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GDP 09-0028

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Paducah Gaseous Diffusion Plant (PGDP)
Docket No. 70-7001, Certificate No. GDP-1
Notification of a Defect in a Component
Supplied to the Paducah Gaseous Diffusion Plant (PGDP)

Pursuant to 10 CFR 21.21(d)(3), the enclosure provides initial and final written notification of the identification of a defect in a basic component at PGDP.

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

Sincerely,

Robert Van Namen
Senior Vice President
Uranium Enrichment

RVN:MLB:mcl

Enclosure: As Stated

cc: J. Henson, NRC Region II
M. Miller, NRC Senior Resident Inspector, PGDP
T. Liu, NRC Project Manager, NRC HQ

I. Name and address of the individual providing the information:

Robert Van Namen
Senior Vice President, Uranium Enrichment
United States Enrichment Corporation
Two Democracy Center
6903 Rockledge Drive
Bethesda, Maryland 20817

II. Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States that contains a deviation or failure to comply:

On August 10, 2009, a failure to comply was identified during USEC's routine refurbishment of a UX-30 transportation overpack in preparation for shipment of a clean empty 30B cylinder to a Russian facility where the cylinder would be filled with enriched uranium hexafluoride and returned to the Paducah Gaseous Diffusion Plant (PGDP). The failure to comply involves a missing retracting ball in a ball lock pin that is designed with two required retracting balls. The ball lock pin is a two-inch grip, seven-sixteenth-inch diameter single acting ball lock pin. Ten of these ball lock pins are used to hold the top and bottom half of the UX-30 overpack together during transport. The defective ball lock pin is Avibank part number BLC7BC20SL6C8. Further evaluation completed August 19, 2009, has determined that the failure to comply was a defect.

III. Identification of the firm constructing the facility or supplying the basic component which contains a deviation or failure to comply:

The firm supplying the ball lock pins was Columbiana Hi Tech (CHT), 1802 Fairfax Road, Greensboro, NC. This item is a commercial grade item manufactured by Avibank, Mfg., Inc., 11500 Sherman Way, North Hollywood, CA. CHT is on the USEC Approved Supplier List. The ball lock pins are dedicated for use as a basic component upon receipt inspection with a verification of receipt of a Certificate of Conformance provided by CHT, and verification of stainless steel caps and buttons. The supplier, CHT, and the UX-30 overpack Certificate of Compliance holder, Energy Solutions, were contacted to notify them of the defect.

IV. Nature of the defect or safety hazard which could be created by such a deviation or failure to comply:

The ball lock pin was missing one of the two retracting balls designed to hold the pin in place by the pin passing through the overpack lid and gripping an alignment post fixed to the overpack base mating surface. USEC is not aware of an evaluation demonstrating the capability of a ball lock pin to perform its function with only one ball in place. The UX-30 overpack was designed with ten ball lock pins installed to hold the

overpack lid to its base during its design basis accident. USEC reported in recent 10 CFR 71.95 event reports associated with other ball lock pin concerns, events involving complete disengagement of ball lock pins. This type event would be a worst case scenario for a pin with a missing retracting ball that could not remain engaged. An evaluation provided in these earlier reports is summarized here as it is illustrative of what would be a worst case impact for a pin with a missing retracting ball.

The UX-30 Safety Analysis Report (SAR) was reviewed and discussions with Energy Solutions indicate the package was accepted on performance based testing conducted by Vectra (original equipment designer/manufacturer). No evaluations were performed in the Safety Analysis Report with less than the full complement of ball lock pins with full insertion. Based on this review USEC is unable to quantify whether one or more missing ball lock pins are a significant reduction in the effectiveness of the package. Since the overpack was never tested with less than all ten ball lock pins in place there is no information on whether one pin missing would cause a substantial safety hazard. The UX-30 transport package is placed on transport saddles that have metal straps that are clamped over the package during shipments. These devices provide a secondary clamping mechanism to hold the overpack halves together, but these devices are not credited in the Safety Analysis Report.

In USEC's previous 10 CFR 71.95 reports, cases were reported where ball lock pins were no longer inserted in an overpack containing a cylinder with enriched uranium hexafluoride; that is, pins were disengaged or completely missing. In no case found to date has any release of radioactive material been experienced nor has the overpack lid become disengaged from its base.

- V. The date on which the information of such a deviation or failure to comply was obtained:

This deviation was identified in PGDP Assessment and Tracking Report ATRC-09-1938 written on August 10, 2009. The evaluation of the deviation determined on August 19, 2009, that a defect exists.

- VI. In the case of a basic component which contains a deviation or failure to comply, the locations of all such components in use or being supplied:

This basic component is used in all USEC owned UX-30 overpacks. Ten ball lock pins are required for each of approximately 540 UX-30 overpacks for a total of approximately 5400 applications. It is not used at the Portsmouth Plant at this time.

USEC has received 3,732 ball lock pins from CHT since July 2008, in five separate purchase orders. This report is the only instance to USEC's knowledge that a ball lock pin has had a missing retracting ball. Six hundred eighty-six of these pins have been supplied by USEC to its shipping agent for as-needed use in the Megatons to Megawatts Program with the Russian Federation.

- VII.** The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action (note, these are actions specifically associated with the identified deviation or failure to comply):

Current actions being taken by USEC include routine inspections of UX-30 overpacks required by the Certificate of Compliance for the UX-30 overpack. These routine inspections require verifications that a ball lock pin does not fail to lock in place. This inspection ensures each pin is properly installed by verifying the pushbutton is in the normal retracted position when released. This extends the retracting balls to ensure they grip the alignment pin locking the ball lock pin in position. This grip is verified by vigorously tugging on the pin and its attached lanyard ensuring the pin cannot be removed. USEC's inspection conducted prior to any shipment will ensure that all conditions of the Certificate of Compliance are met when preparing the UX-30 transportation package for shipment. This inspection verifies the condition of each ball lock pin and ensures they are fully inserted in accordance with Certificate requirements.

Enhanced inspections of ball lock pins were implemented by USEC as committed in previous 10 CFR 71.95 reports for other ball lock pin concerns. These enhancements applied more stringent acceptance criteria to the physical attributes of the ball lock pin that ensured improved functionality.

This current issue, the missing retracting ball, was discovered during overpack refurbishment activities by the questioning attitude of a maintenance employee due to the heightened sensitivity to ball lock pin issues while preparing a UX-30 overpack for shipment of a clean empty cylinder to the Russian Federation.

The defective pin was retained for further evaluation.

A field test of the insertion of the defective pin in several different UX-30 overpacks verified the defective pin will not consistently remain engaged with only one effective retracting ball. The routine inspection described above will, however, be an effective means of verifying proper engagement of the ball lock pin as demonstrated by the field test.

USEC Quality Control inspected approximately one thousand one hundred sixty-four ball lock pins currently on site, but not yet installed, to ensure the pins had both balls installed and the pins functioned correctly. This was completed on August 24, 2009. No additional defective pins were discovered.

The USEC shipping agent was ordered on August 21, 2009, to return to PGDP the remaining uninstalled ball lock pins from the six hundred eighty-six supplied and in its possession. A USEC Quality Control inspection will verify both balls installed and the pins function correctly.

USEC intends to perform an assessment of the supplier (CHT) to ensure the supplier is adequately implementing its quality programs and is ensuring its sub tier suppliers are meeting established quality requirements. This assessment is scheduled to be conducted beginning September 28, 2009, barring any unforeseen circumstances.

USEC modified its Engineering Specification Data Sheet (ESDS) for UX-30 overpack replacement parts on August 21, 2009, to specifically require inspections for both ball locking pin retracting balls and functionality until USEC regains its confidence that the supplier has applied appropriate controls to verify the presence of both balls.

The heightened sensitivity to ball lock pin issues associated with the enhanced ball lock pin inspections being performed by USEC led to the discovery of this issue prior to installation.

Routine preshipment inspections are an effective means of verifying proper engagement of the ball lock pin.

VIII. Any advice related to the deviation or failure to comply about the facility, activity, or basic component that has been, is being given to purchasers or licensees:

The QC inspections of the ball lock pins noted above, and the ESDS changes requiring these inspections in the future will remain in effect until the supplier QA program performance can be verified, and are sufficient to prevent this defect.

USEC does not intend to notify other purchasers or licensees of this supplier issue; however, any UX-30 overpack received from customers is subject to the same preshipment inspection requirements as USEC owned overpacks. USEC will disposition any customer owned overpacks' anomalous conditions with respect to this issue as directed by customer approvals.