

December 6, 2001

Mr. J. Morris Brown  
Vice President - Operations  
United States Enrichment Corporation  
Two Democracy Center  
6903 Rockledge Drive  
Bethesda, MD 20817

SUBJECT: NRC INSPECTION REPORT 07007001/2001-009(DNMS)  
AND NOTICE OF VIOLATION (PADUCAH)

Dear Mr. Brown:

On November 14, 2001, the NRC completed a routine resident 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, the inspectors discussed the findings with members of your staff.

Areas examined during the routine resident inspection period are identified in the report. Within these areas, the inspections consisted of a selective examination of procedures and representative records, interviews with personnel, and observations of activities in progress.

Based on the results of this inspection, the NRC has determined that two violations of NRC requirements occurred. One violation is cited in the enclosed Notice of Violation (NOV), and the circumstances surrounding the violation are described in detail in the subject inspection report. The violation is being cited for failure to comply with the Technical Safety Requirement surveillance associated with the C-337-A North Crane travel limit switch. The second violation is being treated as a Non-Cited Violation (NCV), consistent with the Enforcement Policy. This NCV is described in the subject inspection report.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures 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).

J. Brown

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

Sincerely,  
*/RA/*

Patrick L. Hiland, Chief  
Fuel Cycle Branch

Docket No. 07007001  
Certificate No. GDP-1

Enclosures: 1. Notice of Violation  
2. Inspection Report 07007001/2001-009(DNMS)

cc w/encls: R. Starkey, Paducah General Manager  
L. L. Jackson, Paducah Regulatory Affairs Manager  
P. D. Musser, Portsmouth General Manager  
S. A. Toelle, Director, Nuclear Regulatory Assurance and Policy, USEC  
Paducah Resident Inspector Office  
Portsmouth Resident Inspector Office  
R. M. DeVault, Regulatory Oversight Manager, DOE  
W.D. Seaborg, Paducah Site Manager, DOE  
J. Volpe, State Liaison Officer

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## NOTICE OF VIOLATION

United States Enrichment Corporation  
Paducah Gaseous Diffusion Plant

Docket No. 07007001  
Certificate No. GDP-1

During an NRC routine inspection conducted from October 3, 2001 through November 14, 2001, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," Revision 1, the violation is listed below.

Title 10 of the Code of Federal Regulations, Part 76, Section 87, "Technical Safety Requirements," requires, in part, that the corporation shall establish technical safety requirements.

TSR Surveillance Requirement (SR) 2.2.5.2-5 requires, in part, the Corporation to ensure that the crane travel limit switch shall operate as designed (C-337-A only) prior to first use of shift. Further, TSR Design Feature (DF) 2.2.5.2 requires the Corporation to assure that the crane travel limit switch shall protect the C-337-A Jet Station.

Contrary to the above, as of October 23, 2001, the Corporation failed to ensure that the crane travel limit switch position protected the C-337-A Jet Station. Specifically, since initial certification, the as-set limit switch position failed to ensure that a full cylinder of uranium hexafluoride would not travel (drift) over the jet station, following an authorized movement of the cylinder by the C-337-A North crane.

This is a Severity Level IV violation (Supplement VI). (**VIO 70-7001/2001-009-01**).

Pursuant to the provisions of 10 CFR 76.70, United States Enrichment Corporation is hereby required to submit a written statement or explanation in reply to the violation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, with a copy to the Regional Administrator, Region III, and a copy to the NRC Resident Inspector at Paducah, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). Your reply to the violation should be clearly marked as a "Reply to a Notice of Violation" and should include for the violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation; (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 previously 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 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 to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be placed in the NRC Public Document Room (PDR), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR 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 (for example, explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(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 this 6th day of December 2001

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 07007001  
Certificate No: GDP-1

Report No: 07007001/2001-009

Facility Operator: United States Enrichment Corporation

Facility Name: Paducah Gaseous Diffusion Plant

Location: 5600 Hobbs Road  
P.O. Box 1410  
Paducah, KY 42001

Dates: October 3, 2001 through November 14, 2001

Inspectors: B. L. Bartlett, Senior Resident Inspector  
M. L. Thomas, Resident Inspector  
M. P. Phillips, Senior Fuel Cycle Safety Inspector  
D. J. Hartland, Portsmouth Senior Resident Inspector

Approved By: Patrick L. Hiland, Chief  
Fuel Cycle Branch  
Division of Nuclear Materials Safety

## **EXECUTIVE SUMMARY**

### **United States Enrichment Corporation Paducah Gaseous Diffusion Plant NRC Inspection Report 07007001/2001-009(DNMS)**

This inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 6-week period of resident inspection activities and includes follow-up to issues identified during previous inspection reports.

#### Operations

- The inspectors concluded that routine operations observed were conducted in accordance with the conduct of operations procedure, and that routine communications among operators were adequate. No nuclear criticality safety issues were identified by the inspectors during the observation of routine operations activities. (Section O1.1)
- The inspectors reviewed the adequacy of the certificatee's response to an issue documented in an Assessment and Tracking Report (ATR). The inspectors identified a violation of the certificatee's Technical Safety Requirement (TSR) surveillance requirements with respect to the location of a crane travel limit switch in building C-337-A to prevent the movement of a cylinder over the jet station. (Section O2.1)
- The Criticality Accident Alarm System (CAAS) was being adequately tested to ensure operability, and setpoints for the alarm clusters were controlled to ensure that they were within TSR requirements. Drills had been conducted in all buildings at the required frequency to ensure occupants knew how to respond to a criticality alarm. CAAS quarterly surveillances were sometimes conducted within days of the annual surveillance, which included all of the elements of a quarterly surveillance, resulting in unnecessary equipment unavailability. (Section O2.2)
- During a routine plant tour of Building C-310, Product Withdrawal, the inspectors identified that cylinder number PP-2552 had a safe movement tag with the incorrect cylinder number. The inspectors verified that the cylinder had the correct 5-day cooling periods as determined by a review of the building logs. (Section O4.1)
- The operators effectively implemented the procedure to operate Blow-Out Preventers to facilitate leak testing and troubleshooting on Unit 1, Cell 2, in Building C-335. (Section O4.2)
- The operator effectively implemented the Cell Maintenance Checklist, CP 22185, and the Lube Oil Maintenance Checklist, CP 18806 for Unit 4, Cell 9, in Building C-335. (Section O4.3)

#### Maintenance

- The inspectors concluded that the maintenance and surveillance activities which were observed or reviewed were conducted in accordance with procedure requirements. When questions arose during maintenance activities regarding a procedure, the work was stopped, and the issue was resolved prior to the resumption of work. In addition, the inspectors noted that the acceptance criteria contained in surveillance procedures

were adequate, and that when required, ATRs were initiated by workers for identified issues. (Section M1.1)

- During a routine observation of a TSR surveillance on October 31, 2001, the inspectors identified a failure to follow the Surveillance procedure. The steps that were missed were verification that the annunciator horn would silence and that the annunciator would stay lit following acknowledgment by the test performers. The missed steps did not impact the test acceptance criteria. The failure to follow the TSR surveillance procedure was another example of the failure to follow procedure contrary to TSR 3.9.1 identified in NRC inspection report 07007001/2001-008. A Non-Cited Violation was identified for failure to follow the surveillance procedure. (Section M1.2)

#### Engineering

- The inspectors performed partial system walkdowns of safety related uranium hexafluoride ( $UF_6$ ) handling cranes. In addition, the inspectors reviewed recent ATRs for these systems to verify that no operability concerns existed. The inspectors concluded that the system engineers and operations staff were knowledgeable of the respective systems. (Section E1.1)

#### Plant Support

- The inspectors toured the cylinder storage areas at the facility. The areas were labeled and posted as required by 10 CFR Part 20. (Section R1.1)
- The inspectors concluded that the certificatee's internal exposure monitoring and control program were being effectively implemented in accordance with site procedures and regulatory requirements. Trans-uranic isotopes were being included in the dosimetry calculations at an appropriate level. No individual at the site had exceeded the uranium toxicity limit for soluble uranium specified in 10 CFR 20.1201(e). Radiation protection committee (RPC) meetings were conducted as specified in the TSR. The as-low-as-reasonably-achievable (ALARA) threshold goals for investigating adverse trends were set non-conservatively, and certificatee management agreed to look into the values that were being used to set these thresholds. (Section R1.2)
- The inspectors identified a weakness in the certificatee's respiratory protection program with respect to user inspection of respiratory protection equipment. Given the nature of the violation and the immediate corrective actions implemented to correct this minor deficiency, the inspectors determined that this failure constituted a violation of minor significance and is not subject to formal enforcement action. (Section R.4.1)
- The inspectors concluded that the fire preplans lacked some specific information on addressing Nuclear Criticality Safety (NCS) concerns for each building and did not always match the actual layout of the building. The certificatee's record keeping for training of fire fighting personnel could not demonstrate that all firefighters had attended all training over the past two years. All fire fighting equipment based at the fire station was in working order as of the completion of the inspection. (Section F1.1)

## **Report Details**

### **I. Operations**

#### **O1 Conduct of Operations**

##### **O1.1 Routine Operations Activities**

###### **a. Inspection Scope (88100 and 88020)**

The inspectors observed routine operations activities and discussed routine operations with the appropriate operations staff and management.

In addition, the inspectors reviewed the applicable area log books, routine surveillance forms, and observed operators respond to various alarms. The inspectors also reviewed the following procedures:

- CP2-CO-CO1033, "Communications," Revision 2
- UE2-OP-OP1030, "Conduct of Operations," Revision 0
- CP3-CO-CO1031, "Cascade Assay Ascension," Revision 0

###### **b. Observations and Findings**

The inspectors observed routine operations activities in the cascade buildings and area control rooms, vaporization facilities, product and tails withdrawal facilities, and the central control facility. The inspectors reviewed and verified that the appropriate nuclear criticality safety requirements were implemented, if appropriate, for the routine activities observed. Operations staff in the facilities observed were alert and knowledgeable of the current status of equipment associated with the assigned facility. The inspectors noted that when alarms initiated, the operators acknowledged and responded to the alarms in accordance with procedure.

###### **c. Conclusions**

The inspectors concluded that routine operations observed were conducted in accordance with the conduct of operations procedure and that routine communications among operators were adequate. No nuclear criticality safety (NCS) issues were identified by the inspectors during the observation of routine operations activities.

#### **O2 Operational Status of Facilities and Equipment**

##### **O2.1 TSR Surveillance Failure for Building C-337-A North Crane**

###### **a. Inspection Scope (88100)**

During a routine review of certificatee Assessment and Tracking Reports (ATRs) the inspectors performed a follow-up review to determine if the Technical Safety Requirement (TSR) implications associated with the drift of the Building C-337-A North Crane were addressed. It appeared to the inspectors that the initial review by plant staff of the ATR may not have recognized the TSR impact of the certificatee identified degraded condition.

The inspectors reviewed the following documents:

- Technical Safety Requirements, Section 2.2.5, General Design Features;
- ATRC-01-5492, C-337-A North Crane Drifts
- ATRC-01-5519, Potential As Found, Position of C-337-A crane travel limit switches can allow the North crane to drift into the jet station area
- ATRC-01-5871, NRC inspector identified a potential violation for an inadequate procedure implementing the C-337-A North Crane travel limit switch surveillance requirement
- Title 29 CFR 1910.179, Overhead and gantry cranes
- Work Packages 0111642.01 (Bridge) and 0111642.02 (Trolley)
- CP4-CO-CA2035, "Pre-Use Inspection of UF<sub>6</sub> Handling Cranes," Revision 1
- CP4-QA-QI6085, "Inspection of UF<sub>6</sub> Cylinder Handling Cranes," Revision 1
- Detailed Design Package DDP-Z66150-42, Rev 1, C-337A North Crane Zone Control Modification
- ASME B30.2-1990, "Overhead and Gantry Cranes," Addenda d - ASME B30.2d-1994

b. Observations and Findings

The inspectors reviewed a recent ATR pertaining to the drift of the North Crane in Building C-337A, (ATRC-01-5492). The inspectors determined that follow-up was necessary as drift (movement of the crane after the control switch was released while the brakes were stopping the crane) of the C-337-A North Crane over the jet station did not appear to be considered by the certificatee when the ATR was written.

The as-found drift was 12 to 15 feet, and the plant limit was 18.5 feet. This crane was used to move solid uranium hexafluoride (UF<sub>6</sub>) feed cylinders into and heeled UF<sub>6</sub> feed cylinders out of the autoclaves. The TSR 2.2.5 basis stated that the limit switch prevented carrying a cylinder over the C-337A jet station. While there were no examples of operators allowing a cylinder to drift over the jet station, the NRC inspectors determined that the allowable amount of drift incorporated into procedure CP4-QA-QI6085, did not ensure that the limit switches would prevent a cylinder drifting over the jet station. The certificatee had not allowed for sufficient drift when setting the plant limit.

The Occupational Safety and Health Administration (OSHA) regulations allowed for a drift in feet equal to 10 percent of the full speed in feet per minute when traveling with a full load. The recommended corrective action was to limit the use of this crane by only those individuals familiar with its characteristics. [This placed the certificatee in the position of using a person as an automatic actuation device to prevent a cylinder from traveling over the jet station.] The inspectors considered that the crane was in a state of degraded operability.

After discussions with the operators in C-337A, the plant shift supervisor (PSS), the system engineer, and the operations manager, a second ATR was written to take the North Crane out of service, (ATRC-01-5519). The PSS and the shift engineer failed to recognize the TSR operability impact during their review of ATRC-01-5492.

A design package was developed to modify the crane to take into account the distance needed to stop the crane with an allowable drift of 18.5 feet so that the crane would not drift over the jet station with a cylinder attached to the trolley. The limit switches were moved to a point 20 feet either side of the jet station to account for drift and the trolley stopping arm was moved so that it would strike its limit switch 5 feet sooner. Post maintenance tests were conducted to verify these modifications. The inspectors observed these tests.

TSR Surveillance Requirement (SR) 2.2.5.2-5 requires, in part, the Corporation to ensure that the crane travel limit switch shall operate as designed (C-337-A only) prior to first use of shift. Further, TSR Design Feature (DF) 2.2.5.2 requires the Corporation to assure that the crane travel limit switch shall protect the C-337-A Jet Station.

Contrary to the above, as of October 23, 2001, the Corporation failed to ensure that the crane travel limit switch position protected the C-337-A Jet Station. Specifically, since initial certification, the as-set limit switch position failed to ensure that a full cylinder of uranium hexafluoride would not travel (drift) over the jet station, following an authorized movement of the cylinder by the C-337-A North crane. (**VIO 070-07001/2001-009-01**)

c. Conclusions

The inspectors reviewed the adequacy of the certificatee's response to an issue documented in an ATR. The inspectors identified a violation of the certificatee's TSR surveillance requirements with respect to the location of the crane travel limit switches in building C-337-A to prevent the movement of a cylinder over the jet station.

O2.2 Regional Nuclear Criticality Safety Inspection Program (88020)

a. Inspection Scope

The inspectors reviewed the testing of the Criticality Accident Alarm System (CAAS) and activities associated with nuclear criticality safety emergency response to ensure that they were in compliance with regulatory requirements and the certificatee's TSRs.

b. Observations and Findings

The inspectors reviewed the access to alarm setpoints and determined that the setpoint was established in the calibration shop prior to the detection cluster being installed in the field. The setpoint was established at the value required by the TSR. After the setpoint had been established, the door to the setpoint screw was closed. As such, setpoints were unlikely to be inadvertently changed after being set at the instrument calibration laboratory. As part of the annual surveillance test, a newly calibrated CAAS cluster normally was installed. No changes had been made to any monitoring points since the last criticality safety inspection.

The inspectors reviewed the surveillance test results for all of the CAAS clusters on site. During testing, the CAAS system would be rendered inoperable and the certificatee would enter the Limiting Condition for Operations (LCO) action statement in the TSR for an inoperable CAAS. All quarterly and annual tests reviewed by the inspectors had been completed as scheduled. The inspectors determined that the annual test included all of the components of a quarterly test; however, the computer scheduling system did not appear to have been updated to take credit for the annual test as part of the quarterly scheduling. This conclusion was reached based on the following data:

- For CAAS clusters D and E, the annual test was performed on August 2, 2001; the quarterly test was performed on August 9, 2001.
- For CAAS clusters N and T, the annual test was performed July 23, 2001; the quarterly test was performed on August 3, 2001.
- For CAAS cluster P, the annual test was performed on September 4, 2001; the quarterly test was performed on October 2, 2001.
- For CAAS cluster AE, the annual test was performed on September 12, 2001; the quarterly test was performed on October 2, 2001.
- For CAAS cluster AL, the annual test was performed on August 7, 2001; the quarterly test was performed on September 4, 2001.
- For CAAS cluster AP, the annual test was performed on August 31, 2001; the quarterly test was performed on September 8, 2001.

The quarterly tests for clusters D, E, N, T, P, AE, AL, and AP were all performed within a month of the annual test, and none of the associated surveillance test packages indicated that the test was required for other than a routine scheduled test. This testing methodology resulted in unnecessary disabling of the CAAS system and a consequent increase in equipment unavailability.

The inspectors reviewed the procedure for response to a criticality alarm, CP2-EP-EP5038, Revision 5. The procedure provided adequate guidance on how to respond to the alarm, including precautions for re-entry. The inspectors also reviewed records of criticality evacuation drills held for each building that contained fissile material or was within 200 feet of a building that contained fissile material. Records indicated that annual drills had been held in all of these buildings in December, 2000, and additional drills were held in buildings that were normally occupied. This testing was performed on all shifts such that each of the shifts had a drill requiring building evacuation. In all cases, the drills were held as required by procedure CP4-SF-SF1103, Revision 1. The inspectors did not identify any significant deficiencies; however, the inspectors noted that an evacuation drill was conducted for Building C-411 on August 9, 2001, but C-411 was not listed as a building requiring a drill in procedure CP4-SF-SF1103.

c. Conclusions

The CAAS was being adequately tested to ensure operability, and setpoints for the alarm clusters were controlled to ensure that they were within TSR requirements. Drills had been conducted in all buildings at the required frequency to ensure occupants knew

how to respond to a criticality alarm. CAAS quarterly surveillances were sometimes conducted within days of the annual surveillance, which included all of the elements of a quarterly surveillance, resulting in unnecessary equipment unavailability.

## O4 Operator Knowledge and Performance

### O4.1 Wrong Cylinder Number on Safe Movement Tag

#### a. Inspection Scope (88100 and 88101)

During routine plant observations the inspectors assessed storage and configuration controls for cylinders at Building C-310, Purge and Product Withdrawal. The inspectors verified that cylinders were properly stored, identified, and controlled.

In addition, the inspectors reviewed the applicable log books, routine surveillance forms, and observed operators respond to various alarms in Building C-310 Product Withdrawal. The inspectors reviewed the following documentation:

- CP4-CO-CN2010, "Operation of the C-310 Product and Side Withdrawal System," Revision 11
- UE2-OP-OP1030, "Conduct of Operations," Revision 0
- ATRC-01-5749, November 7, 2001, Safe movement tag attached to cylinder PP-2552 had the listed cylinder number as PK-1012.

#### b. Observations and Findings

On November 7, the inspectors performed a routine tour in Building C-310. During the tour, the inspectors observed that cylinder number PP-2552 had a "safe movement tag" with the incorrect cylinder number. The safe movement tag was intended to ensure that liquid cylinders had at least 5 days of cooling and had solidified prior to movement.

The filling of cylinders at Building C-310 occurred such that only about 1 cylinder per day was ready to be moved to storage for the required 5-day cooling period. Procedure CP4-CO-CN2010, step 8.7.6, required that a safe movement tag with a 5-day time stamp be completed for each filled cylinder. The inspectors reviewed the withdrawal station logs and records, and determined that the safe movement tag on cylinder PP-2552 had the correct date and time, even though it had the incorrect cylinder number.

The inspectors verified that both cylinders PK-1012 and PP-2552 had the correct 5-day cooling periods as determined by a review of the building logs. Step 8.7.8 of procedure CP4-CO-CN2010, required that a second operator verify the safe movement time and date were correct and to complete a form documenting such. Procedure CP4-CO-CN2010 did not require the second operator to verify that the tag had the correct cylinder number.

After the inspectors identified this issue, the certificate holder took prompt action to replace the safe movement tag with one that had the correct cylinder identifier and to issue a lessons-learned to building management. The inspectors concluded that the

incorrect cylinder tag and failure to follow procedure CP4-CO-CN2010, was a failure of minor significance and was not subject to formal enforcement action.

c. Conclusions

During a routine plant tour of Building C-310, Product Withdrawal, the inspectors identified that cylinder number PP-2552 had a safe movement tag with the incorrect cylinder number. The inspectors verified that the cylinder had the correct 5-day cooling periods as determined by a review of the building logs.

O4.2 Blowout Preventor Operation To Support Leak Testing and Troubleshooting of a Process Cell

a. Inspection Scope (88100)

During routine plant observations, the inspectors observed operators in building C-335 operate Blow-Out Preventers to facilitate leak testing and to perform troubleshooting. The inspectors reviewed the following procedure as part of this observation:

- CP4-CO-CA2005, "Operation of Blow-Out Preventers," Revision 3

b. Observations and Findings

On November 2, 2001, the inspectors observed operators in Building C-335 use procedure CP4-CO-CA2005 to operate the Blow-Out Preventers (BOP) on Unit 1, Cell 2, to facilitate leak testing and troubleshooting. The operators performing this procedure were knowledgeable of the procedure, its associated requirements, and how to test for leakage after a BOP had been actuated. The operators effectively implemented the procedure to operate Blow-Out Preventers on Unit 1, Cell 2, in Building C-335.

c. Conclusions

The operators effectively implemented the procedure to operate Blow-Out Preventers to facilitate leak testing and troubleshooting on Unit 1, Cell 2, in Building C-335.

O4.3 Cell Maintenance Checklist and Lube Oil Maintenance Checklist

a. Inspection Scope (88100)

The inspectors observed an operator use Cell Maintenance Checklist, CP 22185, and Lube Oil Maintenance Checklist, CP 18806 for Unit 4 Cell 9 in Building C-335 prior to cell start-up.

b. Observations and Findings

The inspectors observed an operator use the above checklists to verify the status of Unit 4, Cell 9, in Building C-335 prior to cell start-up. The operator performing these checks was knowledgeable of the systems, structures, and components to examine.

c. Conclusions

The operator effectively implemented the Cell Maintenance Checklist, CP 22185, and the Lube Oil Maintenance Checklist, CP 18806 for Unit 4, Cell 9, in Building C-335.

## **O8 Miscellaneous Operations Issues**

- O8.1 (Closed) VIO 70-7001/2001-001-01 - Frozen Standpipe in D-2 due to inadequate weather preparation procedure: The certificatee issued two procedures to address this issue. The first procedure, CP2-GP-BG1032, "Winterization Plan," Revision 0, required that each facility develop a Cold Weather Protection Plan either in the form of a procedure or utilizing the checklist contained in the Winterization Plan procedure. The second procedure, CP4-CO-CM6032, "Preparation for and Recovery From Cold Weather Protection," Revision 3, addressed the specific cold weather activities to be performed in advance of the outside temperature falling to 32°F. This procedure also included several additional surveillances to be performed by operations personnel to ensure equipment that was relied upon for safety or fire protection remains operable during periods of cold weather. The inspectors reviewed both procedures and no deficiencies with the procedures were identified. This item is closed.
- O8.2 (Closed) Certificatee Event Report 37632 - During a check of the temperature of the standpipes it was discovered that the standpipe for HPFW system D-2 was frozen.  
Certificatee Event Report 37632 was reviewed as part of the closure of Violation 70-7001/2001-001-01 documented in section O8.1 above. No additional issues or concerns were identified during the review of this CER. This item is closed.
- O8.3 (Closed) Certificatee Event Report 37625 - Building C-331 E and F surge drum room temperature was found to be at 103 °F which is in violation of NCSA, CAS-005.  
Certificatee Event Report 37625 was reviewed as part of the closure of Violation 70-7001/2001-001-01 documented in section O8.1 above. No additional issues or concerns were identified during the review of this CER. This item is closed.
- O8.4 (Closed) VIO 70-7001/2001-003-01 - Review of Surge Drum Room Operations: Failure to ensure temperatures maintained to prevent a violation of NCSA requirement in a surge drum room in Building C-331. Violation 70-7001/2001-003-01 was reviewed as part of the closure of Violation 70-7001/2001-001-01 documented in section O8.1 above. No additional issues or concerns were identified during the review of this violation. This item is closed.
- O8.5 Bulletin 91-01 Reports (90712)

The certificatee made the following reports pursuant to Bulletin 91-01 during the inspection period. The inspectors reviewed any immediate NCS concerns associated with the reports at the time of the initial verbal notification and the reports are considered closed unless discussed specifically below. Follow-up of the below 91-01 reports was performed and documented in NRC inspection report 70-7001/2001-204, dated November 30, 2001.

<u>Number</u>	<u>Date</u>	<u>Status</u>	<u>Title</u>
38382	10/12/01	Closed	Waste Drums Characterized Improperly Due to Incorrect Lab Analysis Results.
38427	10/25/01	Closed	Independent Verification of Cylinder Acceptability Incorrectly Performed.
38428	10/25/01	Closed	Fissile Mass (legacy issue) Found in 70 Foot Stack When No Nuclear Criticality Safety Approval (NCSA) Existed for this Equipment.

## II. Maintenance and Surveillance

### **M1 Conduct of Maintenance and Surveillance**

#### M1.1 Maintenance and Surveillance Activity Reviews

##### a. Inspection Scope (88102 and 88103)

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 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 Technical Safety Requirements and Safety Analysis Report; and any deficiencies or out of tolerance values identified during the testing were properly documented, reviewed and resolved by appropriate management personnel.

- Work Order 0103991-03, Re-installation of Recirculating Cooling Water Spool Piece for Unit 4 in Building C-335
- UF<sub>6</sub> Cylinder Weigh Scales
- Freezer/Sublimer High-High Weight Trip Test
- C-337-A North Crane Travel Limit Switch
- CP4-GP-MM4150, Removal and Replacement of Fisher RCW Control Valves, Revision 3
- CP4-GP-MM4122, Removal and Installation of R-114 Coolant Condenser Head and Condenser Tube Plugging, Revision 9
- CP2-GP-MM1031, Threaded Fasteners on Pressure Boundaries, Structural Steel, and Plant Equipment, Revision 0
- CP4-CO-CN2075, Operation of Cascade RCW Systems, Revision 9

- CP4-CO-CN6070, TSR Surveillance - Functional Test of UF<sub>6</sub> Cylinder Weigh Scales, Revision 5
- CP4-CO-CN6040k, TSR Surveillance - Freezer/Sublimer Safety System High-High Weight Trip Test, Revision 4
- CP4-CO-CA2035, Pre-Use Inspection of UF<sub>6</sub> Handling Cranes, Revision 1
- CP4-QA-QI6085, Inspection of UF<sub>6</sub> Cylinder Handling Cranes, Revision 1

The inspectors observed plant staff implement the appropriate radiological controls for performing activities, when applicable. In addition, the inspectors noted that during maintenance activities, when a question or issue regarding the procedure arose, work was stopped; the Front Line Manager (FLM) was contacted; and the question or issue was resolved prior to the resumption of work. The inspectors also observed that FLM periodically checked and evaluated the status of ongoing work. With regard to the C-337-A North crane travel limit switch, the inspectors reviewed the adequacy of the acceptance criteria provided in Procedure CP4-QA-QI6085, "Inspection of UF<sub>6</sub> Cylinder Handling Cranes," as the bridge brake operation only accounted for drift in accordance with OSHA regulations and did not give consideration to any drift over the C-337-A Jet Station. A more detailed discussion of this item may be found in Section O2.1.

c. Conclusions

The inspectors concluded that the maintenance and surveillance activities which were observed or reviewed were conducted in accordance with procedure requirements. When questions arose during maintenance activities regarding a procedure, the work was stopped, and the issue was resolved prior to the resumption of work. In addition, the inspectors noted that the acceptance criteria contained in surveillance procedures were adequate, and that when required, ATRs were initiated for identified issues.

## M1.2 Failure to Follow Surveillance Procedure

a. Inspection Scope (88102)

The inspectors performed a routine observation of a selected surveillance test. During the observation the inspectors reviewed the following procedures:

- CP4-CO-CN6040j, "TSR Surveillance - UF<sub>6</sub> Detection Systems Test for C-331, C-333, C-335, and C-337," Revision 2
- ATRC-01-5647, Plant operators failed to complete step 8.2.1.D and E as directed by procedure.

b. Observations and Findings

During a routine observation of a TSR surveillance on October 31, the inspectors identified a failure to follow the Surveillance procedure. The inspectors observed the process gas leak detection (PGLD) system surveillance test in building C-337. The inspectors observed that the test performer in the area control room (ACR) did not have the test procedure in hand and that Steps 8.2.D and E appeared to be missed. Upon

questioning by the inspectors, the test performer realized that an error had been made. The test performer then began following the surveillance test step-by-step and subsequently completed all of the steps sequentially.

The inspectors informed the FLM who briefly stopped the surveillance test. After the workers had been interviewed by the FLM, they were instructed to repeat the affected portion of the surveillance test, and an ATR was initiated (ATRC-01-5647).

The steps that were missed were verification that the annunciator horn would silence and that the annunciator would stay lit following acknowledgment by the test performers. The missed steps did not impact the test acceptance criteria. During the re-test, all steps were successfully performed.

Failure to follow procedures has been the subject of several NRC inspection reports. During this inspection period, a criticality safety inspection was performed by personnel from the Office of NMSS and documented in NRC inspection report 70-7001/2001-008. In that report, several procedural non-compliances were identified. The certificatee has not had time to respond to the violations identified in this inspection report, and the corrective actions have not had sufficient time to be effective. The failure to follow the TSR surveillance procedure was another example of the failure to follow procedure identified in NRC inspection report 70-7001/2001-008.

The inspectors determined that failure to follow plant procedural requirements was a Violation of TSR 3.9.1. This violation is being treated as a Non-Cited Violation (NCV), consistent with the NRC Enforcement Policy. This violation is in the licensee's corrective action program as ATRC-01-5647 (**VIO 070-07001/2001-009-02**).

c. Conclusions

During a routine observation of a TSR surveillance on October 31, the inspectors identified a failure to follow the Surveillance procedure. The steps that were missed were verification that the annunciator horn would silence and that the annunciator would stay lit following acknowledgment by the test performers. The missed steps did not impact the test acceptance criteria. The failure to follow the TSR surveillance procedure was another example of the failure to follow procedure contrary to TSR 3.9.1 identified in NRC inspection report 70-7001/2001-008. A Non-Cited Violation was identified for the failure to follow the surveillance procedure.

### III. Engineering

#### **E2 Engineering Support of Facilities and Equipment**

##### **E2.1 System Walkdowns**

a. Inspection Scope (88101)

The inspectors performed partial field walkdowns of the following systems and respective components:

- Building C-333-A, C-337-A Cylinder Handling Cranes

As part of the walkdowns, the inspectors reviewed and compared the as-built configuration to the appropriate design documents, including process and instrumentation diagrams. In addition, the inspectors also discussed the systems with the respective system engineers. For a random selection of components, the inspectors verified that the assumptions in engineering analyses were consistent with the as-built configuration of the system or component.

b. Observations and Findings

The inspectors verified, through discussions, that operators assigned to the areas observed were familiar with the operation and current condition of the respective systems. The inspectors also reviewed recent ATRs for the systems to verify that the safety functions of the systems were not affected by any adverse conditions identified by the certificatee. In all instances, the justification for operability was evaluated and no operability concerns existed.

The inspectors identified some minor configuration control issues with an as-built component and the corresponding plant drawings; however, the issues were all minor in nature and did not affect equipment operability. Finally, the inspectors verified that no temporary modifications on the systems existed which would preclude the system or components from performing the intended safety function.

c. Conclusions

The inspectors performed partial system walkdowns of safety related UF<sub>6</sub> handling cranes. In addition, the inspectors reviewed recent Assessment and Tracking Reports for these systems to verify that no operability concerns existed. The NRC inspectors concluded that the system engineers and operations staff were knowledgeable of the respective systems.

## IV. Plant Support

### R1 Radiological Protection Controls

#### R1.1 Radiological Control Boundaries and Practices

a. Inspection Scope (83822)

During routine plant tours and inspections, the inspectors observed and assessed the postings of radiological control boundaries and observed operator work practices related to radiological controls.

The inspectors also reviewed the following documents:

- ATRC-01-5718, inspectors identified that some of the radiation warning signs around the C-745-B cylinder yard had fallen.
- UE2-HP-RP1030, "Conduct of Radiological Operations," Revision 2
- UE2-HP-RP1034, "Dosimetry Program Standards," Revision 2

- CP2-HP-DS1034, "External Dosimetry Issue and Use," Revision 2
- CP4-HP-RP2106, "Posting and Tagging Requirements," Revision 7
- CP4-HP-RP2101, "Performance of Radiological Surveys," Revision 4

b. Observations and Findings

The inspectors toured the cylinder storage areas around the facility. The areas were labeled and posted as required by 10 CFR Part 20. Several signs had fallen in the C-745-B yard and had not been restored by plant personnel. The inspectors informed plant management who had the postings promptly restored. Several other radiological posting signs remained visible in the area.

c. Conclusions

The inspectors toured the cylinder storage areas around the facility. The areas were labeled and posted as required by 10 CFR Part 20.

R1.2 Radiological Protection

a. Inspection Scope (83822)

The inspectors reviewed selected data from the certificatee's internal exposure control and monitoring program for the past year, reviewed internal dose computation technical basis documentation and associated procedures, observed the internal monitoring analytical practices, and discussed internal dose monitoring program implementation and results with cognizant personnel in order to determine compliance with appropriate regulatory requirements. The inspectors also reviewed the activities of the Radiation Protection Committee to determine that the activities complied with the TSR and regulatory requirements.

b. Observations and Findings

The inspectors reviewed the internal dosimetry program procedures, CP2-HP-DS1030, "PGDP Urinalysis Program for Detection of Intakes of Radionuclides," Revision 3, and CP4-HP-DS7600, "Routine and Special In Vitro Bioassay," Revision 2. The procedures specified the methodology for controlling the certificatee's internal dose monitoring program, including when individuals would be required to submit bioassays. Plant staff in target work groups, such as those whose routine duties required use of a respirator, entry into radiologically contaminated areas, or work with loose radioactive material participated in the routine bioassay program. All individuals participating in the program were required to submit a urinalysis sample every month to the laboratory for analysis. Transfers of individuals into a target work group would automatically be included in the bioassay program. In addition to the routine target group, special samples were collected from any individual who worked without a respirator in an area with 0.8 Derived Air Concentration hours, had detectable facial contamination, or had been present in an area where there was a UF<sub>6</sub> release. A list was sent out to the various facilities at the beginning of each month to notify individuals to submit the routine samples. A chain of custody was established once the sample had been collected to ensure that the sample results matched the individual submitting the sample.

Once received, the laboratory staff conducted analyses on the sample in accordance with procedures CP4-TS-IN 7100, "The Determination of Uranium in Urine," Revision 2, and procedure CP4-TS-IN7170, "Determination of Protein, Glucose, and Specific Gravity in Urine," Revision 2. The inspectors observed the laboratory practices for the analyses of several routine and special samples and concluded that the laboratory staff were performing the analyses in accordance with the established procedures.

Lab sample results for the bioassays were reported to the health physics department for total uranium uptake. The health physics staff then calculated the internal exposure using procedure CP4-HP-DS7603, "Calculation of Intake Estimates and Assignment of Internal Dose from Bioassay Measurements," Revision 1. This methodology incorporated industry standard algorithms. Trans-uranic isotopes [which are difficult to measure at levels below the legal dose thresholds] were included in the dose calculation only if the dose estimate Committed Effective Dose Equivalent (CEDE) exceeded 50 millirem, or 1 percent of the annual limit for Total Effective Dose Equivalent (TEDE). In cases where the CEDE equaled or exceeded 50 millirem, trans-uranic isotopes were included using a 0.5 percent intake for Neptunium-237, the isotope that is the highest dose contributor. If available, the health physics staff would use the airborne isotopic mix to calculate the dose based on the total uranium value, regardless of a dose threshold.

The dosimetry program included two administrative action levels or trigger points where additional bioassay samples were to be collected. These action points were 5 and 40 micrograms per liter of uranium. Bioassay results greater than 40 micrograms per liter required the individual to be placed on work restriction until subsequent urinalysis data showed the level had dropped below 5.0 micrograms per liter of uranium. At 5.0 micrograms per liter the individual was required to submit additional samples until the results fell below 5.0 micrograms per liter. Although the procedure did not require a dose estimate to be performed until the results exceeded 20 micrograms per liter, the site was routinely performing a dose estimate for every result that exceeded 5.0 micrograms per liter. In cases where supplemental samples were collected and the initial sample results had exceeded 40 micrograms per liter, the full series of bioassay sample results were compared to the uranium biological decay curve to determine the most likely date of uptake and then an internal dose and maximum uptake were calculated for the individual.

The inspectors reviewed internal dosimetry data for selected individuals who had shown positive results and determined that the doses were accurately calculated and assigned to the respective individuals. In all cases, the sample results showed that the intakes were less than the toxicity limit for soluble uranium contained in 10 CFR 20.1201(e). All re-samples for bioassays above the trigger levels were conducted as required. In only two cases did the results exceed the 40 microgram per liter trigger level, and in both of those cases the individuals were properly restricted from working in radiological areas until the results dropped to below 5 micrograms per liter.

The inspectors reviewed the Radiation Protection Committee (RPC) minutes for the meetings held during the past 12 months. Meetings were conducted on a quarterly frequency as required by the certificate, and committee membership requirements were also met. During the December, 2000 meeting, the RPC reviewed the "Transuranic Contamination Bounding Value" report for 2000. That report concluded that the continued use of a transuranic contamination bounding value of 0.5 percent was

appropriate and would result in a "best guess" internal dose estimate for the contamination most often detected at PGDP in the absence of specific airborne monitoring results.

During the March 9, 2000, RPC meeting, the RPC established ALARA goals involving urinary uranium concentrations and quarterly TLD doses. The purpose of the goals was to establish two thresholds at which the RPC would take actions to address the adverse trend. For the external quarterly TLD dose, the thresholds were set at greater than 100 millirem but less than 200 millirem for the first threshold, and any TLD greater than 200 millirem as the second threshold. The similar internal goals were any uranium intake equal to or greater than 5 milligrams per week but less than 10 milligrams per week as the first threshold, and any uptake equal to or greater than 10 milligrams per week for the second threshold. The inspectors considered the internal goals to be non-conservative. While the external quarterly TLD dose was set at a factor of 50 lower than the legal limit, the internal goal was set at the legal limit. That is, an individual who exceeded the internal goal would also exceed the NRC's regulatory exposure limit, while an individual would have to exceed the external goal by a factor of 50 to reach the external exposure limit. Certificatee management agreed to look into the internal exposure goal with the intent of lowering it.

c. Conclusions

The inspectors concluded that the certificatee's internal exposure monitoring and control program was being effectively implemented in accordance with site procedures and regulatory requirements. Trans-uranic isotopes were being included in the dosimetry calculations at an appropriate level. No individual at the site had exceeded the uranium toxicity limit for soluble uranium specified in 10 CFR 20.1201(e). RPC meetings were conducted as specified in the TSR. The ALARA threshold goals for investigating adverse trends were set non-conservatively, and certificatee management agreed to look into the values that were being used.

## R4 Staff Knowledge and Performance

### R4.1 Respiratory Protection Program

a. Inspection Scope (83822/88100)

The inspectors discussed the storage, frequency of canister and respirator replacement, and the tracking system for canisters with the plant staff and the individual responsible for the respiratory protection program. In addition, the respirator storage areas in the process buildings for both the emergency and routine use respirators were inspected.

The inspectors reviewed the following procedure, ATR, and regulations:

- CP2-SH-IH1036, "Respiratory Protection Program," Revision 1
- ATRC-01-5466, Inspected C-335 Respirator Storage Cabinet
- ATRC-01-5467, Using Respirator Canister Dated November 1999
- Title 10 CFR 20.1703, Use of individual respiratory protection equipment

- Title 42 CFR 84, Approval of Respiratory Protective Devices
- Title 29 CFR 1910.134, Respiratory Protection.

b. Observations and Findings

The inspectors reviewed the respiratory protection program procedure and verified that there was guidance for changing GMHF-C canisters in sections 6.4.10-14, such that a canister may be used for one 12-hour shift or until exposed to a release of HF/UF<sub>6</sub> detected visually or by instrumentation. The procedure placed the responsibility for changing the canister on the respirator user versus a requirement for tracking the hours of use. The inspectors considered this to be a weakness.

The inspectors also evaluated respirator storage in the process buildings for the routine use respirators and discussed the storage, frequency of canister and respirator replacement with the plant staff. The inspectors found several canisters that had expired with respect to the use within one year from the seal removal date. In discussions with the plant staff, some were not familiar with the meaning of the dates stamped on the canisters. On October 22, 2001, an operator used a canister that had passed its one year seal removal date in November 2000 when collecting an assay sample. An ATR was written on this issue, ATRC-01-5467. The operator had not inspected the respiratory protection equipment in accordance with section 5.5.4 of the respiratory protection procedure.

The corrective actions taken by the plant were to police all areas for expired canisters and dispose of them, hold crew briefings to explain the differences in the dates stamped on the canisters, and to have the operator retrained in respiratory protection. Given the nature of the violation and the immediate corrective actions implemented to correct this minor deficiency, the inspectors determined that this failure constituted a violation of minor significance and is not subject to formal enforcement action.

c. Conclusions

The inspectors identified a weakness in the certificatee's respiratory protection program with respect to user inspection of respiratory protection equipment. Given the nature of the violation and the immediate corrective actions implemented to correct this minor deficiency, the inspectors determined that this failure constituted a violation of minor significance and is not subject to formal enforcement action.

## R8 Miscellaneous Radiation Protection Issues

- R8.1 (Closed) IFI 70-7001/1999-013-06 - Assess/correct the percentage of Transuranic (TRU) or similar activity applied to the internal dose assessment program: As stated above, the certificatee uses a value of 0.5 percent transuramics in calculating the internal dose for individuals who receive an uptake that would result in a CEDE of 50 millirem or greater. Specifically, a 0.5 percent intake for Neptunium-237, the isotope that is the highest dose contributor, is utilized unless airborne isotopic mix data is available, in which case the airborne data would be used to calculate the dose if the individual received an uptake greater than 5 micrograms uranium per liter. This item is closed.

## **S8 Miscellaneous Security Issues**

### **S8.1 Certificatee Security Reports (90712)**

The certificatee identified the following security-related 24-hour loggable report pursuant to 10 CFR 95 during this inspection period and the prior inspection period. The inspectors reviewed any immediate security concerns associated with the reports at the time of the initial notification. The certificatee has each report entered into the corrective action program.

<u>Date</u>	<u>Title</u>
8/27/01	Classified document improperly marked as unclassified.
8/31/01	Classified information sent on unclassified fax machine.
9/06/01	Classified information not properly marked and left unprotected.
9/14/01	Classified information not properly secured and stored.
9/17/01	Classified information marked as unclassified.
9/20/01	Documents found with improper markings.
9/25/01	Classified information not properly marked and left unprotected.
10/17/01	E-Mail distributed with classified information.
10/19/01	Classified information put on un-secure computer system.
10/31/01	Classified information not properly secured and stored.

## **F1 Control of Fire Protection Activities**

### **F1.1 Fire Protection (88055)**

#### **a. Inspection Scope**

The inspectors reviewed the fire preplans to ensure that they provided adequate and reasonable information and precautions to individuals on potential fire loadings, nuclear criticality safety (NCS) concerns, building layout, etc. The inspectors also reviewed the fire services staff training program for adequacy in accordance with the specifications for training described in the Safety Analysis Report (SAR). The inspectors evaluated the emergency equipment for readiness, including the readiness of an offsite fire department relied upon by the site to respond to a fire.

#### **b. Observations and Findings**

The inspectors determined that the fire preplans were in need of updating and did not contain some specific NCS precautions for dealing with a fire involving fissile material. For example, the floor layout drawing for the C-300 facility did not resemble the actual floor layout of rooms and offices in building C-300. The criticality safety guidance was identical in every fire preplan for every building, and it consisted of a one page discussion of NCS issues, with a 16-page attachment describing where fissile material was located at the facility. As such, a firefighter would have to page through the attachment to find the appropriate locations for the building where the fire was being fought, rather than have the specifics for that building located in its fire preplan. Similarly, the NCS guidance contained the phrase "be aware that if UF<sub>6</sub> has been released, contaminated runoff could collect in a low spot that is geometrically unfavorable." In addition, there was no mention of anything other than water in fighting

a fire involving fissile material. The certificatee acknowledged the need to review and enhance the fire preplans to incorporate specific information and layouts that matched what was present in the buildings for which the preplan was developed. The information should be reasonable and specific enough to address special concerns that the firefighters need to know to ensure that a fire would be properly fought without creating a criticality event. The results of the certificatee's review will be tracked as an Inspector Followup Item. (**IFI No. 70-7001/2001-009-03**).

The inspectors reviewed the training program for the fire fighting staff. The Training Development and Administrative Guide (TDAG) for Fire Services (KY/H-216, Revision 5) implemented the training requirements for fire fighters specified in Section 5.4.5 of the Safety Analysis Report (SAR). Although the procedure had not been revised since January 2000, the training needs had been reviewed by the training officer and no changes were deemed necessary to the TDAG. Section 8.3.12 of the TDAG specified the requirements for annual and biennial training. The inspectors obtained the training records for four firefighters and compared the training documented as having been received to the training required by the TDAG. Several examples of training deficiencies were identified as follows:

- Individuals A, B, and C had no record of receiving fire extinguisher training in 2000, nor did individuals A, B, C, or D have a record of receiving fire extinguisher training in 2001.
- There was no record that any of the individuals (A, B, C, or D) received fire alarm and communications training in 2000, hearing conservation training in 2001, fire behavior training in 2000, confined space rescue training in 2000, Safety or ropes and knots training in 2000, fire streams training in 2001, the annual pump test performance evaluation in 2001, HAZMAT training in 2001, or blood borne pathogen training in either 2000 or 2001.

Following the identification of the above deficiencies, the inspectors reviewed the attendance sheets for HAZMAT training conducted in 2001. In all cases, the individuals noted above were found on an attendance sheet, indicating that at least for the HAZMAT training, the problem was one of record keeping and not one of failing to receive required training. However, the inspectors were not assured that training conducted in 2000 and 2001 was properly documented. Certificatee staff generated another training report using the same database to determine if all individuals the inspectors had examined were up-to-date on required training. One individual was found to be past due in pumper operations, and was immediately placed on restriction pending retraining. The inspectors' review of training provided to firefighters during 2000 and 2001, is an unresolved item pending the certificatee's review of training received and comparison with the requirements for training specified in the TDAG (**URI70-7001/2001-009-04**).

The inspectors reviewed the records associated with the fire response equipment based at the fire station. The facility had one pumper truck, two squad cars, a hook and ladder truck, and two ambulances. Routine surveillances were performed on all of the equipment and periodic inventories were conducted to ensure the equipment was always in an operable condition. When identified, deficiencies were promptly corrected. For example, the inspectors observed that one of the ambulances needed a jump start

during the inspection. The alternator was promptly replaced and the ambulance put back in service within a day. At the conclusion of the inspection, all equipment was in working order.

The inspectors discussed the mutual aid program involving a response to the Paducah Gaseous Diffusion Plant (PGDP) with the Training Officer of the Paducah City Fire Department. This mutual aid organization had participated in drills with the site every year. They also participated in the biennial exercise. They had also participated in table top exercises at the site; but had not to date been called in to assist in putting out a fire at the site.

c. Conclusions

The inspectors concluded that the fire preplans lacked some specific information on addressing NCS concerns for each specific building and did not always match the actual layout of the building. The certificatee's record keeping system for firefighter training had not been properly maintained over the past two years. All fire fighting equipment based at the fire station was in working order as of the completion of the inspection.

## F8 Miscellaneous Fire Protection Issues

- F8.1 (Closed) VIO 70-7001/1998-009-02 - Inadequate Procedure for activity affecting quality results in inoperable CAAS during switchyard sprinkler test: The certificatee suspended all flow testing of switchyard fire suppression systems until a revised program was put in place to ensure routine testing did not result in compressor trips that could lower air pressure below the TSR required limit. In addition, new programmatic requirements to guide the review and approval of work control packages were implemented with the issuance of Revision 3 to procedure CP3-CO-CO1029, "Operations Integration with the Work Control Process." The procedure revision required the evaluation of whether a work package would impact other systems or groups be performed prior to approval of the package. This item is closed.
- F8.2 (Closed) CER 34577 - Tarps installed near the ceiling in Buildings C-331 and C-335 would have obstructed the spray pattern of sprinkler heads in affected areas: This event report was subsequently retracted when the plant staff determined that the lube oil had been removed from the cells associated with the tarps. TSR 2.4.4.5 for the high pressure fire water system establishing the LCO noted that the LCO was only applicable when the system was in Modes 1-3, except when the lube oil is valved off or removed from the cells covered by a specific system. Since the lube oil had been removed, there was no LCO requirement, hence no event to report. This item is closed.
- F8.3 (Closed) IFI 70-7001/1998-017-03 - Removal of incorrect high pressure fire water sprinkler system from service: The cause of this event was a failure by engineers to properly walk down the system combined with a design drawing error. As corrective actions, the certificatee staff revised the component identification procedure, CP2-CO-CN1032 to ensure that the high pressure fire water system and sprinklers were included as components requiring pre-job identification and revised the work control process procedure, CP2-GP-GP1032 to ensure that CP2-CO-CN1032 was utilized in the work control process. In addition, crew briefings were held with engineering staff to emphasize management expectations in walking down systems. Finally, the walkdown attributes were revised to include a verification of system configuration and identification as compared to plant drawings. Based on these corrective actions, this item is closed.

- F8.4 (Closed) VIO 70-7001/1999-008-02 - Corroded sprinkler heads in fire suppression system were not reported to PSS for operability determination in a timely manner: The Fire Services Manager issued a memo, which was read by all fire protection staff that conduct building walkdowns, stating that ATRs were to be filed promptly with the PSS whenever deficiencies were identified. In addition, an article was put in the plant wide newspaper, "Inside P," which emphasized the requirement to report system or component deficiencies in a timely manner to the Plant Shift Superintendent (PSS). This item is closed.
- F8.5 (Closed) VIO 70-7001/1999-014-03 - Failure to implement corrective actions to ensure prompt identification and correction of corroded sprinkler heads: This concern was discussed in Section 2 of NRC Inspection Report No. 70-7001/2001-202, dated July 18, 2001. The report documented that "the facility has implemented an effective program to monitor and correct the fire protection sprinkler head corrosion problem. The system is being rigorously maintained in an operable status within the design basis." Based on this information, this item is closed.
- F8.6 (Closed) Event Report 37080 - Building C-333 Sprinkler System A-9 inoperable due to corroded sprinkler heads: This issue was discussed in Section 2 of NRC Inspection Report No. 70-7001/2001-202, dated July 18, 2001. The report documented that "the facility has implemented an effective program to monitor and correct the fire protection sprinkler head corrosion problem. The system is being rigorously maintained in an operable status within the design basis." Based on this information, this item is closed.
- F8.7 (Closed) Event Report 35790 - Corrosion of high-pressure fire water sprinkler system heads. This issue was discussed in Section 2 of NRC Inspection Report No. 70-7001/2001-202, dated July 18, 2001. The report documented that "the facility has implemented an effective program to monitor and correct the fire protection sprinkler head corrosion problem. The system is being rigorously maintained in an operable status within the design basis." Based on this information, this item is closed.

## V. Management Meetings

### **X1 Exit Meeting Summary**

The inspectors presented the routine resident inspection results to members of the facility management on November 14, 2001. The facility staff acknowledged the findings presented and indicated concurrence with the facts, as stated. The inspectors asked the certificate staff whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

## PARTIAL LIST OF PERSONS CONTACTED

### United States Enrichment Corporation

- \* L. Albritton, Nuclear Regulatory Affairs
- \* M. Buckner, Operations Manager
- \* A. Canterbury, Maintenance
- \* S. Cowne, Nuclear Regulatory Affairs
- \* R. Helme, Engineering Director
- \* L. Jackson, Nuclear Regulatory Affairs Manager
- \* P. Jenny, Plant Services Manager
- \* C. Jones, Nuclear Safety and Quality
- \* M. Mack, Operations
- \* D. Page, Operations
- \* S. Penrod, Enrichment Manager
- \* H. Pulley, USEC Staff
- \* D. Schneider, Engineering
- \* V. Shanks, Production Support
- \* K. Stratemeyer, Operations
- \* R. Starkey, General Manager
- \* B. Sykes, Commitment Manager
- \* J. Wittman, Work Control

\* Denotes those present at the exit meeting on November 14, 2001.

## INSPECTION PROCEDURES USED

- IP 81820: Physical Protection Facility Approval and Safeguarding of National Security Information (NSI) and Restricted Data (RD)
- IP 83822: Radiation Protection
- IP 88020: Regional Nuclear Criticality Safety Inspection Program
- IP 88050: Emergency Preparedness
- IP 88055: Fire Protection
- IP 88100: Plant Operations
- IP 88101: Configuration Control
- IP 88102: Surveillance Observations
- IP 88103: Maintenance Observations
- IP 90712: In-office Reviews of Written Reports on Non-routine Events

## ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Opened</u>	<u>Type</u>	<u>Summary</u>
70-7001/2001-009-01	VIO	C-337-A crane travel limit switch.
70-7001/2001-009-02	NCV	Failure to follow surveillance procedure.
70-7001/2001-009-03	IFI	Updating of fire preplans with potential fire loadings, nuclear criticality safety concerns, building layout, etc.
70-7001/2001-009-04	URI	Firefighter training requirements
<u>Closed</u>		
70-7001/2001-009-02	NCV	Failure to follow surveillance procedure.
34577	CER	Tarps installed near the ceiling in Buildings C-331 and C-335 would have obstructed the spray pattern of sprinkler heads in affected areas
35790	CER	Corrosion of high-pressure fire water sprinkler system heads
37080	CER	Building C-333 Sprinkler System A-9 inoperable due to corroded sprinkler heads
37632	CER	During a check of the temperature of the standpipes it was discovered that the standpipe for HPFW system D-2 was frozen.
37625	CER	Building C-331 E and F surge drum room temperature was found to be at 103°F which is in violation of NCSA.CAS-005
38382	CER	Waste Drums Characterized Improperly Due to Incorrect Lab Analysis Results
38427	CER	Independent Verification of Cylinder Acceptability Incorrectly Performed
38428	CER	Fissile Mass Found in 70 Foot Stack When No Nuclear Criticality Safety Approval (NCSA) Exists for this Equipment
70-7001/1998-017-03	IFI	Removal of incorrect high pressure fire water sprinkler system from service
70-7001/1999-013-06	IFI	Assess/correct the percentage of Transuranic (TRU) or similar activity applied to the internal dose assessment program

70-7001/1999-008-02	VIO	Corroded sprinkler heads in fire suppression system were not reported to PSS for operability determination in a timely manner
70-7001/1998-009-02	VIO	Inadequate Procedure for activity affecting quality results in inoperable CAAS during switchyard sprinkler test
70-7001/1999-014-03	VIO	Failure to implement corrective actions to ensure prompt identification and correction of corroded sprinkler heads
70-7001/2001-001-01	VIO	Frozen Standpipe in D-2 due to inadequate weather preparation procedure
70-7001/2001-003-01	VIO	Review of Surge Drum Room Operations

Discussed

None

#### **LIST OF ACRONYMS USED**

ACR	Area Control Room
ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
ATR(s)	Assessment and Tracking Report(s)
CAAS	criticality accident alarm system
CEDE	Committed Effective Dose Equivalent
CER	Certificate Event Report
CFR	Code of Federal Regulations
DNMS	Division of Nuclear Material Safety
DOE	Department of Energy
FLM	Front Line Manager
GDP	Gaseous Diffusion Plant
HAZMAT	Hazardous Materials
HF	Hydrofluoric Acid
LCO	Limiting Condition for Operations
N/A	Not Applicable
NCS	Nuclear Criticality Safety
NCSA	Nuclear Criticality Safety Approval
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
RCW	Recirculating Cooling Water
PGDP	Paducah Gaseous Diffusion Plant
PSS	Plant Shift Superintendent
RPC	Radiation Protection Committee
SAR	Safety Analysis Report

TSR	Technical Safety Requirement
TDAG	Training Development and Administrative Guide
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
UF <sub>6</sub>	Uranium Hexafluoride
USEC	United States Enrichment Corporation