

Fuel Cycle Facility

Event # 43080

Facility: PADUCAH GASEOUS DIFFUSION PLANT	Notification Date / Time: 01/05/2007 17:34 (EST)
Licensee: UNITED STATES ENRICHMENT CORPORATIO	Event Date / Time: 11/08/2006 12:00 (CST)
Fac Type: URANIUM ENRICHMENT FACILITY	Last Modification: 01/05/2007
Region: 2	Docket #: 0707001
City: PADUCAH	Agreement State: Yes
County: McCRACKEN	License #: GDP-1
State: KY	
NRC Notified by: STEVE TOELLE	Notifications: CHARLIE PAYNE R2
HQ Ops Officer: PETE SNYDER	MICHAEL MARKLEY NMSS
Emergency Class: NON EMERGENCY	
10 CFR Section: 21.21	UNSPECIFIED PARAGRAPH

**DEFECT IDENTIFIED IN CRANE BRAKE CALIPER MOUNTING PIN**

United States Enrichment Corporation (USEC) identified a defect in a Continental Brake Model No. 95400 crane hoist drum hydraulic brake caliper mounting pin (part no. 3954022). The firm that supplied the item was Continental Brake Equipment Company, Longboat Key, Florida. The item is a commercial grade item, dedicated for use as a Basic Component upon receipt inspection.

The defect involved errors in the machining of a groove which accepts a retaining ring to hold the caliper mounting pin in place. Specifically, the grooves were machined too shallow and too narrow to properly accept and hold the retaining ring. The result is that during use the retaining ring may dislodge from the pin, allowing the pin to loosen. This happened in the certificate holder's C-315 facility during use.

A loose mounting pin can result in the brakes not performing its function as a hoist brake to prevent the uncontrolled lowering of a UF6 cylinder. Per the faxed USEC report: "Failure of the crane hoist resulting in the drop of a cylinder containing liquid UF6 is identified in the PGDP accident analysis as resulting in off-site uranium exposures exceeding the guidelines established for determining a substantial safety hazard."

USEC has inspected all subject mounting pins in service and on-hand. All defective mounting pins were removed from service or shelves. USEC has not communicated with other specific purchasers or licensees but they recommend that users of cranes with similar brakes inspect the subject caliper pins for engagement.

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JE20



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## ***Fax Memorandum***

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**Date:** January 5, 2007  
**Time:** 3:52 PM

**To:** NRC Operations Center  
U. S. N. R. C.      **Fax:** (301)-816-5151  
**Phone:**

**From:** Steve Toelle      **Fax:** (301)-564-3210  
**Phone:** (301)-564-3250

**Number of Pages:** 4  
(including cover sheet)

**Subject:** Part 21 Report

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Russell B. Starkey, Jr.  
Vice President, Operations

Dir: (301) 564-3459  
Fax: (301) 564-3210

January 10, 2007  
GDP 07-0001

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 written notification of the identification of a defect in a basic component at PGDP.

Any questions regarding this report should be directed to Steve Cowne at (270) 441-6796.

Sincerely,

Russell B. Starkey, Jr.  
Vice President of Operations

RBS:MLB:mjw

Enclosure: As Stated

cc: J. Henson, NRC Region II  
M. Thomas, NRC Senior Resident Inspector, PGDP

USEC Inc.  
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**I. Name and address of the individual providing the information:**

Russell B. Starkey, Jr.  
Vice President of Operations  
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 November 8, 2006, a deviation was identified during a routine crane inspection at the Paducah Gaseous Diffusion Plant (PGDP) associated with the C-315 overhead UF<sub>6</sub> cylinder handling crane hoist drum hydraulic caliper brakes, Continental Brake Model No. 95400. Further evaluation determined that the deviation 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 item was Continental Brake Equipment Company, Longboat Key, Florida. The hydraulic caliper brake model number is Continental Brake Model No. 95400, and the affected mounting pin part number is 3954022. This item is a commercial grade item, dedicated for use as a Basic Component upon receipt inspection. The vendor was contacted to determine the proper mounting pin and retaining ring dimensions for the application.

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

The nature of the defect is associated with the caliper brake mounting pins. The pins are intended to be held in place by a retaining ring, set in a machined groove. The defect involved errors in the machining of the groove which resulted in the ring not seating properly in the groove. Specifically, the grooves were too shallow and not wide enough to properly accept and hold the retaining ring in place. During use in the C-315 facility, the retaining ring dislodged from the pin, allowing the pin to loosen. The loose mounting pins can result in the brake not performing its intended safety function which could have created or contributed to a substantial safety hazard.

These brakes are located on the hoists of cranes which lift cylinders containing up to 14 tons of liquid UF<sub>6</sub>. Failure of the crane hoist resulting in the drop of a cylinder containing liquid UF<sub>6</sub> is identified in the PGDP accident analysis as

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resulting in off-site uranium exposures exceeding the guidelines established for determining a substantial safety hazard. The hoist brakes actuate to stop the hoist drum from rotating, preventing the uncontrolled lowering of a UF<sub>6</sub> cylinder.

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

This defect was identified in PGDP Assessment and Tracking Report 06-3688 written on November 8, 2006.

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 the C-310, C-315, C-333-A, C-337-A, and C-360 facilities for a total of six applications. It is also used at the United States Enrichment Corporation's Piketon facility for liquid cylinder cranes in the X-326 and X-344 facilities.

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):

In response to the discovery, all of the subject mounting pins in-service and on-hand in the spare parts inventory were inspected. This inspection identified two additional cranes in-service with mounting pin defects and four mounting pins in inventory with the same defect. Research indicated these pins came from the same purchase order of sixteen pins. All sixteen pins were located, removed from service, and replaced with new pins machined to the proper dimensions. To prevent recurrence, the receipt inspection criteria were revised to include inspection of the groove dimensions. These actions were completed on November 16, 2006.

At Piketon, the mounting pins are not ordered separately from the calipers and pins from the suspect purchase order are not on-site. Mounting pins located in the X-340 shop areas with calipers were examined and found to be as designed. Additionally, the liquid cylinder cranes in the X-326 and X-344 facilities were inspected and the subject mounting pins were found to be as designed.

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:

USEC has not communicated with specific purchasers or licensees. It is recommended that users of cranes with similar brakes inspect the subject caliper pins for correct engagement of the retaining rings.