UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

July 24, 2013

EN 48990

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

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 70-7001/2013-003 AND NOTICE OF VIOLATION

Dear Mr. Van Namen:

This letter refers to the results of the above-referenced U.S. Nuclear Regulatory Commission (NRC) inspections conducted at your Paducah facility from April 1 through June 30, 2013. The purpose of the inspections was to determine whether activities authorized by the certificate were conducted safely and in accordance with NRC requirements. The enclosed report presents the results of the inspections. The NRC inspectors discussed the inspection findings with members of your staff during exit meetings held on May 23, June 13, and July 11, 2013.

The inspections were an examination of activities conducted under your certificate of compliance 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 inspections are identified in the enclosed report. Within these areas, the inspections consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of these inspections, the NRC has determined that a Severity Level IV violation of NRC requirements occurred. The violation involved the failure of an operator to ensure that a cylinder was new or washed prior to connecting it to the C-315 jet station resulting in a release of uranium hexafluoride to the environment. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is available on the NRC's Web site at www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding the occurrences are described in the subject inspection report.

If you contest the violation or the significance, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region II, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. For your consideration in presenting the corrective actions, the guidance from NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," is available on the NRC Web site and may be helpful. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its Enclosures, and your response, will be made available electronically for public inspection in the NRC Public Document Room, or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room). To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

Should you have any questions concerning this letter, please contact me at (404) 997-4628.

Sincerely,

/RA/

James A**.** Hickey, Chief
Fuel Facility Inspection Branch 2
Division of Fuel Facility Inspection

Docket No. 70-7001
Certificate No. GDP-1

Enclosures:
1. Notice of Violation
2. NRC Inspection Report 70-7001/2013-003
   w/Attachment: Supplemental Information

cc: (See page 3)

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James A. Hickey, Chief
Fuel Facility Inspection Branch 2
Division of Fuel Facility Inspection

Docket No. 70-7001
Certificate No. GDP-1

Enclosures:
1. Notice of Violation
2. NRC Inspection Report 70-7001/2013-003
   w/Attachment: Supplemental Information

cc: (See page 3)
Distribution:
PUBLIC
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X PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE **X** NON-SENSITIVE

ADAMS: **X** Yes ACCESSION NUMBER: ML13205A354 **X** SUNSI REVIEW COMPLETE **X** FORM 665 ATTACHED

OFFICE	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	RII:DFFI	
SIGNATURE	PDS3	NAP2	JEF3	DJH2	JXD2	JAH5	
NAME	P. Startz	N. Pitoniak	J. Fisher	D. Hartland	J. Diaz	J. Hickey	
DATE	7/ 16/ 2013	7/ 16 /2013	7/ 16 /2013	7/ 16 /2013	7/ 21 /2013	7/ 24 /2013	
E-MAIL COPY	**YES** NO	**YES** NO	**YES** NO	**YES** NO	**YES** NO	**YES** NO	

OFFICIAL RECORD COPY DOCUMENT NAME: G:\DFFI\REPORTS\DRAFT INSPECTION REPORT FOLDER\PADUCAH\2013\PADUCAH 2013-003 FINAL.DOCX

cc:

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Acting General Manager
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United States Enrichment Corporation
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NOTICE OF VIOLATION

United States Enrichment Corporation-PGDP
Paducah, Kentucky

Docket No. 70-7001
Certificate No. GDP-1

During a U.S. Nuclear Regulatory Commission (NRC) inspection conducted from April 1 through June 30, 2013, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

> Title 10 of the *Code of Federal Regulations* (10 CFR) 76.87(a) requires, in part, that the Corporation establish technical safety requirements.
>
> Technical Safety Requirement 3.9.1 requires, in part, that approved written procedures be implemented for activities described in Safety Analysis (SAR) Report Section 6.11.4.1, and listed in Appendix A to the SAR.
>
> Appendix A of SAR Section 6.11 describes "uranium hexafluoride (UF_6) cylinder handling" as an activity for which procedures shall be implemented.
>
> Step 8.11.3 of Procedure CP4-CO-CN2012, “Operation of the Surge and Tails System,” requires that the operator ensure that the cylinder is new or washed prior to being connected to the Building C-315 jet station.
>
> Contrary to the above, on June 28, 2013, an operator connected a cylinder that was not new, or washed, to the Building C-315 jet station resulting in a release of UF_6 to the environment.

This is a Severity Level (SL) IV Violation (NRC Enforcement Policy, Section 6.2.d.2).

Pursuant to the provisions of 10 CFR 76.70, the United States Enrichment Corporation, Paducah Gaseous Diffusion Plant is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region II, and a copy to the NRC Senior Resident Inspector at the Paducah Gaseous Diffusion Plant within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation,” and should include: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved.

Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the certificate of compliance should not be modified, suspended, or revoked, or why such other action, as may be proper, should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room, or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html, to the extent possible, it should not include any personal privacy, proprietary, classified, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected, and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated at Atlanta, Georgia this 24th day of July 2013.

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	70-7001
Certificate No:	GDP-1
Report No:	70-7001/2013-003
Licensee:	United States Enrichment Corporation
Facility:	Paducah Gaseous Diffusion Plant
Location:	Kevil, KY 42053
Dates:	April 1 through June 30, 2013
Inspectors:	D. Hartland, Senior Resident Inspector J. Fisher, Fuel Facility Inspector N. Pitoniak, Fuel Facility Inspector P. Startz, Fuel Facility Inspector
Approved by:	J. Hickey, Chief Fuel Facility Inspection Branch 2 Division of Fuel Facility Inspection

EXECUTIVE SUMMARY

United States Enrichment Corporation
Paducah NRC 2013 2nd Quarter Integrated Inspection Report 70-7001/2013-003
April 1 – June 30, 2013

U.S. Nuclear Regulatory Commission (NRC) resident and regional inspectors conducted inspections at the Paducah Gaseous Diffusion Plant during normal and off normal shifts in the areas of plant operations, effluent control and environmental protection, maintenance and surveillance observations, management organization and controls, and plant modifications. The inspection included the performance of Temporary Instruction (TI) 2600/017 to verify the implementation of the Decommissioning Planning Rule. The inspectors performed a selective examination of activities which was accomplished by direct observation of safety-significant activities and equipment, tours of the facilities, interviews and discussions with personnel, independent verification of safety system status and limiting operation conditions, corrective actions, and a review of facility records. The NRC's program for overseeing the safe operation of uranium enrichment facilities is described in Manual Chapter 2600, "Fuel Cycle Facility Operational Safety and Safeguards Inspection Program," dated January 27, 2010.

Safety Operations

- Activities related to the shutdown of the cascade were performed safely and in accordance with procedure requirements. However, one Severity Level IV violation was identified regarding failure to ensure that a cylinder was new or washed prior to connecting to the C-315 jet station resulting in a release of uranium hexafluoride to the environment. (Paragraph A.1)

Radiological Controls

- The Environmental Protection program was implemented in accordance with the certificate and regulatory requirements. (Paragraph B.1)

- The review of the implementation of the Decommissioning Planning Rule was determined to be adequate in relation to the certificate holder's relationship with the Department of Energy and in accordance with regulatory requirements. (Paragraph B.2)

Facility Support

- Maintenance and surveillance of safety controls were implemented in accordance with the certificate and regulatory requirements. (Paragraph C.1)

- Activities related to management organization and controls were conducted in accordance with certificate requirements. (Paragraph C.2)

- The Plant Modifications program was implemented in accordance with the certificate and regulatory requirements. (Paragraph C.3)

Special Topics

- Six previously identified apparent violations, a cited violation, and an unresolved item were closed. One event notification was opened to review the certificate holder's corrective actions. (Paragraph D)

Attachment

List of Persons Contacted
List of Documents Reviewed
List of Items Opened, Closed, and Discussed
List of Inspection Procedures Used

REPORT DETAILS

Summary of Plant Status

On May 24, 2013, United States Enrichment Corporation (USEC) management announced that the Department of Energy (DOE) had decided not to pursue USEC's Paducah Gaseous Diffusion Plant (PGDP) proposal to continue to enrich onsite depleted uranium material. USEC began shutting down the cascade and indicated that it planned to gradually cease all certified activities at the PGDP over the next months and return the leased facilities to the DOE in 2014. The certificate holder performed cascade shutdown operations and associated maintenance activities safely throughout the inspection period.

A. Safety Operations

1. Plant Operations (Inspection Procedures 88100 and 88020)

a. Scope and Observations

The inspectors observed routine operations in the central control facility, the cascade buildings, the feed vaporization facilities, product and tails withdrawal facilities, the toll and transfer facility, and all associated control rooms. The inspectors observed control room personnel to determine whether proper control room staffing was maintained, access to the control room was properly controlled, and operations were conducted in a manner commensurate with the plant configuration and plant activities in progress.

The inspectors examined the status of selected control room alarm indicators, instrumentation, and data recorders to identify abnormalities and to determine the plant status. The inspectors reviewed control room and plant shift superintendent log entries, daily operating instructions, and corrective action program entries to obtain information concerning operating trends and activities.

The inspectors observed on-duty operators to verify the attentiveness in carrying out their assigned duties. The inspectors compared operator actions to approved procedures for ongoing activities and evaluated compliance with the appropriate technical safety requirements (TSRs) limiting condition for operation action statements during abnormal conditions.

The inspectors interviewed staff, reviewed records, and observed operators performing activities associated with the cascade shutdown, filling and handling liquid uranium hexafluoride (UF_6) cylinders in the toll and sampling building, and conducting safety control testing. The inspectors determined that the safety controls associated with cascade and cylinder filling operations were adequately implemented and properly communicated as described in the Safety Analysis Report (SAR). The inspectors determined that the certificate holder was operating safely and in compliance with requirements.

The inspectors observed cascade operators shutdown several units, observed technicians performing autoclave safety control testing, and performing cylinder cart interlock safety control testing. The inspectors reviewed the procedures applicable to the observed tasks and determined that the procedures were current, reflected safety controls, and were followed by the operators and technicians.

The inspectors determined that certificate holder's administrative controls were implemented and communicated. The inspectors reviewed numerous operating procedures and determined that required actions as identified in the SAR had been correctly transcribed into written operating procedures. The inspectors evaluated the procedures' contents with respect to operating limits and operator responses for upset conditions and verified that limits needed to ensure safety were adequately described in the procedures.

The inspectors attended daily communications meetings and interviewed numerous operators and technicians and determined that operators and technicians were adequately implementing the required safety controls. The inspectors observed operator's and technician's performance and determined that they were adhering to applicable safety procedures. The inspectors reviewed the postings and instructional aids applicable to the tasks being observed and determined that these postings and instructional aids were current, reflect safety controls, and were followed by the operators and technicians.

The inspectors toured portions of the cascade and UF_6 handling areas to assess safety conditions, general plant cleanliness, and equipment status. The inspectors assessed the handling and storage of portable gas cylinders and flammable material, management of fire loads, postings and controls of radioactive material control zones and radiation areas, and implementation of criticality controls. The inspectors walked-down portions of the fire protection system to verify the correct system alignment, physical condition, and operability.

The inspectors confirmed that safety controls were present and capable of performing their intended safety functions. To complete this confirmation, the inspectors verified the physical presence of passive and active engineered safety controls and evaluated the safety controls to determine their capability and operability.

The inspectors determined all required notices to workers were appropriately and conspicuously posted in accordance with the Title 10 of the *Code of Federal Regulations* (10 CFR) Part 19 and 10 CFR Part 21. The inspectors confirmed that the certificate holder met the requirement to conspicuously post copies of NRC Form-3, "Notice to Employees," in sufficient quantities and locations to permit workers engaged in licensed activities to observe them on the way to or from any activity location as required. The inspectors reviewed the postings located in the vicinity of the normal employee access and egress locations.

UF_6 Release at C-315 Jet Station

Introduction

The inspectors identified a violation regarding failure to ensure that a cylinder was new or washed prior to connecting to the C-315 jet station resulting in a release of UF_6 to the environment.

Description

On June 28, 2013, an operator inadvertently connected a cylinder containing approximately 5,000 pounds of a solid UF_6 to a jet station used to evacuate clean cylinders outside of the C-315 tails withdrawal facility. The vapor space from the cylinder was released for approximately six minutes until the operator saw the UF_6 plume and isolated the cylinder.

Subsequent surveys performed by the certificate holder staff of areas in the plume path identified no detectable levels of radioactive contamination. Some results of urinalyses performed on individuals potentially exposed to the release were above the recall limit (greater than 5 micrograms (µg)/liter) which triggered the licensee to continue bioassay sampling the individuals. The maximum result received was 14 µg /liter, well below the certificate holder's limit of 300 µg /liter which would have required individuals to be restricted from radiation worker activities, and below the occupational dose limits in 10 CFR 20.

The certificate holder determined that the event was not reportable as the plume was not visible 1,000 feet downwind of the source which would have required an Alert to be declared in accordance with its Emergency Plan. The NRC inspectors verified that the visible plume length was approximately 200 feet. The certificate holder also subsequently weighed the cylinder and determined that a maximum of 14 pounds (lbs) of UF_6 was released, well below the reportable quantity of 400 lbs. The NRC inspectors verified the certificate holder's mass determination for the UF_6 release.

The certificate holder put a hold on further operation at the jet station pending the results of its root cause investigation. During follow-up, the inspectors noted that the operator failed to ensure that the cylinder was clean and empty as required by Step 8.11.3 of Procedure CP4-CO-CN2012, "Operation of the Surge and Tails System," prior to connecting the cylinder to the jet station.

Analysis

The NRC inspectors determined that the violation was more than minor because it resulted in the loss of a significant barrier for the protection of workers from unplanned radiation exposures, and protection of the environment. The violation was determined to be a Severity Level IV violation because the Occupational Dose Limits in 10 CFR 20 were not exceeded (See NRC Enforcement Policy Section 6.7.c).

Enforcement

As required by 10 CFR 76.87(a), the Corporation is required, in part, to establish technical safety TSRs. TS Requirement 3.9.1 required, in part, that approved written procedures be implemented for activities described in SAR Section 6.11.4.1, and listed in Appendix A to the SAR. Appendix A of SAR Section 6.11 described "UF_6 cylinder handling" as an activity for which procedures shall be implemented.

Step 8.11.3 of Procedure CP4-CO-CN2012, "Operation of the Surge and Tails System," required that the operator ensure that the cylinder was new or washed prior to being connected to the C-315 jet station.

Contrary to the above, on June 28, 2013, an operator connected a cylinder that was not new or washed to the C-315 jet station resulting in a release of UF_6 to the environment. Failure to ensure that the cylinder was new or washed prior to connecting to the C-315 jet station is a Severity Level IV violation (VIO) 70-7001/2013-003-01) "Inadvertent Release of UF_6 During Cylinder Handling."

b. Conclusion

Activities related to the shutdown of the cascade were performed safely and in accordance with procedure requirements. However, one violation was identified regarding failure to ensure that a cylinder was new or washed prior to connecting to the C-315 jet station resulting in a release of UF_6 to the environment.

B. Radiological Controls

1. Effluent Control and Environmental Protection (Inspection Procedure 88045)

a. Scope and Observations

The inspectors interviewed staff members regarding program changes and determined that no significant changes had occurred in the program since the last inspection. The inspectors reviewed procedures and verified that they were in accordance with certificate requirements. The inspectors verified that the certificate holder was conducting audits at the triennial frequency as required by the certificate.

The inspectors observed the collection and analysis of the C-310 stack effluent sample. The inspectors determined that the certificate holder was in compliance with the approved procedures for sampling. The inspectors verified that the quality control techniques associated with the analytical laboratory analysis of the effluent sample were in accordance with the certificate and approved procedures.

The inspectors reviewed records of airborne effluents and verified that a sample of the calendar year 2012 assumptions and calculations performed for the airborne effluent stacks without continuous sampling equipment were appropriate. The inspectors determined that the airborne effluent monitoring program was in compliance with the certificate.

The inspectors reviewed the liquid effluent monitoring results and verified that the licensee was assessing the data as required by the certificate. The inspectors interviewed the environmental technician regarding sampling frequency and technique to verify that sampling was in accordance with the certificate. The inspectors observed the material condition of the liquid composite samplers and associated equipment and determined that they were adequate. The inspectors verified that the liquid composite sampler and gas flow rate meters were calibrated, and that functional checks were performed in accordance with 10 CFR 20.1501.

The inspectors reviewed the airborne portion of the public dose assessment and verified that result was in compliance with the As Low As Reasonably Achievable constraint required by 10 CFR 20.1101(d). The inspectors reviewed the public dose assumptions and calculations from the average annual airborne effluent concentrations and the external radiation measurements results and determined that the total dose to an individual likely to receive the highest dose from the licensed operation did not exceed the regulatory limit in calendar year 2012. The inspectors verified that the liquid effluents from the certificate holder's activities did not exceed the values specified in Appendix B of 10 CFR Part 20.

The inspectors reviewed environmental sampling results for external radiation, soil, vegetation, sediment, and surface water and determined that the frequency and analyses required were in compliance with the certificate requirements.

b. Conclusion

No violations of NRC requirements were identified.

2. Review of the Implementation of the Decommissioning Planning Rule (Temporary Instruction 2600/017)

a. Inspection Scope and Observations

Program Controls. The inspectors reviewed the program and procedures which directly relate to the Decommissioning Planning Rule (76 Federal Register 35512). The Rule can be located in the NRC public document system using the Agencywide Documents Access and Management System (ADAMS) Accession No. ML11272A154. The inspectors noted that the certificate holder leases its property from the Department of Energy (DOE). The Division of Fuel Facility Inspection, Nuclear Materials Safety and Security, and Federal and State Materials and Environment staff reviewed the relationship between the certificate holder and the DOE in regards to decommissioning and site characterization of environmental contamination.

The NRC staff reviewed the DOE's responsibility for pre-existing conditions outlined in the USEC Privatization Act, Public Law 104-134 (110 Stat. 1321-338) April 26, 1996 Title III, Ch.1, Subch. A, Section 3107, "Leasing of Gaseous Diffusion Facilities." This section states that the "payment of any costs of decontamination and decommissioning, response actions, or corrective actions with respect to conditions existing before July 1, 1993, at the gaseous diffusion plants shall remain the sole responsibility of the Secretary" of the DOE.

The NRC staff reviewed the lease agreement between the certificate holder and the DOE. Section 4.6 of the lease agreement states that DOE will be responsible for and will pay the costs of all decontamination and decommissioning of the leased premises. DOE may initiate action for the decontamination and decommissioning of property any time property of any kind is returned to the DOE by USEC pursuant to the provisions of the lease. The exception is that USEC will become the owner of capital improvements on the leased property and will be responsible for any increase in decommissioning costs if and when the capital improvement is removed. If USEC does not remove the capital improvement at the end of the lease term, the title and decommissioning costs will transfer to the DOE.

The inspectors discussed capital improvements, the addition of permanent structural improvement or restoration of some aspect of property that will either enhance the property's overall value or increased its useful life, with the certificate holder staff to determine if decommissioning costs could be affected. Based on the discussions with the staff interviewed, the inspectors determined that USEC does not intend to remove any capital improvement projects. The inspectors also noted that the certificate holder did not create any new effluent outfalls on the leased property.

The inspectors interviewed the environmental staff and reviewed procedures regarding how environmental monitoring results were assessed. The inspectors verified that the licensee maintained methodology for reviewing effluent monitoring and environmental sampling results.

The NRC staff noted that the certificate holder does not evaluate subsurface or groundwater radiological contamination, as the remediation of the pre-existing environmental contamination at the end-of-plant life is the responsibility of the DOE. The NRC staff determined that this was appropriate as the certificate holder demonstrated that the necessity to survey the subsurface was not required because it did not have evidence that any subsurface contamination was caused during its tenure. This conclusion was supported by a history of low levels of airborne and liquid effluent results and a lack of unremediated radiologically contaminated spills.

The leased property has surface and subsurface contamination areas in the environment and near buildings which remain from operations prior to USEC leasing the property. These surface and subsurface contamination areas were the result of DOE operations. Prior to USEC leasing the property, DOE performed an analysis of the contaminated areas to characterize the extent and levels of contamination which occurred from past DOE operations. USEC performs surface surveys of the boundaries of the identified contaminated areas and verifies that the contamination has not migrated along the surface of the soil. In the instance that the survey results identify migrated contamination, USEC either remediates the area outside of the posted contaminated area or adjusts the contaminated area boundary. USEC has not identified any area of environmental contamination which resulted from NRC-certified operations. The inspectors discussed the onsite survey program with the certificate holder regarding the performance of routine surveys of its leased property, including both the buildings and environmental areas, verified selected areas were present on the annual survey schedule, and reviewed a sample of survey results.

The NRC staff determined that the extent and types of radiological surveys performed by the certificate holder were reasonable due to the low emission levels of airborne and liquid effluents and the immediate remediation of spills and releases.

Minimization of Contamination. The inspectors verified through staff interviews and the review of effluent results and trends that the certificate holder conducted operations to minimize the introduction of residual radioactivity into the site in accordance with 10 CFR 20.1406(c). The airborne effluent and liquid effluent levels were maintained low. The inspectors did not identify any additional pathways of contamination effecting the environment during the inspection.

Monitoring Stations and Sampling Locations. The inspectors reviewed the certificate holder's environmental monitoring and sampling program regarding onsite contamination. The NRC staff determined that the level of sampling was appropriate due to additional sampling being performed by DOE and the DOE commitment to remediate the leased property. The certificate holder's environmental sampling program does not include sampling of the groundwater, soil, ambient air, lagoon sludge, sediment, or vegetation within the Controlled Access Area. The NRC staff noted that the Decommissioning Planning Rule does not require licensees to monitor off-site contamination.

Records and Reports of Environmental Monitoring. The inspectors verified that survey records and environmental sampling results performed inside and outside of the controlled area were maintained as quality records. The inspectors noted that 10 CFR Part 76 does not include requirements pertaining to the maintenance of a decommissioning planning file as specified for other fuel facilities by 10 CFR 70.25(g). The certificate holder does not

maintain a decommissioning planning file as they remediate any environmental contamination they create.

Calibration of Measurement Equipment. The inspectors verified that instruments and equipment used for quantitative radiation measurements, including effluent monitoring, were calibrated periodically for the radiation measured in accordance with 10 CFR 20.1501(c). The inspectors verified that the liquid composite sampler and gas flow rate meters used in the collection of liquid and gaseous effluents were calibrated and functional checks were performed. The inspectors observed the calibration of detection equipment in the analytical laboratory and verified that it was in compliance with the certificate holder's procedures.

b. Conclusion

No violations of NRC requirements were identified.

C. Facility Support

1. Maintenance and Surveillance Observations (Inspection Procedures 88102 and 88103)

a. Scope and Observations

The inspectors conducted onsite records reviews, observations of work activities, and interviewed cognizant staff and management to determine whether maintenance and surveillance activities were adequately implemented to ensure that equipment and facilities used to protect health and minimize danger to life or property remained available and reliable to perform their safety function.

The inspectors verified that maintenance and surveillance activities performed on safety-related equipment and components as specified in the certificate holder's SAR and TSRs were adequate to ensure that the controls were available and reliable to perform their safety function when needed. The inspectors determined that adverse conditions related to the maintenance and surveillance program were sufficiently identified and tracked to completion.

The inspectors reviewed maintenance and surveillance work packages and procedures for accuracy and to ensure that testing challenged and verified operability of safety-related equipment and components per the accident analysis in the SAR. The inspectors noted that acceptance criteria, where appropriate, was provided in the work packages.

The inspectors evaluated maintenance activities and work control requirements for special authorizations for activities involving welding, radiological controls, and personnel safety controls including the radiation work permits, confined space permits, hot work permits, fall hazards precautions, and other industrial hygiene permits and evaluations.

The inspectors reviewed the lock-out/tag-out (LOTO) records for selected systems to determine if there was any impact on the systems' operability status. For the LOTOs, the inspectors confirmed that systems were properly returned to the normal configuration after the completion of maintenance.

The inspectors observed daily maintenance and operations plan-of-the-day meetings and attended pre-job briefings conducted prior to maintenance activities. The inspectors also observed maintenance work activities on selected systems and processes, and determined

that work activities were conducted in accordance with certificate holder requirements and approved procedures, and that personnel were knowledgeable of the requirements.

The inspectors noted that effective corrective actions were taken when safety controls failed or were degraded. The inspectors verified that post-maintenance testing and calibrations as specified by the certificate holder requirements were adequately performed prior to restoring equipment to operational status. Completed work packages were adequately reviewed prior to returning equipment to service.

The inspectors reviewed the performance of periodic surveillances required by the TSR and plant procedures to verify that surveillance activities of safety-significant systems were conducted in accordance with the technical safety requirements and nuclear criticality controls. The inspectors reviewed the surveillance documentation to verify that required administrative approvals and tag-outs were obtained before test initiation. The inspectors observed portions of the surveillance test and verified that testing was done by qualified personnel, reviewed test data for accuracy and completeness, and confirmed the safety systems were properly returned to service.

The inspectors reviewed the certificate holder's problem identification and resolution program and determined that performance issues relating to the maintenance and surveillance of safety-related equipment and components were entered into the corrective action program.

The inspectors reviewed the certificate holder's program for tracking and trending maintenance activities and for maintaining equipment and component reliability. The inspectors reviewed associated documentation and conducted discussions with responsible personnel. The inspectors evaluated the certificate holder's program for tracking and trending various performance indicators to monitor health of plant safety systems.

b. Conclusion

No findings of significance were identified.

2. Management Organization and Controls (Inspection Procedure 88105)

a. Scope and Observations

During this period, the inspectors evaluated plant procedure changes and attended plant operations review committee meetings. The inspectors reviewed facility staffing and overtime records, including management approval of overtime. The inspectors verified that personnel were notified and trained on procedure changes in a timely manner, and that procedure adherence policies were clear and appropriately disseminated. The inspectors

reviewed the Assessment & Tracking Report (ATR) system (problem-identification system) to evaluate the certificate holder's effectiveness in resolving problems. The inspectors verified that deficiencies identified during other inspection activities were entered and tracked using the ATR system.

b. Conclusion

No findings of significance were identified.

3. Permanent Plant Modifications (Inspection Procedure 88070)

a. Scope and Observations

The inspectors interviewed management, supervisors, project engineers, and technical staff to verify that the certificate holder had established an effective configuration management system to review, approve, implement, and track permanent plant modifications to the facility which could affect safety.

The inspectors verified that the certificate holder's work control program had provisions to ensure the adequate pre-job planning and preparation of permanent plant modification design packages. The configuration management system had adequate provisions to ensure that permanent plant modifications did not degrade the performance capabilities of items safety systems and controls that were part of the safety design basis described in the SAR.

The inspectors reviewed process equipment modifications and new installations that were either approved for installation, installation was in progress, or had been completed. The most significant modifications inspected either supported facility shutdown preparations or future UF_6 repackaging activities. The UF_6 repackaging effort included transfer of natural UF_6 from the feed facilities to cylinders approved/certified for transportation at the C-315 tails withdrawal facility.

The inspectors reviewed the implementation of several modifications to quality and nuclear criticality safety-related systems and components and verified that the design information and safety analyses were in compliance with the SAR and required design criteria. The inspectors verified that the installation of the modifications and resulting system conditions were consistent with the design basis, that post-modification testing ensured implementation of design and safety system functionality, and that the performance capabilities of quality-related items were not degraded. Projects inspected included C-310 condenser / accumulator code relief, C-315 accumulator level instrumentation, C-315 liquid sampling, and C-310 burp station evacuation.

The inspectors verified that design documents and operating procedures were updated as applicable to reflect the modifications and that plant personnel were properly trained prior to implementation. The inspectors interviewed engineers and reviewed plant change reviews and determined that the engineering review process included steps to determine if NRC approval was required prior to implementing modifications. The modifications reviewed by inspectors did not require changes to licensing documents. The inspectors also determined that none of the changes reviewed involved unreviewed safety questions.

The inspectors verified that applicable post maintenance installation and testing requirements were adequately identified and performed prior to implementation of permanent plant modification design packages. Completed modifications were adequately reviewed prior to implementation and before returning effected equipment to service.

The inspectors reviewed the certificate holder's problem identification and resolution program to verify that issues relating to the preparation and installation of permanent plant modifications were entered into the corrective action program and the adequacy of corrective actions.

b. Conclusion

No findings of significance were identified.

D. Special Topics

1. Follow-up on Previously Identified Issues

a. Unresolved Item 70-7001/2012-005-07: C-360 Cylinder Tilt Mechanism Failure (CLOSED)

On November 25, 2012, the gear mechanism that was used to tilt a liquid UF_6 cylinder in preparation for transfer to daughter cylinders failed while being operated inside partially opened Autoclave No. 1 at Building C-360. The failure caused the plug end of the 10 ton cylinder, which was as much as 18 inches above ground level, to fall back into the horizontal position. No release of UF_6 resulted and a subsequent inspection of the cylinder did not reveal any apparent damage.

Since the certificate holder did not designate the tilting gear as a safety-related component, the failure was not reportable per 10 CFR 76.120. However, a potential unreviewed safety question existed related to the failure and resulting cylinder drop which may have not been previously analyzed. As a result, tilt operations were put on hold pending the results of the certificate holder's evaluation to determine if the failure of the non-safety related tilt mechanism could result in a liquid UF_6 cylinder rupture.

The certificate holder completed the evaluation which concluded that a liquid UF_6 cylinder rupture due to the failure of the tilt mechanism was not credible and resumed tilt operations. The inspectors reviewed the evaluation and had no further issues. This item is considered closed.

b. VIO 70-7001/2012-003-01: Operators Failed to Follow Procedures When Conducting Overhead Crane Operations (CLOSED)

The violation involved multiple operator failures to ensure the path was clear from obstructions when operating cranes with liquid UF_6 cylinders. The certificate holder determined that the root cause for the incidents was a lack of rigor with the use of error prevention tools such as task preview and peer checks during cylinder movement.

As corrective action, the certificate holder revised the applicable procedure to require a task preview and incorporate the formal use of error prevention tools for all liquid UF_6 cylinder movements. The certificate holder also enhanced the training provided to operators regarding cylinder handling. The inspectors observed that the corrective actions have been effective in preventing recurrence and this item is closed.

c. Apparent Violation 70-7001/2012-005-01): Loss of Control of Radioactive Material (CLOSED)
AV 70-7001/2012-005-02: Improper Waste Shipment of Radioactive Material (CLOSED)
AV 70-7001/2012-005-03: Failure to Perform Leak Testing of the PGLD Devices (CLOSED)
AV 70-7001/2012-005-04: Failure to Perform Inventory of the PGLD Devices (CLOSED)
AV 70-7001/2012-005-05: Failure to Perform Surveys to Assess Radiological Hazards Associated with PGLD Maintenance Activities (CLOSED)
AV 70-7001/2012-005-06): Failure to Label Several PGLD Devices (CLOSED)

Six apparent violations were identified involving failures to properly manage the Process Gas Leak Detector (PGLD) devices as radioactive material devices. The apparent violations included the failure to maintain control of the devices, perform leak testing, perform inventories, perform surveys, maintain the required radioactive material labeling, and improper waste shipments.

In a letter dated May 8, 2013 (ADAMS Accession No. ML13129A063), in response to additional information provided by the certificate holder, the NRC determined that the apparent violations of regulatory requirements did not occur. The NRC based its conclusions on the fact that the certificate holder was able to demonstrate that PGLD devices were possessed and used as exempt distributed devices rather than generally licensed or specifically licensed devices. The inspectors had no further issues and these items are closed.

2. Event Follow-up

a. Event Notification 48990: Unplanned contamination event at C-337A (OPEN)

On April 30, 2013, after operators disconnected a heel cylinder in an autoclave in Building C-337A, radioactive contamination was discovered 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 to a contaminated area and decontamination efforts were initiated. There was no indication of measureable personnel exposure as evidenced by negative air samples, bioassays, and personnel monitoring (whole-body frisker) surveys.

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 in accordance with 10 CFR 76.120. This event will be tracked as an unresolved item (URI) pending a review of the certificate holders root cause investigation and corrective actions, as documented in the 60-day report to the NRC, “URI 70-7001/2013-003-02, Inadvertent Contamination Event During Heel Cylinder Operations.”

E. Exit Meeting

The inspection scope and results were summarized on May 23, June 13, and July 11, 2013, with Mr. M. Buckner, Acting General Manager, at the quarterly exit meeting with members of his staff. The certificate holder acknowledged the issues presented. The inspectors confirmed no proprietary information was identified.

SUPPLEMENTAL INFORMATION

1. List of Licensee Personnel Contacted

Name	Title
B. Bell	Waste Management/Environmental Compliance Manager
M. Boren	Regulatory Compliance Manager
M. Buckner	Plant Manager
D. English	Nuclear Safety and Quality Manager
S. Gunn	Operations Manager
O. Hickman	Health Physics Manager
S. McKinney	Engineering Manager
V. Shanks	Regulatory Affairs Manager
S. Smith	Security Manager
D. Snow	Environmental, Safety, and Health Manager
C. Willett	Maintenance Manager

List of NRC Personnel Contacted

Name	Title
J. Shepherd	Project Engineer, FSME
O. Siurano-Perez	Project Manager, NMSS

2. List of Items Opened, Closed, and Discussed

Opened

70-7001/2013-003-01	VIO	Inadvertent Release of UF_6 During Cylinder Handling
70-7001/2013-003-02	URI	Inadvertent Contamination Event During Heel Cylinder Operations

Closed

70-7001/2012-005-01	AV	Loss of Control of Radioactive Material
70-7001/2012-005-02	AV	Improper Waste Shipment of Radioactive Material
70-7001/2012-005-03	AV	Failure to Perform Leak Testing of the PGLD Devices
70-7001/2012-005-04	AV	Failure to Perform Inventory of the PGLD Devices
70-7001/2012-005-05	AV	Failure to Perform Surveys to Assess Radiological Hazards Associated with PGLD Maintenance Activities
70-7001/2012-005-06	AV	Failure to Label Several PGLD Devices
70-7001/2012-005-07	URI	C-360 Autoclave/Cylinder Tilt Mechanism Failure
70-7001/2012-003-01	VIO	Operators failed to follow procedures when conducting overhead crane operations.

3. List of Inspection Procedures Used

88020 Operational Safety
88045 Effluent Control and Environmental Protection
88070 Permanent Plant Modifications
88100 Plant Operations
88102 Surveillance Observations
88103 Maintenance Observations
88105 Management Organization and Controls
2600/017 Review of the Implementation of the Decommissioning Planning Rule

4. Partial List of Documents Reviewed

Records

PCR-ATRC-06-2078, Revision (Rev.) 0, Request Application Change, SAR Section 3.5, add vapor transfer of <1 wt. % UF6 to C-315 ops, dated June 28, 2006
NCSE 113, Rev. 2, Nuclear Criticality Safety Evaluation, Cell Servicing (re: C-315 vapor transfer activities)
KP-EN-S11005, Rev. 0, Assessment of Engineering Configuration Control Management, dated April 1, 2011
KP-RA-S11004, Rev. 0, Surveillance of Nuclear Criticality Safety Engineering, dated March 22, 2011
KP-RA-S11011, Rev. 0, Surveillance of Plant Change Reviews, dated November 21, 2010
KP-RA-S12014, Rev. 0, Surveillance of Nuclear Criticality Safety and Plant Operations Review Committee, dated December 12, 2012
KP-EN-S11018, Rev. 0, Surveillance of Systems Engineering, dated December 16, 2011
KP-EN-2010-A256, Rev. 0, Independent Assessment of Engineering Elements per QAP/PTQAP, dated September 24, 2010

Procedures

CP4-GP-IM6361, Rev. 2, UF6 System Maintenance In Autoclave Buildings
CP2-CO-CN2033, Rev. 11, Operation and Maintenance of Surge/Relief Drums and Process Piping Autoclave Buildings.
UE2-OP-OP1030, Conduct of operation, Rev. 1, dated December 23, 2009
CP4-CO-CN2013, Unit Isolation and Evacuation, Rev. 16, dated May 31, 2013
CP2-CO-CN6040b, TSR Surveillance C-310 and C-315 Scale Cart Movement Prevention Test
CP2-PO-PO1034, Control of Instructional Aids and Status Indicators, Rev. 3, dated October 28, 2011
CP4-CO-CN6054c, TSR Surveillance C-333A/337A Autoclave Pressure Decay Test, Rev. 16, dated May 29, 2013
CP4-GP-IM6510, CAAS Test Report and Check Valve Leak Rate, Rev. 11,

Other Documents

E-I-14522, Rev. 7, Drawing, UF6 Detection System, C-315, AKA: tank level sensor replacement, dated October 9, 1990
M5E-ZC0290-A01, Rev. A1, C-310 Condenser Accumulator Code Relief Alternate Path Bypass Piping Plan & Details, dated April 5, 2013

S5E-ZC0290-A01, Rev. A1, C-310 Condenser Accumulator Code Relief Alternate Path Bypass Piping Support Details dated April 5, 2013
J1-1021-M, Rev. 6C, Surge Booster Station, dated May 13, 1992
P5E16437M, Rev. 8, High Assay Upgrading NaF Trap, dated December 18, 2012
ESO# ZC0329, Rev. 0, Eng. Service Order, C310 Burp Station Evacuation to South NaF Trap Evacuation Crossover, WR#5159366, dated May 29, 2012
DIVS-ZC0320-M001, Rev. 0, Design Installation and Verification Specifications (DIVS), WR#5159366, dated June 8, 2012
DDP-ZC0320-01, Rev. 0, Design Package (DDP), WR#5159367, dated June 8, 2012
DAC-814-ZC0290-0002, Rev. 0, Design Analysis and Calculations (DAC), C-310 Condenser Accumulator Code Relief Alternate Path, dated November 13, 2012
DAC-814-ZC0290-0001, Rev. 0, Design Analysis and Calculations (DAC), C-310 Accumulator Condenser Relief Line Alternate Discharge Path, dated May 7, 2012
DDP-ZC0290-02, Rev. 0, Detailed Design Package (DDP), C-310 Condenser Accumulator Code Relief Alternate Path, dated March 28, 2013
DIVS-ZC0290-M002, Rev. 0, Design Installation and Verification Specifications (DIVS), C-310 Condenser Accumulator Code Relief Alternate Path, dated April 5, 2013
R1211703-01, Rev. 0, Work Order, C360 valve XV-042B replacement, dated July 21, 2012