U.S. Department of Energy".

- 6.3.8** Ensure the driver has signed the following:
- Original Shipping Paper with drivers signature and name printed
  - Dedicated Truck Instructions
- 6.3.9** Complete or obtain FBP-WM-PRO-00044-F05 and FBP-WM-PRO-00044-F09.
- 6.3.10** Provide the driver with the following completed documents, as applicable:
- One original BOL with driver's name printed and signature, with attached ERG and second BOL/ERG for receiving facility)
  - Dedicated Truck Instructions signed by the driver
  - Outbound Shipment, and Package radiological surveys signed by the supervisor, as reported on the Radiological Survey Form
  - Extra placards (if not metal flip placards)
  - Any additional documentation required by the receiving facility
- 6.3.11** **WHEN** shipping 48Y cylinders, **THEN** prepare URENCO USA Pre Notification documentation with the following:
- Certificate of Quality and Quantity (CQQ)
  - Each cylinder data book
  - Worksheet (wt. in kgs, Seals, Cylinder #, BOL, Ship Date, POs), (Worksheet is labeled as Product Values Urenco/Daughter Final Values)
  - Package Surveys
  - 741 (Nuclear Material Transaction Report) after shipment has departed
- 6.3.12** Prior to shipment leaving the site, provide the following and add to the SDF:
- Email notification to include BOL/ERG attachment and distribution to PSS, FBP Transportation Manager, and other applicable persons.
  - BOL and ERG (with DOT proper shipping name)

<b>TITLE:</b>  <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 14 of 23</b>

- 6.3.13** Maintain a copy of the signed documents (CQQ, survey, 741s) in the SDF.
- 6.3.14** File SDF in approved repositories.
- 6.3.15** **IF** contacted by the PSS for a transportation incident or emergency situation, **THEN** follow procedure FBP-EM-PRO-00050, *Response to an Off-Site Transportation Incident*.
- 6.3.16** The consignee must notify the shipper by the end of the first working day after the estimated arrival date if the shipments have not been received for shipment of fissile material or more than Type A quantity of Radioactive materials [DOE 460.2A Attachment 2, *Contractor Requirements Document*].

## **7.0 RECORDS**

### **7.1 Records Generated**

- A.** SDF
  - Per 49 CFR 172.201 (e) *Retention and Recordkeeping for Shipping Papers Required by 172.200* (a), for a hazardous waste, the shipping paper copy must be retained for 3 years after the material is accepted by the initial carrier. For other hazardous materials, the shipping paper must be retained for 2 years after the material is accepted by the initial carrier.
- B.** FBP-WM-PRO-00273-F03, *CI-48 Visual Inspection and Closure Verification*
- C.** FBP-WM-PRO-00273-F04, *P-48 Visual Inspection and Closure Verification*
- D.** FBP-WM-PRO-00273-F05, *Kevil Kougar Visual Inspection and Closure Verification*

### **7.2 Requirements**

Records generated or received as a result of performing this procedure shall be managed according to FBP-BS-PRO-00062, *Records Management Process*.

## **8.0 DEFINITIONS/ACRONYMS**

### **8.1 Definitions**

None

### **8.2 Acronyms**

- A.** **BOL** – Bill of Lading
- B.** **CDL** – Commercial Driver’s License
- C.** **DOT** – Department of Transportation

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 15 of 23</b>

- D.     ERG** – Emergency Response Guide
- E.     HST** – Health and Safety Technician
- F.     IAEA** – International Atomic Energy Agency
- G.     LC** – Logistics Coordinator
- H.     MCEP** – Motor Carrier Evaluation Program
- I.     PO** – Purchase Order
- J.     PSS** – Plant Shift Supervisor
- K.     RP** – Radiological Protection
- L.     SDF** – Shipment Documentation Folder
- M.     TID** – Tamper Indicating Device
- N.     TS** – Transportation Specialist

## **9.0     SOURCE REFERENCES**

- A.**     ANSI N14.1 American National Standard Institute, *Nuclear Materials - Uranium Hexafluoride-Packagings for Transport*
- B.**     DOE M 470.4-6, *Nuclear Material Control and Accountability*
- C.**     DOE Order 460.1D, *Hazardous Materials Packaging and Transportation Safety*
- D.**     DOE Order 460.2A, *Departmental Materials Transportation and Packaging Management.*
- E.**     DOE/NRC Form 741, *Nuclear Material Transaction Report*
- F.**     Emergency Response Guidebook
- G.**     FBP-MC-PL-00002, *NMC&A Plan for the Facilities Managed by FBP*
- H.**     FBP-QA-PL-00006, *Quality Assurance Project Plan for the Use of Type A (F) and B Packaging*
- I.**     IAEA Competent Authority Certification Certificate USA/0592/H (M)-96
- J.**     IAEA Kevil Kougar Competent Authority Certification Certificate USA/0819/H (M)-96
- K.**     IAEA Regulations for the Safe Transport of Radioactive Material

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 16 of 23</b>

- L.** TFR-DE-2015-0108, *Technical & Functional Requirements for CI-48 Uranium Hexafluoride Cylinder Overpack Self-Certification Report*
- M.** TFR-DE-2015-0199, *Technical & Functional Requirements for P-48 Uranium Hexafluoride Cylinder Overpack Self-Certification Report*
- N.** TR-20000-010-103, *Acceptance Test and Maintenance Instructions for the Kevil Kougar*
- O.** Title 10 CFR 71, NRC, *Packaging and Transportation of Radioactive Material*
- P.** Title 40 CFR, *Protection of Environment*
- Q.** Title 49 CFR, *Transportation*




<b>TITLE:</b>  <b>Preparing Uranium Hexafluoride (UF<sub>6</sub>) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 17 of 23</b>

**Appendix A**  
**REGULATORY REQUIREMENTS FLOW DOWN**

1. ANSI N14.1 American National Standard Institute, *Nuclear Materials - Uranium Hexafluoride-Packagings for Transport*
2. DOE M 470.4-6, *Nuclear Material Control and Accountability*
3. DOE Order 460.1D, *Hazardous Materials Packaging and Transportation Safety*
4. DOE Order 460.2A, *Departmental Materials Transportation and Packaging Management.*
5. DOE/NRC Form 741, *Nuclear Material Transaction Report*
6. Title 10 CFR 71, NRC, *Packaging and Transportation of Radioactive Material*
7. Title 40 CFR, *Protection of Environment*
8. Title 49 CFR, *Transportation*

TITLE:	Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment	FBP-WM-PRO-00273
		REV. NO. 10
		Page 18 of 23

**Attachment A**  
**INSPECTION REGULATORY COMPLIANCE CHECKLIST**  
**Page 1 of 2**

	Off-Site Shipment of Uranium Hexafluoride UF <sub>6</sub> Cylinders <b>Inspection Regulatory Compliance Checklist</b> <i>Highway Transportation</i>
---	---

Shipment Number: \_\_\_\_\_ Control Number: \_\_\_\_\_


Carrier: \_\_\_\_\_ Date: \_\_\_\_\_

Truck No. \_\_\_\_\_ ; Trailer No. \_\_\_\_\_

	CRITERIA	YES	N/A
Packaging 49 CFR 178.500	Packaging(s) [48Y] Cylinder, CI-48 Package, P-48 Package, Kevik Kougur		
	Container Type:		
	Visual Inspection Performed (to ensure integrity of all packages)		
Marking for Non-Bulk Packages 49 CFR 172.301	Proper Shipping Name & UN/NA Identification Number 49 172.301(a)		
	"RQ" and (Constituent), if required 49 CFR 172.101 Table 1 & 2 172.101		
Marking for Bulk Packages 49 CFR 172.310	Identification Numbers (Orange Pands) 172.302(a)		
	"OVERPACK", when specification packaging are required and specification markings are not visible 173.25(a)(4)		
	Overpacks are marked and labeled for each hazardous material contained within, if inner package markings and labels are not visible 173.25(a)(2)		
	DOT Specification marking ex Type A/IP1		
	UN2908 marking for empty		
Additional Marking Requirements for Class 7 49 CFR 172.310	Gross Weight, for Radioactive Material Packages Greater than 50 kg (110 lb)		
	"USA DOT 7A Type A"		
	IAEA Competent Authority Certification Certificate USA.0592/H (M)-96		
Labeling 49 CFR 172.400 172.406 (e)	Packages or overpacks with a volume of 1.8m <sup>3</sup> (64ft <sup>3</sup> ) or more must have labels affixed to (2) sides or (2) ends unless placarded		
	Primary Radioactive [7]		
	Subsidiary Hazard Labels, Poison [6] and Corrosive [8]		
	Radioactive Label x 2 (with appropriate information entered i.e., TD) ex: Yellow II or Yellow III		
	Empty Label		
Placarding 49 CFR 172.500	Note: A bulk packaging, other than a portable tank, cargo tank, or tank car, with a volumetric capacity less than 18 m <sup>3</sup> (640 ft <sup>3</sup> ) may be placarded on two opposite sides OR labeled instead of placarding. 172.514 (c)		
	Each bulk packaging, freight container, or transport vehicle which contains any quantity of the following hazardous materials requires placarding on each side and each end:		
	Each bulk packaging, freight container, or transport vehicle which contains ≥ 454 kg (1001 pounds) aggregate gross weight of the following hazardous materials requires placarding on each side and each end: See 172.504 Table 1 and Table 2		
	Bulk <640ft <sup>3</sup> (non-freight container) – 49 CFR 172.504; 172.514; 173.427(a)(6)(v)		
	• Package – (2) Labels: Radioactive, Poison and Corrosive		
	• Transport Vehicle – (4) Placards: Radioactive, Poison and Corrosive		
	Placards present on transport vehicle, per 49 CFR 172.500		
Bill of Lading	Bill of Lading number matches the number assigned in the Shipment Log		
	Shipper Listed		
	Shipping date		
	Consignee's name and address		
	TID numbers listed for individual packages, if applicable		
	Applicable labels listed		
	Applicable placards listed		
	Shipper and Contract Number listed in the signature block		
	Signature Line: "FLUOR-BWXT PORTSMOUTH LLC ON BEHALF OF THE U.S. DEPARTMENT OF ENERGY"		
	Carrier's name listed in the signature block		
	ERG Number		

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 19 of 23</b>

**Attachment A**  
**INSPECTION REGULATORY COMPLIANCE CHECKLIST**  
**Page 2 of 2**

	Off-Site Shipment of Uranium Hexafluoride UF <sub>6</sub> Cylinders <b>Inspection Regulatory Compliance Checklist</b> <i>Highway Transportation</i>
---	---


**Shipment Number:** \_\_\_\_\_ **Control Number:** \_\_\_\_\_

	CRITERIA	YES	N/A
Shipping Paper Descriptions	"X" or "RQ"		
	Page 1 of _____ (Shipping papers consecutively numbered)		
	24-Hour "EMERGENCY CONTACT" Phone Number: 740-897-3025		
	Identification Number		
	Proper Shipping Name (PSN)		
	Hazard Class or Division		
	(Subsidiary Hazard Class or Division)		
	Total Quantity of Material Covered by One Description		
	Number of Containers and Type of Packaging		
	Printed Name of Person certifying the shipment		
Additional Descriptions General	Special Permit Number		
Radioactive Material	Radionuclide Symbol(s), per 173.435		
	Physical & Chemical Form		
	Activity per Package in SI units		
	Category of Radioactive Label: Radioactive White-I, Radioactive Yellow-II, or Radioactive Yellow-III, if applicable		
	Transport Index for Radioactive Yellow-II or Yellow-III		
	non-fissile		
Driver Information	Verified Valid CDL License, Proper Endorsement(s), Medical Exam Certificate & Verify the driver has a communication device in their vehicle.		
CI-48, P-48 and Kevlar Inspections MCS Reduced	Cold pressure check performed and verified @ 68 degrees F to be less than 14.7 PSIA (101.3 k Pa) or less than 30 inches of Hg (Mercury) <u>Cylinders have been inspected and verified to conform to ANSI N14.1 (QA inspection report)</u> Cylinders have been loaded and closed in accordance with manufacturer's closure instructions.		
Trailer/Truck Checklists	Truck/Trailer Checklists completed and verified acceptable		
CI-48 Annual Inspection	Verify annual inspection has been performed and is up to date.		
P-48 Annual Inspection	Verify annual inspection has been performed and is up to date.		

Print Name/Signature	Date
----------------------	------

<b>TITLE:</b>  <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 20 of 23</b>

**Attachment B**  
**FBP UF6 SHIPMENT DOCUMENT FOLDER CHECKLIST**


		<b>FBP UF6 SHIPMENT DOCUMENT FOLDER CHECKLIST</b>					
BOL Number:		Shipper Initials:		Date:			
LEFT SIDE	Y	N/A	RIGHT SIDE	Y	N/A		
• Shipping Paper BOL and ERG with PSN			• Emailed copies BOL/ERG to PSS, Transportation Manager				
• Copy DOE/NRC 741 Form			• FBP-MC-PRO-00067-F04, <i>Shipment Worksheet</i> (equivalent off-site facility NMC&A Shipment Authorization)				
• Dedicated Truck Instructions			• FBP-MC-PRO-00067-F03, <i>Nuclear Material Tally-Out Sheet</i>				
• FBP-NO-PRO-00011-F01, <i>Inspection Regulatory Compliance Checklist</i>			• Incoming _____ and _____ Outgoing Surveys				
• FBP-WM-PRO-00273-F01, <i>Inspection Regulatory Compliance Checklist</i>			• <i>Truck Inspection Checklist</i> , FBP-WM-PRO-00044-F05				
• Shipment Summary			• <i>Trailer Inspection Checklist</i> , FBP-WM-PRO-00044-F09				
• Package Surveys (signed by RC Supervisor)			• 1S UF6 Sample Cylinder Inspection Report				
• Cold pressure check, cylinder meets ANSI N14.1 and package closure document, if/as applicable			• Certificate of Quality and Quantity (CQQ)				
<b>Verifications:</b>							
• Email BOL, 741, CQQ, Cylinder Data Books, and Worksheet (Product Values URENCO), to Receiving Facility, Package Survey			• Drivers License & Medical Card verified				
• 2000 MED IAEA Competent Authority Certification Certificate USA/0575/H(U)-96 on file			• Overpack visual integrity inspection				
• 48Y IAEA Competent Authority Certification Certificate USA/0592/H(M)-96 on file			• Overpack (P48 or CI-48) annual inspection current				
• Kevil Kougar IAEA USA/0819/H (M)-96 competent authority check			• Overpack closure verification				

FBP-WM-PRO-00273-F02, Rev. 7

\*\*\*\*\*This is a Transportation Best Management Practice Checklist and nothing is to be removed from this folder unless you check with the shipper of record\*\*\*\*\*

TITLE:  Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment	FBP-WM-PRO-00273
	REV. NO. 10
	Page 21 of 23

**Attachment C**  
**CI-48 VISUAL INSPECTION AND CLOSURE VERIFICATION**

 <p style="margin-top: 10px;"><b>CI-48 VISUAL INSPECTION AND CLOSURE VERIFICATION</b></p>
--

Shipment Number: \_\_\_\_\_ Control Number: \_\_\_\_\_

Cylinder Number: \_\_\_\_\_ Date: \_\_\_\_\_

CI-48 Number: \_\_\_\_\_


Trailer Number: \_\_\_\_\_

CI-48 VISUAL INSPECTION	CRITERIA	YES	N/A
TFR-DE-2015-0108 SECTION 3.4.2	No evidence of holes in surfaces		
	Fit of closure is acceptable		
CI-48 CLOSURE			
TFR-DE-2015-0108 SECTION 3.2	Cylinder valve protector cover is in place		
	Three nylon straps been secured across the cylinder and not twisted		
	No visible cracks or stripped threads on Inconel 718 bolts, nuts, lock and flat washers		
	Bolt tightening pattern per Figure 11, <i>Torque Pattern for CI-48</i>		
	Torque bolts to 70 ft-lbs		
CI-48 CLOSURE EMPTY			
TFR-DE-2015-0108 SECTION 3.3	Insert four of the bolts and washer sets in each of the four corners and tighten in any order (do not torque)		
COMMENTS:			
PRINT NAME/SIGNATURE		DATE	

TFR-DE-2015-0108, CI-48 Uranium Hexafluoride Cylinder Overpack Self-Certification Report

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 22 of 23</b>

**Attachment D**  
**P-48 VISUAL INSPECTION AND CLOSURE VERIFICATION**

 <b>P-48 VISUAL INSPECTION AND CLOSURE VERIFICATION</b>
---

Shipment Number: \_\_\_\_\_ Control Number: \_\_\_\_\_

Cylinder Number: \_\_\_\_\_ Date: \_\_\_\_\_

P-48 Number: \_\_\_\_\_


Trailer Number: \_\_\_\_\_

P-48 VISUAL INSPECTION	CRITERIA	YES	N/A
TFR-DE-2015-0199 SECTION 6.1	No evidence of holes or tears to either outer or inner skin surfaces		
	No surface cracks		
	No dents that prevent proper fit-up of lid's mating surfaces		
	No dents deeper than 1 inch in outer or inner skin surface		
P-48 CLOSURE (load & empty)			
TFR-DE-2015-0199 SECTION 5.2.2	Cylinder valve protector cover is in place		
	Install jack-ratchet pin and locking clip at all four locations		
	Apply ratchet tension until lid joint is flush with bottom joint (metal-to-metal)		
	Install four quick-release pins so ball bearings engage through hole on shear pins		
	Apply tension to all eight tie-down chains		
COMMENTS:			
PRINT NAME/SIGNATURE		DATE	

TFR-DE-2015-0199, P-48 Uranium Hexafluoride Cylinder Overpack Self-Certification Report

<b>TITLE:</b> <b>Preparing Uranium Hexafluoride (UF6) Cylinders for Shipment</b>	<b>FBP-WM-PRO-00273</b>
	<b>REV. NO. 10</b>
	<b>Page 23 of 23</b>

**Attachment E**  
**KEVIL KOUGAR VISUAL INSPECTION AND CLOSURE VERIFICATION**

 <b>KEVIL KOUGAR VISUAL INSPECTION AND CLOSURE VERIFICATION</b>
---

Shipment Number: \_\_\_\_\_ Control Number: \_\_\_\_\_

Cylinder Number: \_\_\_\_\_ Date: \_\_\_\_\_

Kevil Kougar Number: \_\_\_\_\_

Trailer Number: \_\_\_\_\_

KEVIL KOUGAR VISUAL INSPECTION	CRITERIA	YES	N/A
TR-20000-10-103 SECTION 1.1.1	No deformation, warping or damage that prevents secure closure		
	No large dents more than 0.5 inches deep		
	No cracked or broken welds		
	No deterioration or damage to package interior		
	No internal debris or standing water		
	No nicks or deep scratches to gasket surfaces		
	No cracked or broken acetate vent plugs		
	No damaged or ineffective TID seal points		
	No damage to ISO corners		
	No bent or cracked lifting lugs		
	No damaged forklift pockets		
No damaged or detached cylinder support pads			
KEVIL KOUGAR CLOSURE			
TR-20000-10-103 SECTION 1.2	Cylinder valve protector cover is in place		
	Secure lid to base using ten clamping toggle assemblies. Clamp the toggles starting from the middle toggle on each side, moving outward		
	Secure toggle handles by inserting the locking pins into handle locking bracket		
	Disable the two forklift pockets on top of the package by inserting pins into the pocket hole		
	Disable the four lifting lugs on the sides of the upper half by placing covers over the lug holes.		
KEVIL KOUGAR CLOSURE EMPTY			
TR-20000-10-103 SECTION 1.4	Secure lid to base using ten clamping toggle assemblies. Clamp the toggles starting from the middle toggle on each side, moving outward		
	Secure toggle handles by inserting the locking pins into handle locking bracket		
	Disable the two forklift pockets on top of the package by inserting pins into the pocket hole		
	Disable the four lifting lugs on the sides of the upper half by placing covers over the lug holes.		
COMMENTS:			
PRINT NAME/SIGNATURE		DATE	

(DAHER-TLD) TR-20000-10-103, *Handling Instructions for the Kevil Kougar*