



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

March 25, 2005

United States Enrichment Corporation
ATTN: Mr. Russell B. Starkey, Jr.
Vice President - Operations
Two Democracy Center
6903 Rockledge Drive
Bethesda, MD 20817

SUBJECT: NRC INSPECTION REPORT 07007001/2005-002 - PADUCAH - DOCKET
NO. 07007001

Dear Mr. Starkey:

On March 12, 2005, the NRC completed a routine inspection at the Paducah Gaseous Diffusion Plant. The purpose of the inspection was to determine whether activities authorized by the certificate were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection on March 15, 2005, the NRC inspectors discussed the findings with members of your staff.

This inspection consisted of an examination of activities conducted under your certificate as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your certificate. Areas examined during the routine inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities in progress, and interviews with personnel.

Based on the results of this inspection, the NRC did not identify any violations.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

/RA/

Jay L. Henson, Chief
Fuel Facility Inspection Branch 2
Division of Fuel Facility Inspection

Docket No. 07007001
Certificate No. GDP-1

Enclosure: Inspection Report 07007001/2005-002

cc w/encl:
S. Penrod, Paducah General Manager
S. R. Cowne, Paducah Regulatory Affairs Manager
P. D. Musser, Portsmouth General Manager
S. A. Toelle, Director, Nuclear Regulatory Affairs, USEC
Paducah Resident Inspector Office
R. M. DeVault, Regulatory Oversight Manager, DOE
G. A. Bazzell, Paducah Facility Representative, DOE
Janice H. Jasper, State Liaison Officer

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PUBLIC

SISP REVIEW COMPLETE: Initials: _____ SISP REVIEW PENDING*: Initials: _____ *Non-Public until the review is complete
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ADAMS: Yes ACCESSION NUMBER: _____

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI				
SIGNATURE	/RA/	/RA/	/RA/				
NAME	D.Hartland	N. Rivera	M. Thomas				
DATE	3/22/05	3/23/05	3/23/05	3/ /2005	3/ /2005	3/ /2005	3/ /2005
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 07007001

Certificate No.: GDP-1

Report No.: 07007001/2005-002

Facility Operator: United States Enrichment Corporation

Facility Name: Paducah Gaseous Diffusion Plant

Location: Paducah, KY

Dates: January 16, through March 12, 2005

Inspectors: Bruce L. Bartlett, Senior Resident Inspector
Mary L. Thomas, Resident Inspector
David J. Hartland, Senior Fuel Facility Inspector
Nilda S. Rivera-Feliciano, Fuel Facility Inspector

Approved by: Jay L. Henson, Chief
Fuel Facility Inspection Branch 2
Division of Fuel Facility Inspection

Enclosure

EXECUTIVE SUMMARY

United States Enrichment Corporation Paducah Gaseous Diffusion Plant NRC Inspection Report 07007001/2005-002

This inspection included aspects of certificatee safety operations and facility support. The report covered resident and region-based inspection activities, including follow-up to issues identified during previous inspections.

Plant Operations

- Routine operations activities were conducted in accordance with written procedures. Routine communications among operators were adequate. (Paragraph 2.a)

Maintenance and Surveillance

- Maintenance and surveillance activities were conducted appropriately and in accordance with approved procedures. Acceptance criteria contained in surveillance procedures were adequate and, when required, assessment and tracking reports were initiated. Maintenance workers were adequately qualified, and the corrective maintenance work order backlog was effectively tracked by management. (Paragraph 3.a)
- Maintenance activities were conducted according to the work control procedures. The self-assessments reviewed were adequate. (Paragraph 3.b)
- The surveillance and calibration of equipment important to safety and the tracking system for required tests and calibrations were adequate. Appropriate post maintenance testing was performed prior to returning components to operational status. (Paragraph 3.c)

Temporary Instruction

- C Cylinder valves obtained from suppliers were verified by certificatee personnel to meet the requirements of ANSI Standard N14.1, "Uranium Hexafluoride - Packaging for Transport," 2001 Edition. However, the inspectors identified some deficiencies during review of procedures used to implement the requested actions of NRC Bulletin 2003-003 and its subsequently approved certificatee-specific exceptions. The certificatee took appropriate action to address the deficiencies. (Paragraph 4)

Attachment:

Partial List of Persons Contacted
Inspection Procedures Used
List of Items Opened, Closed, and Discussed
List of Acronyms

REPORT DETAILS

1. Summary of Plant Status

The certificatee performed routine operations throughout the inspection period. During the period, product assay was slowly increased in order to achieve targeted values.

2. Plant Operations

a. Conduct of Operations - Routine Operations Activities

(1) Scope and Observations (88100)

The inspectors observed routine operations activities and discussed routine operations with staff and management. In addition, the inspectors reviewed the applicable area control room (ACR) log books and routine surveillance forms. The inspectors observed operators respond to various alarms.

The inspectors observed routine operations in the cascade buildings and area control rooms, the feed vaporization facilities, product and tails withdrawal facilities, and the central control facility. The operations staff were alert and generally knowledgeable of the current status of equipment associated with their assigned facilities.

(2) Conclusions

Routine operations activities were conducted in accordance with written procedures. Routine communications among operators were adequate.

b. Certificatee Event Reports (92700)

The plant staff made the following operations-related event reports during the inspection period. The inspectors evaluated any immediate safety concerns indicated at the time of the initial verbal notifications. The inspectors will review the associated written reports for the events following submittal, as applicable.

<u>Number</u>	<u>Date</u>	<u>Status</u>	<u>Title</u>
41378	2/6/05	Open	Safety System Failure, C-360 Valve XV-434 did not go fully closed.
41465	3/6/05	Open	Safety System Actuation, C-360 lab area process gas leak detection actuation.

c. Miscellaneous Open Item Closures (92701)

(Closed) Violation (VIO) 2004008-02: Failure to perform effectiveness reviews. The inspectors reviewed the certificatee's response, interviewed selected personnel, and reviewed the lessons learned memo that was issued. The inspectors have no further issues, and this violation is closed.

(Closed) CER 41020: C-337 No. 5 Low Speed Purge and Evacuation Recirculating Cooling Water differential pressure instrument line was discovered plugged. This item is closed to Violation 07007001/2004203-01.

(Closed) CER 41158: NCSE 3972-11 did not establish the necessary moderation controls for the sump in the C-360 elevator pit to ensure that double contingency was maintained if a uranium hexafluoride release occurred in the transfer room. This item is closed to Non-Cited Violation 07007001/2005001-04.

3. Maintenance and Surveillance

a. Maintenance and Surveillance Activity Reviews

(1) Scope and Observations (88102, 88103 and 88025)

For the maintenance and surveillance activities listed below, the inspectors verified one or more of the following: activities observed were performed in a safe manner; testing was performed in accordance with procedures; measuring and test equipment was within calibration; Technical Safety Requirement (TSR) Limiting Conditions for Operations were entered, when appropriate; removal and restoration of the affected components were properly accomplished; test acceptance criteria were clear and conformed with the TSR and the Safety Analysis Report (SAR); and any deficiencies or out-of-tolerance values identified during the testing were documented, reviewed, and resolved by appropriate management personnel.

- Work Order (WO) 0306379, C-333 Replace subassembly on Valve 2CF-1;
- WO 0405427, C-337A Replace jet station Valves SE2 and SE3E;
- WO 0410571, C-333 Replace subassembly on Valve 5F-8;
- WO 0410572, C-333 Replace subassembly on Valve 5F-7;
- WO 0413011, C-337A Autoclave 3 East and 3 West Valve XV-516/XV-524 actuator modifications;
- WO 0414485, C-333 Replace subassembly on Valve 5F-1;
- WO 0417138, C-333 Surveillance Requirement 2.4.4.11-2 Calibrate Unit 6 Datum according to CP4-GP-IM6244;
- CP2-GP-IM6244, "OOO Building Unit High Datum Calibration," Revision 3;
- WO 0417999, C-337A Surveillance Requirements 2.2.4.3b-1 and -2 Quarterly Criticality Accident Alarm System (CAAS) surveillances on N Cluster;

- WO 0418002, C-337 Surveillance Requirement 2.4.4.2a-1, Annual CAAS surveillances on U and AK Cluster; Surveillance Requirements 2.4.4.2b-1 and -2, Quarterly CAAS surveillances on T, U, V, W, X, Y and AK Clusters;
- WO 0418147, C-360 Surveillance Requirements 2.1.3.1-6, 2.1.3.1-2, 2.1.4.3-1, and 2.1.3.3-1, Quarterly Functional Surveillance Testing on Autoclave 4;
- WO 0419497, C-331 Surveillance Requirements 2.4.4.2b-1 and -2, Quarterly CAAS surveillances on J, K, and L Clusters;
- WO 0419708, C-333 Surveillance Requirements 2.4.4.2b-1 and -2, Quarterly CAAS surveillances on AJ and Z clusters;
- WO 0500390, C-337 Install CAAS Air Strainers;
- WO 0500399, C-333 Install CAAS Air Strainers;
- WO 0500400, C-331 Install CAAS Air Strainers;
- WO 0501199, C-315 Surveillance Requirement 2.3.5.2-2, Hands-on inspection of crane;
- WO 0501908, C-360 Autoclave 4, XV-434 valve will only close 75%;
- WO 0503038, C-360 Autoclaves 2, 3, and 4, Replace valve actuators on Valves 511A, B, and C; replace valve actuators on Valves XV-234, XV-334, and XV-434;
- WO 0503710, C-360 Autoclave 4, Repair Valve PNE-439;
- Work Request (WR) 5073749, Trouble shoot and repair atmospheric leak on the C-360 Number 4 sample cabinet;
- WR 5073750, C-360 Autoclave Number 1 possible UF₆ leak;
- WR 5073874, Air Circuit Breaker ACB-537, repair or replace dashpot;
- WR 5073887, C-360 Replace seat on Valve HPDT-4A;
- WO 0501151, C-360 Autoclave 4, Replace subassemblies on Xomox Valves PNE-439 and POE-441;
- WO 0501152, C-360 Autoclave 3, Replace subassemblies on Xomox Valves PNE-339 and POE-341;
- WO 0501153, C-360 Autoclave 2, Replace subassemblies on Xomox Valves PNE-239 and POE-241; and
- WO 0501154, C-360 Autoclave 1, Replace subassemblies on Xomox Valves PNE-139 and POE-141.

The inspectors observed that the certificatee staff effectively implemented work control practices and associated radiological controls during the above listed maintenance activities. Specifically, the inspectors observed and reviewed pre-job briefings, work packages, procedures, preparation, donning and use of personnel safety equipment, and other safety aspects of the activities. The inspectors interviewed the plant staff performing the work. The inspectors found the operators and maintenance personnel to be knowledgeable of the equipment and procedures and noted that the maintenance activities observed were performed according to procedures. The inspectors also reviewed the qualifications on record for the maintenance personnel performing the tasks and found no issues.

The inspectors reviewed the status of the corrective maintenance (CM) WO backlog. The inspectors reviewed a WR generated about 10 years ago to replace the subassembly on a motor-operated valve (MOV). The inspectors verified the status of the MOV in the control room and noted that the MOV was in the open position. Also, the inspectors noted that next to the MOV switch on the control panel was a tag identifying the WO number. The inspectors interviewed operators in the area and determined that they were aware of the status of the MOV. The inspectors confirmed that the ability of the valve to close and provide isolation was not a safety-related function.

The inspectors also interviewed maintenance management and verified that the proper priority was being placed on items with active WOs. The inspectors observed in the morning meetings that maintenance resources were being provided to the most significant issues related to safety. The inspectors determined that the WO backlog was effectively tracked by management.

(2) Conclusions

Maintenance and surveillance activities were conducted appropriately and in accordance with approved procedures. Acceptance criteria contained in surveillance procedures were adequate and, when required, assessment and tracking reports were initiated. Maintenance workers were adequately qualified, and the corrective maintenance work order backlog was effectively tracked by management.

b. Work Control Procedures, Work Control Authorizations, and Management Audit of Maintenance

(1) Scope and Observations (88025)

The inspectors reviewed the work control procedures listed below to verify that requirements were in place for maintenance personnel to obtain approval prior to performing maintenance activities. The inspectors verified that required instructions were included in the work packages for maintenance activities and for conducting post maintenance testing (PMT) of the equipment.

- CP2-GP-GP1032, "Work Control Process," Revision 12;
- CP2-GP-GP1033, "Preventive Maintenance Program," Revision 3;

- CP2-GP-GP1037, "Technical Safety Requirements Surveillance Program," Revision 1;
- CP3-GP-GP1116, "Conduct of Maintenance - Job Performance Monitoring," Revision 1;
- CP2-CO-CN2033, "Operation and Maintenance of Surge/Relief Drums and Process Piping in Autoclave Buildings," Revision 7; and
- Maintenance Self-Assessments dated July 22, 2004, August 26, 2004, and November 3, 2004.

The inspectors reviewed ten work packages related to surveillance, preventive maintenance (PM), and CM activities. The procedures and maintenance work packages examined were reviewed and approved by management. The inspectors observed CM activities and reviewed the work packages being used. The inspectors noted that detailed work instructions were provided. No significant problems were identified.

The inspectors reviewed the information available on the certificatee's intranet. The inspectors noted valuable information regarding equipment history, work schedules, daily communication meetings, and reports was available. The inspectors reviewed the assessment and tracking and the "two-working day look ahead" reports and determined that they provided a detailed status of current work and the PMTs to be performed. The inspectors also observed that maintenance work requiring immediate scheduling received the proper approvals before the work was performed. No significant problems were identified.

The inspectors reviewed the certificatee's self-assessments for confined space, welding program, and maintenance work package documentation. The inspectors noted that a checklist of items that were reviewed was provided for each assessment. The inspectors verified that findings were tracked and addressed. No significant issues were noted.

(2) Conclusions

Maintenance activities were conducted according to the work control procedures. The self-assessments reviewed were adequate.

c. Surveillance Testing and Calibrations of Equipment

(1) Scope and Observations (88025)

The inspectors reviewed surveillance and calibration of equipment important to safety and the tracking system for required tests and calibrations to determine compliance with the certificate. The inspectors verified that appropriate PMTs were performed prior to returning the components to operational status.

The inspectors reviewed the certificatee's computer tracking system for scheduling routine safety significant PM and CM activities. The inspectors noted that the system

was robust in its ability to track items and issues. The inspectors determined that the certificatee had an effective method for scheduling and tracking safety significant maintenance activities. The inspectors observed that PMT of safety functions prior to returning the equipment to service was tracked and performed.

The inspectors observed the annual and quarterly surveillance tests of the criticality detectors in Building C-337. The required tests were performed according to procedure. The inspectors interviewed the individuals performing calibrations of the criticality detectors and verified that calibrations were performed adequately. The inspectors noted that the individuals had detailed knowledge of the equipment and the safety features impacted by the maintenance. The inspectors determined that the surveillance and calibration activities reviewed were properly tracked and documented.

(2) Conclusions

The surveillance and calibration of equipment important to safety and the tracking system for required tests and calibrations were adequate. Appropriate post maintenance testing was performed prior to returning components to operational status.

4. Temporary Instruction

a. Verification of Disposition of Potentially Defective 1-inch Hunt Valves for Uranium Hexafluoride Cylinders.

(1) Scope and Observations (TI 2600/011)

The inspectors performed a review of the implementation of the certificatee's commitments made in response to Bulletin 2003-003, "Potentially Defective 1-Inch Hunt Valves for Uranium Hexafluoride Cylinders." The inspectors confirmed that valves obtained from an alternate supplier were verified by certificatee personnel to meet the requirements of ANSI Standard N14.1, "Uranium Hexafluoride - Packaging for Transport," 2001 Edition. However, the inspectors identified some deficiencies during review of procedures used to implement the requested actions of NRC Bulletin 2003-003 and its subsequently approved certificatee-specific exceptions.

- NRC approved the certificatee's proposal for installing and using Hunt valves that were in stock for cylinders that were to be filled with depleted uranium hexafluoride (UF₆) and stored indefinitely. The valves were required to pass a seat leakage test in accordance with the ANSI Standard N14.1 prior to installation and usage. NRC's approval was conditioned on the certificatee's agreement to withdraw from further use any Hunt valves that initially failed the seat leakage test.

The inspectors reviewed Procedure CP2-EG-EG6047, Revision 0, "Valve Pressure Testing," and noted that if the initial leak test failed, the procedure allowed for the packing or gasket to be tightened and the valve retested. The inspectors discussed the discrepancy with the certificatee, who indicated that the procedure had not been used to test Hunt valves since implementation of the bulletin commitments. The certificatee also issued ATRC-05-0533 and placed the procedure "on hold" pending revision to be consistent with their commitment.

- NRC also approved the certificatee's proposal for continuing to use cylinders with Hunt valves already installed, provided that the cylinders were not shipped off-site while containing more than heel quantities of UF₆. NRC's approval was conditioned on cylinders with Hunt valves installed, containing natural or enriched UF₆, once emptied, were not be refilled with natural or enriched UF₆ after the end of the 12-month transition period described in BL-2003-003 (August 29, 2004) until the valve was replaced with one that met ANSI Standard N14.1 and that was manufactured by a supplier on USEC's Approved Supplier List.

Later correspondence from the certificatee, dated May 25, 2004, documented their understanding of the commitment. The certificatee defined an "empty" cylinder as not exceeding 25 pounds for a 30B cylinder and 50 pounds for a 48" diameter cylinder. In addition, the certificatee stated that once a tails cylinder containing a Hunt valve was emptied, it was not to be refilled until the Hunt valve was replaced with a valve manufactured by a supplier on the USEC Approved Suppliers List.

The inspectors reviewed Procedure CP4-CO-CM6023, Revision 22, "Shipment, Receipt, And Inspection Of UF₆ Cylinders," and noted that it did not adequately implement these commitments. Step 8.4.3 of the procedure, which provided requirements for cylinders to be filled, stated that if a cylinder contained equal or less than 50 pounds of material, ensure it did not have a Hunt valve installed, unless authorized by written approval from management.

The inspectors noted that in a memo dated January 25, 2004, the UF₆ Handling Manager authorized filling four empty cylinders previously containing natural UF₆ with tails material. Although not specifically prohibited by the commitments made to the NRC, it was clearly not the intent of the NRC to approve the practice. Following discussion with the inspectors, the certificatee issued ATRC-05-0576, put a hold on filling any previously emptied cylinder, and intended to revise the procedure to clearly prohibit the practice.

b. Conclusions

Valves obtained from an alternate supplier were verified by certificatee personnel to meet the requirements of ANSI Standard N14.1, "Uranium Hexafluoride - Packaging for Transport," 2001 Edition. However, the inspectors identified some deficiencies during review of procedures used to implement the requested actions of NRC Bulletin 2003-003 and its subsequently approved certificatee-specific exceptions. The certificatee took appropriate action to address the deficiencies.

5. Exit Meeting Summary

The inspection scope and results were summarized on March 15, 2005, with General Manager Steve Penrod and members of the facility management. The inspectors asked the certificatee staff whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

1. PARTIAL LIST OF PERSONS CONTACTED

United States Enrichment Corporation

- *S. Penrod, General Plant Manager
- *M. Boren, Nuclear Regulatory Affairs
- *K. Ahern, Production Support
- *C. Hicks, Scheduling
- *L. Jackson, Operations Manager
- *P. Jenny, Security Manager
- *M. Keef, Plant Manager
- *J. Labarraque, Nuclear Quality and Safety Manager
- *M. Mack, Operations
- *D. Page, Operations
- *D. Stadler, Nuclear Regulatory Affairs
- *K. Stratemeyer, UF₆ Handling Manager
- *G. Voci, Design Engineering Manager
- *M. Wayland, Maintenance Manager

* Denotes those present at the exit meeting on March 15, 2005.

2. INSPECTION PROCEDURES USED

- | | |
|------------|---|
| IP 88025 | Maintenance and Surveillance |
| IP 88100 | Plant Operations |
| IP 88102 | Surveillance Observations |
| IP 88103 | Maintenance Observations |
| IP 92700 | Onsite Follow-up of Written Reports of Nonroutine Events at Power Reactor Facilities |
| IP 92701 | Follow-up |
| TI 2600/11 | Verification of Disposition of Potentially Defective 1-inch Hunt Valves for Uranium Hexafluoride Cylinders. |

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
41378	Open	CER	Safety System Failure, C-360 Valve XV-434 did not go fully closed.
41465	Open	CER	Safety System Actuation, C-360 lab area process gas leak detection actuation.
07007001/2004008-02	Closed	VIO	Failure to perform effectiveness reviews.
41020	Closed	CER	C-337 No. 5 Low Speed Purge and Evacuation Recirculating Cooling Water differential pressure instrument line discovered plugged.
41158	Closed	CER	NCSE 3972-11 did not establish the necessary moderation controls for the sump in the C-360 elevator pit.

4. LIST OF ACRONYMS USED

ACR	Area Control Room
ADAMS	Agencywide Documents Access and Management System
CER	Certificatee Event Report
CFR	Code of Federal Regulations
CM	Corrective Maintenance
GDP	Gaseous Diffusion Plant
IP	Inspection Procedure
MOV	Motor-Operated Valve
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PDR	Public Document Room
PGDP	Paducah Gaseous Diffusion Plant
PM	Preventive Maintenance
PMT	Post Maintenance Testing
SAR	Safety Analysis Report
TSR	Technical Safety Requirement
UF ₆	Uranium Hexafluoride
USEC	United States Enrichment Corporation
WO	Work Order
WR	Work Request
VIO	Violation