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December 21, 1998
GDP 98-0285

Dr. Carl J. Paperiello
Director, Office of Nuclear Material Safety and Safeguards
Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Paducah Gaseous Diffusion Plant (PGDP)
Docket No. 71-6553
Changes to the Request for Renewal of Certificate of Compliance No. 6553

Dear Dr. Paperiello:

By letter dated October 26, 1998 (Reference 1), USEC submitted a request for renewal of Certificate of Compliance No. 6553 in accordance with 10 CFR 71.38. The request for renewal was based on Revision 1 to KY-665, "Safety Analysis Report on the "Paducah Tiger" Protective Overpack for 10-Ton Cylinders of Uranium Hexafluoride" (Paducah Tiger SAR). This letter provides changes to Revision 1 to the Paducah Tiger SAR.

Enclosure 1 to this letter provides a detailed description of the changes. The redline/mark-up version of the revised Paducah Tiger SAR pages are provided in Enclosure 2. Enclosure 3 is a final copy of the Paducah Tiger SAR changes with the insertion and removal instructions. For completeness purposes, USEC is resubmitting the entire Chapter 7 of the Paducah Tiger SAR. The conclusions and analysis stated in Enclosure 2 to Reference 1 are not affected by this revision.

Any questions regarding this matter should be directed to Beth Darrough at (301) 564-3422 or Russ Wells at (301) 564-3245. There are no new commitments contained in this submittal.

Sincerely,

James H. Miller
Vice President, Production

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- References: 1. Letter from Steven A. Toelle (USEC) to Dr. Carl J. Paperiello (NRC), Request for Renewal of Certificate of Compliance No. 6553, USEC Letter GDP 98-0228, October 26, 1998
- Enclosures: 1. Detailed Description of Changes to Revision 1 to KY-665, "Safety Analysis Report on the "Paducah Tiger" Protective Overpack for 10-Ton Cylinders of Uranium Hexafluoride"
2. Redline of Changes, Revision 1 to KY-665, "Safety Analysis Report on the "Paducah Tiger" Protective Overpack for 10-Ton Cylinders of Uranium Hexafluoride"
3. Revision 1 to KY-665, "Safety Analysis Report on the "Paducah Tiger" Protective Overpack for 10-Ton Cylinders of Uranium Hexafluoride," with Insertion/Removal Instructions, December xx, 1998

cc: Mr. Cass R. Chappell, NRC HQ
NRC Region III Office
NRC Resident Inspector - PGDP
NRC Resident Inspector - PORTS

**United States Enrichment Corporation (USEC)
Detailed Description of Change
KY-665, "Safety Analysis Report on the "Paducah Tiger" Protective Overpack for
10-Ton Cylinders of Uranium Hexafluoride," Revision 1**

In support of the United States Enrichment Corporation's (USEC's) request for renewal of Certificate of Compliance No. 6553, Revision 1 to KY-665, "Safety Analysis Report on the "Paducah Tiger" Protective Overpack for 10-Ton Cylinders of Uranium Hexafluoride" (Paducah Tiger SAR), was prepared and submitted to the NRC for approval on October 26, 1998. A 2-inch thick stiffening plate fabricated from high-strength aluminum was added to the overpack design specifications in Paducah Tiger SAR, Revision 1, as described in Section 1.2.1.4. The aluminum stiffening plate is inserted in the valve end of the overpack cavity to provide puncture protection for the cylinder valve during a hypothetical accident event.

USEC has determined that a change to the Paducah Tiger SAR, Revision 1, is needed in Chapter 7, "Operating Procedures." The Paducah Tiger SAR, Revision 1, currently requires the installation of the aluminum stiffening plate each time the Paducah Tiger is loaded with a 48X cylinder. The Paducah Tiger SAR also requires the aluminum stiffening plate be removed prior to unloading the overpack, and reinstalling the plate prior to shipping the empty overpack. USEC determined that once the aluminum stiffening plate is initially installed in an overpack, it is not necessary for the plate to be removed each time a cylinder is loaded or unloaded. The design specifications provided in the Paducah Tiger SAR, Revision 1, allow for a 48X cylinder to be loaded and unloaded without removing the aluminum plate. As provided in Enclosure 2 to this letter, USEC is revising Chapter 7 of the Paducah Tiger SAR, Revision 1, to remove applicable action steps relating to the installation and removal of the aluminum stiffening plate. The proposed changes will ensure that the aluminum stiffening plate is installed prior to cylinder loading operations.

Enclosure 2 to
GDP 98-0285

**Redline/Strike-out Changes to KY-665,
"Safety Analysis Report on the "Paducah Tiger" Protective Overpack for
10-Ton Cylinders of Uranium Hexafluoride"
Revision 1**

7.0 OPERATING PROCEDURES

This chapter outlines the procedures for conducting the receiving inspection of the Paducah Tiger overpack, loading and unloading the overpack, and preparing the overpack for transport following loading or unloading. These procedures represent the minimum requirements to ensure safe and reliable operation of the overpack in accordance with this SAR and its Certificate of Compliance.

The Paducah Tiger overpack is designed to transport the 48X 10-ton UF₆ cylinder. The overpack provides thermal and impact protection of the cylinder in the normal conditions of transport and in the hypothetical accident conditions. Safe transport of the UF₆ requires that the cylinder be in good condition prior to transport in the overpack. Consequently, these procedures address the inspection and handling of the cylinder to the extent required for safe transport in the overpack. In preparation for transport, the cylinder must conform to ANSI N14.1 [1] which contains standards for inspecting and repairing the 48X cylinder.

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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 UF₆ 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 UF₆ 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~~ Using a suitable lifting device, install the aluminum stiffening plate 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/cm² for beta, gamma, and low toxicity alpha emitters, and 2.2 dpm/cm² 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 UF₆ and for damage.
- ~~7. Using a suitable lifting device, remove the aluminum stiffening plate from the overpack cavity and move it to the designated area.~~
- ~~8. Perform a contamination survey of the aluminum stiffening plate and record the results.~~
9. Visually inspect the 4 lifting lugs attached to the cylinder for damage.
10. 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.

211. 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~~ Using a suitable lifting device, 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.