USEC
A Global Energy Company

June 28, 2013
GDP 13-1026

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
USEC Event Report ER 13-01

Pursuant to 10 CFR 76.120 (c)(1) and (d)(2), enclosed is the final written event report involving an unplanned contamination event that required access to the area by workers to be restricted for more than 24 hours by imposing additional radiological controls. This event was discovered following a routine cylinder change in the C-337A feed facility on April 30, 2013, at 1220 hours. The Nuclear Regulatory Commission (NRC) was verbally notified on April 30, 2013 at 1316 hours. NRC assigned No. 48990 to the notification. The details of this report are included in Enclosure 1 and a list of commitments made is in Enclosure 2.

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

Sincerely,

Michael A. Buckner
Acting General Manager
Paducah Gaseous Diffusion Plant

DCS:MLB:mcl

Enclosure: As Stated

cc: NRC Region II
NRC Resident Inspector – PGDP

United States Enrichment Corporation
Paducah Gaseous Diffusion Plant
P.O. Box 1410, Paducah, KY 42002

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EVENT REPORT
ER 13-01

A. Description of Event

On April 30, 2013, while changing the feed from Building C-337A Position 3 East to Position 3 West autoclaves, operators noticed a pressure spike on the 3 East cylinder of approximately 40 psi. After disconnecting the cylinder in position 3 East with Health Physics (HP) assistance, HP found contamination on the cylinder, on the grating within the autoclave, and on the autoclave locking ring. The cylinder was removed to a saddle in an adjacent area for decontamination. Due to the contamination, access requirements to the area were increased from a contamination control zone (CCZ) to a contaminated area (CA) and decontamination efforts initiated. Because the area/cylinder could not be decontaminated and radiological controls returned to the original state within 24 hours, the NRC Operations Center was notified on April 30, 2013, in accordance with 10 CFR 76.120.

Background:

Past history of similar pressure spikes had shown significantly higher levels of contamination that include uranium daughter products of thorium and protactinium in small particulate form may result following these spike incidents during cylinder heeling. This situation was addressed in procedure CP4-CO-CN2045a, "Operation of the C-333a and C-337a Vaporizer Facilities," as a result of a previous pressure spike that resulted in a loss of contamination control. Procedure step 8.4.2 and 8.4.3 had been revised to require the operator to monitor for pressure spikes exceeding a 15 psia threshold on the cylinder pressure history recorder during cylinder heeling operations. Procedure step 8.4.3 had been revised such that if the pressure threshold were exceeded during cylinder heeling, to notify the Front Line Manager and Health Physics for further instructions. The intent was to effect additional management and radiological protection oversight and controls to help prevent spread of possible contamination.

In this case the operators failed to recognize the pressure spike above the 15 psia threshold had been exceeded and did not request the additional management/HP oversight necessary.

B. Description of Equipment Failure

None

C. Exact Location of the Event

The contamination event occurred in the C-337A Feed Facility following a cylinder heeling operation.

D. Description of Isotopes, Quantities, and Chemical and Physical Form of the Material Involved

Analysis of HP smears indicate the isotopes confirmed to be present above minimum detectable activity (MDA) were Thorium-234 (1.57E+05 pCi/sample) and Protactinium-234m (2.6E+05 pCi/sample) in particulate form. MDA was 1.38E+02 and 2.45E+03 pCi/sample, respectively.

E. Causes of the Event

1. Direct Cause of the Event

The pressure spike occurred during the Area Control Room remote valving operations of CP4-CO-CN2045a, section 8.3. It was determined that the steps in section 8.3 were completed in the correct order through interviews with the ACR operator. The sequence of steps in the procedure should prevent the back pressure spike from occurring. However, investigation indicated the operator completed the valving sequence with minimal delay between valve manipulations. Following this incident, changes were made to CP4-CO-CN2045a, section 8.3, to add a delay time between valve manipulations.

Once the back pressure spike occurred, it caused some of the heel material daughter products, Th-234 and Pa-234m, in minute particulate form, to become suspended in the cylinder "atmosphere." The ensuing jetting of the cylinder then drew this particulate through the valve into the pigtail. During the pigtail disconnection, the particulate was released into the atmosphere and was the source of the contamination.

The contaminated cylinder had been moved onto a saddle in an adjacent contamination control zone that was then up-posted to a contaminated area. Decontamination of the cylinder surface required in excess of 24 hours due to the type of paint used on the cylinder for corrosion protection. More aggressive decontamination methods than normally used were determined necessary and the method chosen had to ensure negligible impact on the cylinder tare weight. Once decontamination was complete, the area of concern was returned to pre-event postings on May 2, 2013 at 1400 hours.

2. Root Cause(s) of the Event

   Operators failed to follow procedure CP4-CO-CN2045a, Steps 8.4.2 and 8.4.3.

F. Corrective Actions Taken

1. Disciplinary actions were taken on May 9, 2013 with the two operators involved.

2. A crew briefing was held with UF6 Handling personnel describing the circumstances of the event including, a reiteration of the required procedure steps, a review of the pressure history strip chart for this event, and the importance of making the necessary notifications to determine appropriate radiological controls to prevent spread of potential contamination. The final UF6 Handling Operations personnel completed the crew briefings on June 10, 2013.

3. Procedural controls in the feed and heeling cylinder switching operation in CP4-CO-CN2045a were modified on May 3, 2013, to aid in minimizing the potential for a spike to occur.

G. Corrective Actions Planned

Develop and complete a required reading on lessons learned from the C-337A unplanned contamination event by August 30, 2013.

H. Extent of Exposure of Individuals to Radiation or to Radioactive Material

Personnel in the C-337-A area had the potential to be exposed to radioactive material; however, there is no indication of measureable personnel exposure as evidenced by negative air samples, bioassays, and personnel monitoring (whole-body frisker) surveys.

I. Lessons Learned

Lessons learned will be communicated in accordance with the action plan above.

LIST OF COMMITMENTS
EVENT REPORT 13-01

Develop and complete a required reading on lessons learned from the C-337A unplanned contamination event by August 30, 2013.