Enclosure 3 to
GDP 98-0285

Proposed Changes
KY-665, "Safety Analysis Report on the "Paducah Tiger"
Protective Overpack for 10-Ton Cylinders of Uranium Hexafluoride"
Revision 1
Insertion/Removal Instructions

KY-665, "SAFETY ANALYSIS REPORT ON THE "PADUCAH TIGER" PROTECTIVE OVERPACK FOR 10-TON CYLINDERS OF URANIUM HEXAFLUORIDE" REVISION 1 REMOVE/INSERT INSTRUCTIONS	
Remove Pages	**Insert Pages**
CHAPTER 7.0 OPERATING PROCEDURES	
Chapter 7 7-1 7.1-1 7.1-2 7.2-1 7.2-2 7.3-1 7.4-1	**Chapter 7** 7-1 7.1-1 7.1-2 7.2-1 7.2-2 7.3-1 7.4-1

7.1 Loading the Paducah Tiger

The Paducah Tiger is intended for the shipment of a 48X 10-ton cylinder. The cylinder may be full or contain a heel. Cylinders containing UF_6 must be inspected in accordance with ANSI N14.1. Cylinders which are empty (i.e., net weight less than 50 pounds) need not be handled in accordance with this procedure.

Prior to loading the cylinder into the overpack, the lower half (body) of the overpack must be secured to the floor or bed of the conveyance. The conveyance may be a dedicated rail car or a truck trailer.

7.1.1 Inspection of the Overpack and 48X Cylinder

Inspection of the overpack and the 48X cylinder is required to verify that both are acceptable for use. Defects identified in the inspection must be corrected before use.

1. Inspect the overpack in accordance with Table 8.2-1.
2. Inspect the 48X cylinder in accordance with the requirements of ANSI N14.1.
3. Visually inspect the cylinder lifting lugs prior to attachment of the lifting slings.
4. Perform a surface contamination survey and a radiation survey, and record the survey results.

7.1.2 Loading the Overpack

Loading of the overpack requires a suitable lifting device. The body of the overpack must be secured to the bed or floor of the conveyance prior to loading the cylinder into the overpack. Prior to loading the 48X cylinder into the overpack, verify that the UF_6 weight is either less than 350 pounds, or between 12,000 and 21,030 pounds; and that the pressure within the cylinder is less than 0 psig.

1. Using a suitable lifting device, place the cylinder into the overpack body with the valve end of the cylinder facing the lid guide in the body.
   CAUTION: The opposite (nonvalve) end of the cylinder is tapered. The tapered end of the cylinder must rest in the matching tapered shape of the body of the overpack. The body of the overpack may be damaged if the cylinder is not correctly oriented.

2. Ensure that the aluminum stiffening plate is resting between the cylinder skirt and the PTO end plate at the valve end of the overpack cavity.
   CAUTION: Ensure that the stiffening plate is oriented such that the larger opening is facing the cylinder.
3. Using a suitable lifting device, install the lid on the overpack body using the lid guide and guide pins to aid alignment.
4. Hook each of the 4 ratchet turnbuckles attached to the lower hold-down bracket in the body to the corresponding upper hold-down bracket in the lid to secure the two halves.
5. Tighten the 4 turnbuckles in any sequence to the point that allows the insertion of the 8 ball lock pins.
6. Insert the ball lock pins.
   NOTE: Ball lock pins are installed at 8 locations corresponding to the 8 guide pins in the body of the overpack.
7. Latch the turnbuckle handles to the side of the overpack using the rubber retainer straps.
8. Install a tamper-indicating device (TID) through the seal loops on one side of the overpack.
9. Perform a surface contamination survey and a radiation survey, and record the survey results.
   NOTE: The radiation levels may not exceed 200 mrem/hr (2 mSv/hr) at the overpack surface, or 10 mrem/hr (0.1 mSv/hr) at 1 meter from the overpack. Wipe samples must verify that removable radiological contamination on the package surface does not exceed 22 dpm/cm^2 for beta, gamma, and low toxicity alpha emitters, and 2.2 dpm/cm^2 for all other alpha emitting radionuclides. If these limits are exceeded, the controls specified in 10 CFR 71.47 are followed.

7.2 Unloading the Paducah Tiger

This procedure provides for inspecting the overpack upon receipt, opening the overpack, and removing the 48X cylinder.

7.2.1 Receiving Inspection

1. Perform radiation and contamination surveys on the conveyance and overpack(s) and record the results.
2. Visually inspect the overpack(s) for signs of damage and verify the presence of the tamper-indicating device (TID). Record any damage found.
3. If not already done, position the conveyance so that the overpack lid and the cylinder can be removed by a suitable lifting device.

7.2.2 Opening and Unloading the Overpack

This procedure provides for removing the 48X cylinder from the overpack. Once the cylinder is removed, it must be inspected in accordance with the requirements of ANSI N14.1.

1. Record the TID serial number and remove the TID.
2. Disengage the 8 ball lock pins securing the lid to the body of the overpack. If necessary, adjust tension on the ratchet turnbuckles.
3. Disengage the turnbuckle handle retainer straps.
4. Loosen the 4 turnbuckles in any sequence until each turnbuckle can be unlatched from the upper hold-down bracket in the overpack lid. Unlatch the turnbuckles.
5. Using a suitable lifting device, carefully lift the lid to clear the cylinder and move the lid to a suitable storage area.

   NOTE: Care should be taken to ensure that the lid is lifted vertically to avoid side pressure on the guide pins, and to avoid contact between the lid and the cylinder or aluminum stiffening plate.
6. Survey the cylinder for contamination and visually inspect the cylinder for signs of leakage of UF_6 and for damage.
7. Visually inspect the 4 lifting lugs attached to the cylinder for damage.
8. Using a suitable lifting device, lift the cylinder from the overpack body and move it to the designated area.

NOTE: Care should be taken to ensure the cylinder is lifted vertically from the body to avoid side pressure on the rubber shock isolators and isolator mounts.

9. Perform a contamination survey of the interior of the overpack body and record the results. Inspect the body for damage and foreign material and for signs of UF_6 leakage.

7.3 Preparing the Empty Paducah Tiger for Transport

The Paducah Tiger overpack may be transported with or without the 48X cylinder. If a filled cylinder, or a cylinder containing residual product ("heel") is to be transported in the overpack, then the overpack is prepared for transport in accordance with the procedures provided in Section 7.1. An empty Paducah Tiger overpack (i.e., one containing no 48X cylinder) is prepared for shipment in the following manner:

1. If necessary, install the aluminum stiffening plate between the cylinder skirt and the end plate, at the valve end of the overpack cavity, using a suitable lifting device.
2. Using a suitable lifting device, install the lid on the body using the lid guide and guide pins to aid alignment.
3. Hook the 4 ratchet turnbuckles attached to the lower hold-down brackets in the body to the corresponding upper hold-down brackets in the lid to secure the two halves.
4. Tighten the 4 turnbuckles in any sequence to the point that allows the insertion of the 8 ball lock pins.
5. Insert the ball lock pins.
   NOTE: Ball lock pins are installed at 8 locations corresponding to the 8 guide pins in the body of the overpack.
6. Latch the turnbuckle handles to the side of the overpack using the rubber retainer straps.
7. Perform a surface contamination survey and a radiation survey, and record all survey measurements.
   NOTE: This survey is required even if the overpack does not contain a 48X cylinder. A TID is not required for overpacks that do not contain a cylinder.

7.4 References

1. American National Standards Institute, *American National Standard for Nuclear Materials, Uranium Hexafluoride - Packaging for Transport*, ANSI N14.1, New York, NY, 1990.