

**INTEGRATED INSPECTION REPORT**

1. LICENSEE OR CERTIFICATE HOLDER/LOCATION INSPECTED: United States Enrichment Corporation 6903 Rockledge Road Bethesda, MD 20817		2. NRC/REGIONAL OFFICE: U.S. Nuclear Regulatory Commission Region II 61 Forsyth Street, Suite 23T85 Atlanta, GA 30303-8931	
REPORT NO: 2008-04			
3. DOCKET NUMBER: 70-7001	4. LICENSE OR CERTIFICATE NUMBER: GDP-1	5. DATE(S) OF INSPECTION: October 1, 2008 – December 31, 2008	

LICENSEE OR CERTIFICATE HOLDER:

The inspection was an examination of the activities conducted under your license or certificate as they relate to safety and/or safeguards and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license or certificate. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

- 1. Based on the inspection findings, no violations were identified.
- 2. Previous violation(s) closed.
- 3. Reported events reviewed
- 4. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, to exercise discretion, were satisfied.  
Non-Cited Violation(s) was/were discussed involving the following requirement(s) and Corrective Action(s):
  
- 5. During this inspection, certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.  
(Violations and Corrective Actions)

LICENSEE OR CERTIFICATE HOLDER STATEMENT OF CORRECTIVE ACTIONS FOR ITEM 5, ABOVE

I hereby state that, within 30 days, the actions described by me to the inspector will be taken to correct the violation(s) identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to the NRC will be required, unless specifically requested.

Title	Printed Name	Signature	Date
LICENSEE/CERTIFICATE HOLDER REPRESENTATIVE			
NRC SENIOR RESIDENT INSPECTOR	Michael O. Miller	J. Pelchat for	January 22, 2009

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GDP-1

5. DATE(S) OF INSPECTION:

October 1, 2008 – December 31, 2008

6. INSPECTOR(S): Paul Startz, Robert Prince, John Pelchat, Michael Miller, and Mark Chitty

7. INSPECTION PROCEDURES USED: 88025, 88030, 88050, 88100, 88101

### EXECUTIVE SUMMARY

#### Summary of Plant Status

The certificate holder performed routine operations throughout the inspection period. Plant load was maintained at high power and assay was adjusted according to the production schedule.

#### Plant Operations (88100)

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

#### Configuration Control (88101)

- Inspectors observed final acceptance testing and implementation of a modification to allow controlled feeding of category 'C' (damaged or overfilled) cylinders. Observations included a review of the engineering records and procedures. Inspectors also observed feeding of the first damaged cylinder using this modification. Inspectors determined that the procedures, modifications, and additional safety systems were adequate for feeding category 'C' cylinders safely.

#### Maintenance and Surveillance of Safety Controls (88025)

- The inspectors accompanied operations personnel that were performing regularly scheduled tests of the process gas leak detection system in building C-333. Testing activities were specified in Procedure CP4-CO-CN6020 and data was recorded on associated check list CP22437. Operations personnel properly coordinated testing activities with control room operators, accurately performed test sequences, and correctly responded when a system failure was encountered. The testing procedure provided adequate instructions for normal testing protocols, adequate responses for several failure modes, and adequate data check lists for documenting the condition of the system.
- The inspectors reviewed documentation of work completed for the quarterly calibration and functional testing of the nuclear criticality alarm system in Building C-400. Calibration and testing activities were specified in Procedure CP4-GP-IM6516 and associated data form CP-22366. The following records were evaluated: alarm system and equipment testing; testing of local cluster horns and building horns; verification of compressed air accumulator pressure to horns; and verification of battery backup to

## EXECUTIVE SUMMARY (Continued)

electronic horns. A review of CAAS form CP-22366 indicated that surveillance and testing activities that ensured the reliability of safety systems was in compliance with operating procedures and regulatory requirements.

- Inspectors performed an on-site review of surveillance testing of autoclaves in Building C-331A. The periodic testing involved pressure decay measurements to ensure the autoclave housing and associated valves were in an acceptable leak-tight condition. The testing was accomplished with Procedure CP4-CO-CN6054 and data results were recorded on form CP-20747. Inspectors reviewed test data from the previous eight tests that were conducted from April to October 2008. Records indicated that the tests were performed in accordance with the procedure and the performance of autoclave equipment was adequately maintained in accordance with operating procedures.
- Inspectors performed an on-site review of a major maintenance project that involved the replacement of a large process compressor in building C337. The onsite work control package included evidence that the activity had been properly developed, reviewed, approved, and implemented. The job site boundary control, worker protective equipment, portable ventilation equipment, and stationing of monitoring personnel were in accordance with the defined job requirements. Post maintenance inspection and leak testing were included in the work package. The maintenance effort was conducted in accordance with the certificate holder's Procedures GP2-CO-CN2030 and GP4-GP-MM4111.

### **Radiation Protection (88030)**

- The inspector observed Health Physics technicians performing routine surveys in contamination control zones of the facility. Health Physics technicians demonstrated adequate contamination survey and air sample filter change out techniques. Breathing zone air monitoring stations were positioned at appropriate locations to obtain representative air samples in normally occupied work areas. The inspector reviewed selected survey results for accuracy and completeness. No issues or concerns were identified.
- The inspector reviewed radiological work activities in the field. Work areas were adequately prepared and prescribed radiological controls appropriate for the radiological conditions associated with work activities. The inspector observed certificate holder personnel utilizing hand-and-foot monitors upon exit from contamination control zones in accordance with radiological program requirements. The inspector noted that workers followed radiological safety requirements of the radiation work permit (RWP) covering the job. Health Physics personnel were knowledgeable of work area radiological conditions. The inspector reviewed selected RWPs for accuracy and completeness. No issues or safety concerns were identified.
- The inspector observed the performance of source response and operational checks of radiation monitoring equipment, and the functional alarm verification procedure for hand-and-foot contamination monitors utilized at exit points from contamination control zones. Certificate holder personnel were knowledgeable of the operational check requirements and activities performed in accordance with approved procedures.
- The inspector reviewed records associated with the calibration of portable survey instruments and hand-and-foot contamination monitors. The inspector reviewed calibration sources for appropriate configuration and to confirm suitability of sources for their intended function. The inspector found that personnel responsible for calibration were knowledgeable of calibration techniques and associated procedural requirements. The inspector reviewed selected calibration records for accuracy and completeness. No issues or concerns were identified.
- The inspector reviewed the certificate holder's bioassay program associated with the evaluation of worker exposure to uranium and adequacy of personnel exposure assessments. The inspector reviewed procedures and documentation associated with bioassay exposure calculations. Certificate holder

## EXECUTIVE SUMMARY (Continued)

personnel described the procedure for preparing urine samples for uranium analysis with the inspector. The inspector reviewed procedural requirements with responsible personnel. Exposure records were reviewed for accuracy and completeness. The inspector interviewed personnel responsible for the review and maintenance of bioassay exposure records and found individuals to be knowledgeable of program requirements.

- The inspector interviewed personnel regarding the as low as reasonably achievable (ALARA) program and the trending and tracking of personnel exposures. The inspector noted that ALARA committee meetings were held on a routine basis. ALARA committee meeting agendas included a review of personnel exposures, a review of radiation safety-related issues, and mechanisms to track committee action items.
- The inspector reviewed the certificate holder's corrective action program pertaining to issues involving radiological safety matters. The threshold for radiological safety-related problem identification was adequate and corrective actions implemented in accordance with the certificate holder's corrective action program.

### **Emergency Preparedness (88050)**

- The certificate holder made no major changes to the emergency preparedness program during the review period. Three minor programmatic changes were made to clarify terminology, adjust the emergency response organization, and to delete the use of an obsolescent weather tracking system. These changes received the appropriate level of review and were communicated to affected personnel.
- The certificate holder made the required changes to its emergency procedures to incorporate the programmatic changes described above. These procedure modifications were developed, reviewed, and promulgated as required to both on and off site emergency response organizations.
- Training provided to on and offsite emergency responders met the requirements described in the certificate's safety analysis report.
- The certificate holder frequently met with the various offsite organizations that provided assistance to the facility in case of an emergency to ensure they were updated on the conditions of the facility and changes as detailed in the emergency plan. A member of the emergency management staff also serves as a deputy director in the county emergency management agency.
- No significant issues were identified with respect to the certificate holder's biennial graded emergency exercise conducted on September 9, 2008. Local, state and federal agencies including the Department of Energy and the NRC participated in the drill and subsequent critiques. Critique issues were documented and appropriately resolved.
- The certificate holder's independent quality assurance organization performed audits of the emergency management program and fire department. The assessments determined that the certificate holder was effectively implementing its emergency management program. Minor issues were documented in the certificate holder's corrective action program and appropriately resolved.
- Equipment relied on for emergency management was inspected, maintained, and tested in accordance with the certificate requirements.

EXECUTIVE SUMMARY (Continued)

**Exit Meeting Summary**

- The inspection scope and results were summarized on Monday, January 12, 2009, with Steve Penrod, and members of his staff. The inspectors asked the certificate holder staff whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

Key Points of Contact

<u>Name</u>	<u>Title</u>
Steve Penrod	General Manager
Jim Lewis	Plant Manager
Jim Wittman	Maintenance Manager
Sherrill Gunn	Operations Manager
Robert Helme	Engineering Manager
Keith Ahern	Production Support
David Clayton	Training Manager
Vernon Shanks	Regulatory Affairs Manager
April Tilford	Emergency Management

List of Items Opened, Closed, Discussed

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
44056 CER	Closed	TWO CYLINDERS IDENTIFIED WITH WEIGHT CHANGE PRIOR TO WASH Two non-fissile cylinders were identified in the ORGDP (Oak Ridge Gaseous Diffusion Plant) strategic reserve category that had a weight change while stored at ORGDP in violation of the NCSE for the C-400 cylinder wash operation. The certificate holder revised their nuclear criticality safety procedures to eliminate the ORGDP strategic reserve group of cylinders from the list of approved cylinders for washing in the C-400 Cylinder Wash facility. The certificate holder completed a crew briefing with the Nuclear Criticality Safety staff on June 17, 2008. The certificate holder also provided required reading to fissile material operation management for the 30-day required reading list. The inspectors had no further questions. This event report is closed. PGDP: ATRC-08-0730 and PAD-2008-06

**EXECUTIVE SUMMARY (Continued)**

List of Items Opened, Closed, Discussed

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
44356 CER	Closed	<p><b>FAILURE OF PGLD SYSTEM</b>                      On July 20 building C-315 received an audible PGLD alarm with no visual indications. Moments later an alarm was received in C-331 for the C-315 PGLD System. C-315 operators found that the READY light for this system was not illuminated and that the system heads would not test fire. Engineering determined that the system would not have been able to perform its intended safety function when this alarm came in.</p> <p>The certificate holder determined that the "RESET" button on the power supply had an "end of life" failure. The entire power supply was replaced and the C-315 High Voltage PGLD system was returned to service on July 22, 2008. No further corrective actions, beyond trending similar failures, are planned. The inspectors had no further questions. This event report is closed.                      PGDP: ATRC-08-2090 and PAD-2008-23</p>
44448 CER	Closed	<p><b>LEAK IN HIGH PRESSURE FIRE WATER (HPFW) SYSTEM</b>                      On August 28 the plant experienced a large leak on HPFW header A-12 in building C-333 due to a piping rupture. A-12 is one of 66 HPFW headers that provide water for fire suppression in this process building.                      PGDP: ATRC-08-2528</p> <p>The certificate holder determined that the 8-inch cast iron pipe supplying water to the affected header failed due to a crack that initiated at a mechanical joint flange four feet below the concrete floor. The affected header was returned to service on October 16 following repairs to the damaged pipe. The C-333 HPFW system was installed in 1958. The certificate holder could not determine the exact failure mode but their analysis indicated the sprinkler line likely failed due to stress induced by the settling of the process building foundation. No further corrective action is planned. The inspectors had no further questions. This event report is closed.</p>
44558 CER	Opened	<p><b>24-HOURS BULLETIN 91-01 REPORT INVOLVING FAILURE TO VISUALLY INSPECT STORAGE CYLINDERS</b></p> <p>USEC procedure GEN-003 requires inspection every four years of all thick wall cylinders that contained fissile material since they were last washed on the inside of the cylinder. While performing an extent of condition, an additional 8 cylinders were discovered which had not been properly inspected. All of the cylinders were determined to be empty except for residual "heeling." Cylinder heels are typically less than 50 pounds with assay less than 5.5% enrichment. The certificate holder inspected the affected cylinders per CP4-CU-CH6430 and all cylinders were found to comply with GEN-003.                      PGDP: ATRC-08-2918 and 2933 and PAD-2008-31</p>

**EXECUTIVE SUMMARY (Continued)**

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
44604 CER	Opened and Closed	<p><b>CONCURRENT NOTIFICATION TO NRC OF PCB SPILL</b></p> <p>On October 27 the "B" capacitor for building C-333 U1/C1 failed releasing PCB contaminated oil into the capacitor cabinet. The plant informed the EPA and the Kentucky Department of Environmental Protection of the PCB spill. The capacitor cabinet is located within the C-333 process building. PGDP: ATRC-08-3077 and PAD-2008-032</p> <p>The certificate holder determined the failure resulted from an internal fault and attributed it to end-of-life. The equipment was repaired and returned to service. No further corrective actions are planned. The inspectors had no further questions. This event report is closed.</p>
44608 CER	Open and Closed	<p><b>PROCESS GAS LEAK DETECTION SYSTEM INOPERABLE</b></p> <p>On October 28 the C-337 U1/C2 UF6 Process Gas Release Detection (PGLD) System alarm actuated. Operators responded and found that the READY and MANUAL lights for this system were not illuminated (indicating a power supply failure). Areas of the cascade covered by this system were operating above atmospheric pressure the time of the alarm. PGDP: ATRC-08-3093 and PAD-2008-033</p> <p>The certificate holder determined that the failure resulted from a burnt resistor and its associated K1 relay, both of which are located on the logic card. The logic card was replaced. The power supply was also replaced when one of the readings taken on its output was found slightly out of tolerance. A review of their database (which only goes back to 2004) showed no previous problems with the logic card for this unit and no similar problems with the logic cards for any of the other PGLD modules plant-wide. This unit's power supply had been replaced in 2/04 (due to a faulty reset button) and again in 3/06. This appears to be an isolated failure type. The inspectors had no further questions. This event report is closed.</p>
44621 CER	Opened and Closed	<p><b>PROCESS GAS LEAK DETECTION SYSTEM NOT FUNCTIONING CORRECTLY</b></p> <p>On November 1 an operator was about to test fire the C-333 unit 5 cell 3 PGLD system as required by the twice-per-shift TSR surveillance when it was discovered that the Ready light was not illuminated. At the time, some areas of the process system covered by this system were operating above atmospheric pressure. This PGLD System was declared inoperable and a continuous smoke watch was put in place within one hour in accordance with the LCO. Engineering determined that the system would not have been able to perform its intended safety function with the Ready light not illuminated. The root cause of this event was determined to be a fabrication error that resulted in the incorrect installation of a resistor in the 200 volt section of the power supply circuit board. The resistor generated heat that was not accounted for in the</p>

**EXECUTIVE SUMMARY (Continued)**

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
		circuit board design. The additional heat eventually led to the power supply failure. The power supply was replaced and retested on November 1, 2008. The engineering specification data sheet, DS-CIE-16289-483, was modified to include additional visual inspections to ensure the 120 volt and 200-volt bleeder resistors are correctly installed. The inspectors had no further questions. This event report is closed. PGDP: ATRC-08-3142 and PAD-2008.034
44664 CER (Retracted)	Open and Closed	This event notification was initiated November 18, 2009 and retracted November 21, 2008. The certificate holder identified corroded sprinkler heads in Building C-337. The event report was made because an empty area had no sprinkler coverage. The certificate-holder tested the corroded sprinkler heads in the lab and found that they would still generate an acceptable spray pattern. Based on that information the event report was retracted. The inspectors had no further questions. This event report is closed.  PGDP: ATRC-08-3282 and PAD-2008-035
44705 CER	Opened	PROCESS GAS LEAK DETECTION SYSTEM Failure  On December 8, 2008, Building C-333 Unit 6 Cell 5 Process Gas Leak Detection (PGLD) System would not test fire during routine testing. With the Unit 6 Cell 5 PGLD system inoperable, none of the required cell heads were operable. This PGLD System was declared inoperable, TSR LCO 2.4.4.1.B.1 was entered and a continuous smoke watch was put in place within one hour. The problem has been corrected and the system returned to service. PGDP: ATRC-08-3434 and PAD-2008-036
44742 CER (Retracted)	Opened and Closed	PROCESS GAS LEAK DETECTION SYSTEM Inoperable PGDP:  On December 27, 2008, C-337 Unit 6 Cell 9 was above atmospheric pressure and the Process Gas Leak Detection (PGLD) System was inoperable. The cell had been running below atmosphere earlier in the day but a new gradient was put in and load movement caused pressure to go above atmosphere. The PGLD System for Unit 6 Cell 9 had been inoperable for an extended period of time due to wiring problems. TSR LCO 2.4.4.1.B.1 was entered and a continuous smoke watch was put in place within one hour of discovery. Subsequent engineering evaluation found that the cell was above atmospheric pressure for 20 minutes during a plant transient. A transient condition is allowed by procedure and the event report was retracted. The inspectors had no further questions. The inspectors had no further questions. This event report is closed. ATRC-08-3624 and PAD-2008-037 12-27-08
44744 CER	Opened	ACTUATION OF PROCESS GAS LEAK DETECTION (PGLD) DUE TO



EXECUTIVE SUMMARY (Continued)

Item Number

Status

Description

MINOR PROCESS GAS LEAK

On December 28, 2008, Building C-337 unit 5 cell 3 Process Gas Leak Detection (PGLD) System head located on stage 8 actuated. Operators responded to the alarm and performed sampling in the area. The sample result indicated 3 ppm of HF at the stage 8 compressor. To stop the release the cell was taken off-stream and the pressure was reduced to below atmosphere. Investigation indicated that a UF6 release had occurred. The amount of material released has not been determined.

The certificate-holder stated that a compressor seal appears to have failed. The amount of material released is characterized as on the order of a few grams. Material release was only in the vicinity of the compressor. There was nothing unusual or not understood and all systems functioned as required. There was no offsite release or personnel contamination resulted from this event.

PGDP: ATRC-08-3628 and PAD-2008-038