



June 7, 2012
GDP 12-1021

Ms. Brooke D. Poole, Acting Director
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety and Safeguards
ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Paducah Gaseous Diffusion Plant (PGDP)
Docket No. 70-7001, Certificate No. GDP-1
10 CFR 71.95 - Type B Transportation Package Report (USA/9196/B(U)F-96)

Pursuant to 10 CFR 71.95(a)(3), the United States Enrichment Corporation (USEC) submits this report for discovery of three instances where USEC made shipments of a Type B uranium hexafluoride transportation package that did not conform with Condition 6 of the Certificate of Compliance for the NRC-approved Type B package. A Model 30B cylinder, number GEW281 enclosed in a Model UX-30 transportation package with transportation package identification number USA/9196/B(U)F-96, was discovered by USEC to have a cylinder plug installed whose thread engagement did not conform to the requirements of Condition 6. Condition 6 requires in part that the cylinder be inspected and maintained in accordance with ANSI N14.1-2001. The cylinder plug in question did not conform to the thread engagement criterion of Section 6.10.6 in that at least six threads were exposed meaning that less than a minimum of five threads were determined to be engaged for this ten thread plug.

This nonconformance by a user was associated with the cylinder and not the overpack. This nonconformance with a Certificate condition was not an element attributed to a package design issue; therefore, USEC determined discussions were not necessary with the UX-30 Certificate of Compliance holder.

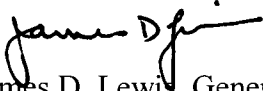
Enclosure 1 provides the required details of this report. There are no new commitments made in this letter.

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Any questions regarding this report should be directed to Vernon J. Shanks, Regulatory Affairs Manager at (270) 441-6039.

Sincerely,

A handwritten signature in black ink, appearing to read "James D. Lewis".

James D. Lewis, General Manager
Paducah Gaseous Diffusion Plant

Enclosures: As Stated

cc: NRC Region II
NRC Resident Inspector - PGDP
NRC Project Manager – PGDP

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ABSTRACT

During receipt inspection on April 11, 2012, USEC identified a customer owned uranium hexafluoride cylinder that did not appear to have adequate cylinder plug thread engagement. This cylinder had been previously shipped by USEC with the cylinder plug in the current configuration. The cylinder plug did not have a minimum of five threads engaged in the cylinder. A minimum of five threads engaged is a requirement of ANSI N14.1-2001, "Uranium Hexafluoride Packaging for Transport," Section 6.10.6. Conformance to this standard is required by Condition 6 of the Certificate of Compliance for the cylinder's UX-30 transportation package. In this case, six threads were exposed on a ten thread plug. A nonconformance with a condition of the Certificate of Compliance in making a shipment is reportable under 10 CFR 71.95(a)(3).

DETAILS

On April 11, 2012, USEC identified during a receipt inspection that the cylinder plug in a customer owned cylinder did not have a minimum of five threads engaged in the cylinder. USEC shipped this cylinder filled with uranium hexafluoride on three occasions since October 2005.

This heeled cylinder number GEW281 was received from a USEC customer, the cylinder's owner, on April 10, 2012. USEC rejected this cylinder for filling and is holding the cylinder awaiting further guidance for disposition from the customer. The customer was notified of this issue on April 12, 2012.

INVESTIGATION RESULTS

The incoming radiological survey for the subject cylinder found less than minimum detectable activity; thus, there was no indication of any leakage of UF_6 . USEC's current cylinder inspection procedures contain acceptance criteria for cylinder plug thread engagement that detected the subject anomaly. Photographs taken of the as-found condition of the cylinder's plug showed at least six exposed threads. This indicated that less than five threads were engaged. Although the plug had been stamped to indicate it had 11 effective threads, USEC verified the plug length using ultrasonic testing and calculated that the plug could only have 10 threads; therefore, the thread engagement did not meet the minimum requirements.

USEC's current inspection procedures meet the ANSI N14.1-2001 standard requirements for inspection of thread engagement. Enhancements to the USEC inspection procedures that were implemented as committed in response to the cylinder valve thread engagement issues reported in Similar Event 1 below were found to also be applicable to and have enhanced USEC's plug thread count methods.

USEC reviewed its NUMAS nuclear material control database that documents the location of the cylinder and its content by material balance area and account code. This data demonstrated USEC had shipped this cylinder on three occasions on, or about March 8, 2007, October 10, 2006, and January 26, 2006. The customer supplied information that the cylinder's plug had not been changed at its last recertification in November 2007.

CYLINDER PLUG INSTALLATION/INSPECTION REQUIREMENTS

The Certificate of Compliance for the UX-30 transportation package, Package Identification Number USA/9196/B(U)F-96, requires in Condition 6 that the 30B, 30-inch diameter cylinder must be fabricated, inspected, tested and maintained in accordance with ANSI N14.1-2001, "Uranium Hexafluoride Packaging for Transport."

Section 6.10.5, Item 3), states in part "*Pipe Plug*. ... The actual number of effective threads on the plug shall be stamped on the head of the plug as shown in Figure 7. ... The number of effective threads is the number of threads that are capable of providing reasonable engagement in mating threads. ... The stamping of the number of effective threads on the head of the plug is provided to aid users in determining the number of threads engaged. For old cylinders without this stamping or as an additional check, other methods such as dimensional measurements with ultrasonic measurements that provide assurance the plug is properly engaged are also acceptable."

Section 6.10.6, "Valve and Plug Installation," of this standard requires, for new cylinders and valves, "The plug thread engagement of 5 minimum and 8 maximum shall be obtained using a minimum of 150 and maximum of 650-ft-lb of torque." In the case of this customer's cylinder, the cylinder recertification data package indicated the plug had not been changed, but that the cylinder passed its recertification hydrostatic test that would have included the plug as part of the pressure boundary.

ASSESSMENT OF SAFETY CONSEQUENCES

In the case of this cylinder, there has been no indication of leakage of uranium hexafluoride during transport. Based on a review of the NRC's ADAMS database, USEC is not aware of any reports of cylinder plug leakage due to the thread engagement issue during transit for any domestic user of the UX-30 overpack. Even though plug thread engagement was not between five and eight threads for this cylinder, the plug installation performed its intended safety function and there were no safety consequences.

This event resulted in no exposures beyond normal exposures incident to routine cylinder handling.

CORRECTIVE ACTIONS TAKEN

1. USEC notified the customer of this issue on April 12, 2012.
2. USEC has rejected this cylinder for filling and will not ship the cylinder in its current configuration without a special permit issued by the Department of Transportation that is the responsibility of the cylinder owner.
3. There are no additional corrective actions considered necessary in that the current inspection methods employed by USEC are recognizing apparent thread engagement deficiencies for both cylinder plugs and valves.

CORRECTIVE ACTION PLANNED

None pending further instructions regarding disposition from the customer

SIMILAR EVENTS

The following events reported to NRC by USEC addressed cylinder valve thread engagement issues that are deemed similar to this event of cylinder plug thread engagement:

1. USEC letter number GDP 11-1017, dated June 3, 2011
2. USEC letter number GDP 11-1031, dated September 29, 2011
3. USEC letter number GDP 11-1035, dated October 20, 2011
4. USEC letter number GDP 12-1003, dated January 13, 2012
5. USEC letter number GDP 12-1010, dated February 24, 2012