



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931**

October 21, 2004

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

SUBJECT: NRC INSPECTION REPORT 07007001/2004-007 AND NOTICE OF VIOLATION - PADUCAH

Dear Mr. Brown:

On September 25, 2004, the NRC completed a routine resident and region-based inspection at the Paducah Gaseous Diffusion Plant. The purpose of the inspection was to determine whether activities authorized by the certificate were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection on September 27, 2004, the NRC inspectors discussed the findings with members of your staff.

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

Based on the results of this inspection, the NRC has determined that a Severity Level IV violation of regulatory requirements occurred. The violation was evaluated in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, which is included on the NRC's web site at <http://www.nrc.gov>. The violation is cited in the enclosed Notice of Violation (Notice), and the circumstances surrounding the violation are described in detail in the subject inspection report. The violation involved a failure to initiate a smoke watch within the time frame of a Technical Safety Requirement when a leak detection system was rendered inoperable.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and to prevent recurrence, and the date when full compliance will be achieved, is already adequately addressed on the docket in this inspection report. Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

In accordance with 10 CFR 2.390 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).

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

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

Docket No. 07007001
 Certificate No. GDP-1

Enclosure:

1. Notice of Violation
2. Inspection Report 07007001/2004-007

cc w/encls:

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

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*See next page for prior concurrence

OFFICE	RII:DFFI	RII:DFFI		
SIGNATURE	/RA/	/RA/	/RA/	/RA/
NAME	O. Lopez	N. Rivera	D. Seymour	D. Hartland
DATE	10/20/04	10/20/04	10/20/04	10/21/04
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO
PUBLIC DOCUMENT	YES NO			

NOTICE OF VIOLATION

United States Enrichment Corporation
Paducah Gaseous Diffusion Plant

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

During an NRC inspection conducted from August 3, through September 25, 2004, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions," NUREG-1600, the violation is listed below:

Technical Safety Requirement (TSR) 2.2.4.1, "UF₆ Release Detection System - Autoclave Heated Housings, Piping Trench, Jet Station, West Wall Detectors (C-337-A Only)," requires that, for autoclaves being operated in Mode 4, "Autoclave Closed" or Mode 5, "Heating/Feeding/Heeling," the uranium hexafluoride (UF₆) release detection system be operable.

Action A of TSR 2.2.4.1 requires that, if the UF₆ release detection system is inoperable, a UF₆ smoke watch be performed on the area affected by the system inoperability within one hour and continuously thereafter until operability is restored.

Contrary to the above, the inspectors determined that at about 2:30 a.m. on August 9, 2004, autoclaves in C-333-A were being operated in Modes 4 or 5 when the UF₆ release detection system was rendered inoperable, and a UF₆ smoke watch was not performed on the area affected by the system inoperability within one hour.

This is a Severity Level IV Violation (Supplement VI).

The NRC has concluded that information regarding the reasons for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance was achieved is already adequately addressed in this inspection report. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 (10 CFR 76.70) if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555 with a copy to the Regional Administrator, Region II, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

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

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. Therefore, to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

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

Dated this 21st day of October, 2004.

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 07007001

Certificate No.: GDP-1

Report No.: 07007001/2004-007

Facility Operator: United States Enrichment Corporation

Facility Name: Paducah Gaseous Diffusion Plant

Location: Paducah, KY

Dates: August 3, through September 25, 2004

Inspectors: Bruce L. Bartlett, Senior Resident Inspector
Mary L. Thomas, Resident Inspector
David J. Hartland, Senior Fuel Facility Inspector
Deborah A. Seymour, Senior Fuel Facility Inspector
Nilda S. Rivera, Fuel Facility Inspector
Omar R. Lopez, Fuel Facility Inspector

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

EXECUTIVE SUMMARY

United States Enrichment Corporation Paducah Gaseous Diffusion Plant NRC Inspection Report 07007001/2004-007

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

Plant Operations

- During routine follow up to a certificatee-identified failure to follow procedure, the inspectors identified a violation of Technical Safety Requirement 2.2.4.1 regarding failure to initiate a smoke watch within one hour after the Process Gas Leak Detection System was rendered inoperable. The certificatee took appropriate corrective action to address the issue. (Paragraph 1.a)
- A routine semi-annual detailed walkdown was performed of a representative sample of the accessible portion of the Building C-360 Criticality Accident Alarm System. The system was determined to be capable of performing its intended safety function and in good material condition, with valves and breakers in their required positions. Some minor periodic testing and configuration control issues were identified. (Paragraph 1.b)
- The postings required by 10 CFR 19.11 regarding notices to workers were current and conspicuously posted. In addition, the certificatee adequately implemented the Technical Safety Requirement for functional portable lights when battery backup for emergency egress in process areas was not functional. (Paragraph 1.c)
- During a routine assessment of a brief loss of power to the C-333A Feed Facility, the inspectors identified a minor violation for the failure to properly tag equipment that was abandoned-in-place. (Paragraph 1.d)
- An operator appropriately questioned a long standing condition in the C-360 elevator pit and determined that an inappropriate container was present. The inspectors noted that a nuclear criticality safety analysis (NCSA) that limited total volume of containers was not applicable to the elevator pit. As corrective action, the certificatee removed the container from the C-360 elevator pit and revised the NCSAs and implementing procedure to clarify the requirements. One minor violation was identified. (Paragraph 1.e)

Maintenance and Surveillance

- Maintenance and surveillance activities were conducted appropriately and in accordance with approved procedures. Acceptance criteria contained in surveillance procedures were adequate and, when required, Assessment and Tracking Reports were initiated. (Paragraph 2.a)

Chemical Safety

- Process safety information was maintained current for the existing plant configuration and was readily accessible to employees. The certificatee's program inventory of hazardous chemicals was adequate to control the chemical hazards. (Paragraph 3.a)
- The inspectors determined that chemical operations were conducted with appropriate operating procedures. The inspectors also determined that operators were appropriately qualified for their positions. (Paragraph 3.b)
- The inspectors determined that the detection and monitoring program was adequately implemented to ensure that important safety significant instrumentation was calibrated. In addition, the inspectors determined that functional tests were performed to ensure operability and reliability of selected equipment. (Paragraph 3.c)
- The inspectors determined that the Nuclear Safety and Quality compliance review of the Process Safety Management and Risk Management Plan was of sufficient depth and appropriately targeted, and findings were resolved in a timely manner. (Paragraph 3.d)

Environmental Protection

- The inspectors determined that the certificatee's environmental program was being implemented in accordance with regulatory commitments. (Paragraph 4.a)

Management Controls

- The inspectors determined adequate management controls were maintained. Safety committees and audits reviewed were being conducted in accordance with certificatee requirements. (Paragraph 5.a)

Facility Support

- The inspectors did not identify any violations of certificate requirements during review of emergency preparedness activities. (Paragraph 6.a)
- The inspectors did not identify any violations of certificate requirements during review of training program activities. (Paragraph 6.b)

Fire Safety

- The High Pressure Fire Water System was maintained in an operable condition to mitigate the potential consequences of a design-based lube oil fire. The fire protection department staff was knowledgeable of the current system status and configuration. (Paragraph 7.a)
- The fire department was staffed and trained in accordance with Safety Analysis Report commitments. (Paragraph 7.b.)
- Preventive maintenance was performed in accordance with plant procedures to ensure availability and reliability of fire protection systems and equipment. There were no

obvious deficiencies in the material condition of fire protection systems and equipment or concerns about the operability of selected equipment examined. (Paragraph 7.c)

- Combustibles were adequately controlled within the process buildings to minimize potential fire severity and fire propagation. Combustibles were also adequately controlled to minimize potential fire exposure hazards to the process buildings and to the storage of uranium hexafluoride cylinders. (Paragraph 7.d)
- The certificatee provided reasonable assurance that equipment required for firefighting was maintained available and reliable for firefighting operations. Pre-fire plans and mutual aid agreements were established and maintained for emergency response and suppression of a major fire at the plant. (Paragraph 7.e)
- The certificatee's annual building appraisal program was adequate. (Paragraph 7.f)

Attachment:

Partial List of Persons Contacted

Inspection Procedures Used

List of Items Opened, Closed, and Discussed

List of Acronyms

REPORT DETAILS

1. Plant Operations

a. Failure to Comply with Technical Safety Requirements (TSR) at C-333A

(1) Scope and Observations (88100)

The inspectors performed routine follow-up to a certificatee-identified failure to follow procedure. The documents reviewed during this follow-up were:

- ATRC-04-3158, Terminal block broken in C-333A Autoclave No. 1 South;
- CP4-CO-AR8333A, "Alarm Response for C-333A," Revision 5;
- TSR 2.2.4.1, "UF₆ Release Detection System - Autoclave Heated Housings, Piping Trench, Jet Station, West Wall Detectors (C-337-A Only);"
- Safety Analysis Report (SAR) 4.3.2.2.4, "Evacuation of UF₆ Handling and Storage Facilities (External Event);"
- SAR 3.2.5.7, "UF₆ Release Detection Systems;"
- SAR 3.15.7.3, "UF₆ Release Detection Systems;" and
- ATRC-04-3158, C-333A TSR Violation Evaluation.

At about 2:30 a.m. on August 9, 2004, maintenance personnel were working on the controls for Autoclave No. 1 South in C-333A that had previously been declared inoperable. During this work activity, a control power fuse inadvertently failed, causing a loss of power to the programmable logic controller (PLC) and the "PLC halt" alarm to be received. Because portions of the Process Gas Leak Detection System (PGLD) for C-333A were controlled by this PLC, the PGLD System for the building was rendered inoperable.

While Autoclave No. 1 South was already inoperable, other autoclaves in C-333A were being operated in Mode Four "Autoclave Closed" or Mode Five, "Heating/Feeding/Heeling." As such, the action statement for TSR 2.2.4.1.A required that a smoke watch be established within one hour of PGLD System inoperability.

Certificatee personnel determined that the C-333A operators did not establish a smoke watch as required by the TSR because they did not remember that the PLC for Autoclave No 1 South impacted the operability of the PGLD System. The operators also failed to reference the applicable alarm response procedure (ARP) for the "PLC halt" alarm because Autoclave No. 1 South was already inoperable, and the operators believed there were no further actions required to be performed. The ARP would have alerted the operators to establish the smoke watch. In addition, the operators did not inform their Front Line Manager or the Plant Shift Superintendent of the PLC failure. The error was identified when the oncoming day shift personnel questioned the lack of a

smoke watch during turnover activities, and the smoke watch was initiated at 6:15 a.m. on August 9, 2004.

Initially, certificatee personnel informed the inspectors that a TSR violation had not occurred. This was based upon their review of the SAR and TSR basis statement and their interpretation that, since the power loss only affected the audible and visual alarms in the C-333 area control room (ACR) and the local area and did not affect the audible or visual alarm in the C-333A local control room, the PGLD System remained capable of performing its intended safety function. Certificatee personnel determined that, since at least one qualified operator remained in the local control room at all times, the TSR action statement was not required to be entered.

The inspectors assessed the certificatee's position and reached a different conclusion. The inspectors' review of the design basis documents determined that, in order for the PGLD System to be capable of performing its intended safety function, all three areas (local control room, area control room, and area around the autoclaves) needed to have audible and visual alarm capability. After further review of the design basis documents and other records, the certificatee indicated that it agreed with the inspectors' conclusion.

Notwithstanding the certificatee's initial conclusion that a TSR violation had not occurred, corrective actions for the operators' failure to follow procedure had been promptly implemented. A smoke watch was established as soon as it was recognized that the PGLD System was affected and remained until the PLC was repaired. Required reading was issued to affected staff describing the issue and the required action to take upon a power failure. In addition, an operator aid was placed on the control and alarm panels in both C-333A and C-337A reminding the operators of the impact that the PLC for Autoclave No. 1 had upon PGLD System operability. The inspectors verified that the corrective actions had been implemented.

The safety significance of the failure to perform the required smoke watch was minimized because the operators fortuitously remained in the local control room which still had an audible and visual alarm from the PGLD System. In addition, there was alarm indication in the C-300 Central Control Facility, although it was not a quality system and was not credited for in the certificate.

Technical Safety Requirement 2.2.4.1, "UF₆ Release Detection System - Autoclave Heated Housings, Piping Trench, Jet Station, West Wall Detectors (C-337-A Only)," required that, for autoclaves being operated in Mode 4, "Autoclave Closed" or Mode 5, "Heating/Feeding/Heeling," the uranium hexafluoride (UF₆) release detection system be operable. Action A of TSR 2.2.4.1 required that, if the UF₆ release detection system was inoperable, a UF₆ smoke watch be performed on the area be affected by the system inoperability within one hour and continuously thereafter until operability was restored.

Contrary to the above, the inspectors determined that at about 2:30 a.m. on August 9, 2004, autoclaves in C-333-A were being operated in Modes 4 or 5 when the UF₆ release detection system was rendered inoperable, and a UF₆ smoke watch was not performed on the area affected by the system inoperability within one hour.
(VIO 07007001/2004-007-01)

(2) Conclusions

During routine follow up to a certificatee-identified failure to follow procedure, the inspectors identified a violation of Technical Safety Requirement 2.2.4.1 regarding failure to initiate a smoke watch within one hour after the PGLD System was rendered inoperable. The certificatee took appropriate corrective action to address the issue.

b. Safety System Walkdown of the C-360 Criticality Accident Alarm System

(1) Scope and Observations (88100 and 88105)

The inspectors performed a routine semi-annual detailed walkdown of a representative sample of the accessible portion of the C-360 Criticality Accident Alarm System (CAAS) to verify its operability. The documents reviewed by the inspectors are listed in Attachment No. 5.

The inspectors determined that, for the portion walked down, the hangers and supports were aligned properly and in good material condition, housekeeping was adequate, and valves in the system were installed correctly. In addition, the inspectors verified that components were appropriately labeled, instrumentation was properly aligned, support systems were operable, and electrical breakers were in their required positions.

The inspectors identified several loose nuts on the support base of the C-360 CAAS air accumulator tank. The certificatee immediately tightened the loose nuts and checked all other CAAS air accumulator tanks for loose nuts. One additional tank was determined to have loose nuts. Due to the weight of the tanks, the length of the studs, and the lack of upward vertical forces, the loose nuts did not impact CAAS operability.

The inspectors identified other minor discrepancies between the various building CAAS accumulator tanks and the drawings. Examples included:

- Some tanks were installed with six hold-down bolts, one with seven hold-down bolts, and the rest with eight hold-down bolts. The inspectors determined that six hold-down bolts was the required minimum; however, the drawings did not reflect the as-built condition of each tank.
- Relief Valve PRV-1 on the C-360 CAAS accumulator tank was shown on one drawing to have a tail pipe length of three inches, but the actual length was six and one quarter inches. The certificatee's review of the as-found condition determined that the additional back pressure created by the longer tail pipe did not significantly affect the set-point of the relief valve.
- The inspectors identified a check valve on the discharge of the non-safety related CAAS air compressors that was not on the certificatee's drawings.

After the inspectors informed the certificatee of the as-built issues, the configuration issues were entered into their corrective action system.

The inspectors also questioned certificatee personnel regarding the apparent lack of preventive maintenance or periodic testing of relief valves on the accumulators and a set of check valves that separated the non-safety related portion of the CAAS system from the safety-related portion. Engineering personnel stated that they had already recognized the lack of testing of the relief valves and were moving forward with plans to add them to the testing program. In addition, engineering personnel determined that, even though there was a low pressure alarm on the CAAS accumulator tank that would alert operators of a check valve failure, the valves on the discharge of the non-safety related air compressors should be included as part of a routine testing program. They also wrote Assessment and Tracking Reports (ATRs) in response to the inspectors' issues.

(2) Conclusions

The inspectors performed a routine semi-annual detailed walkdown of a representative sample of the accessible portion of the Building C-360 Criticality Accident Alarm System. The system was determined to be capable of performing its intended safety function and in good material condition, with valves and breakers in their required positions. Some minor periodic testing and configuration control issues were identified.

c. Notices to Workers and the Worker Protection Technical Safety Requirement

(1) Scope and Observations (88100)

The inspectors performed a routine quarterly inspection to determine if the certificatee had appropriately and conspicuously posted all required notices to workers in accordance with 10 CFR 19.11. The inspectors also toured various process buildings to determine if TSR 3.23g(3) regarding worker protection was being adequately implemented.

The inspectors observed that the postings required by 10 CFR 19.11 were current and in place at all site entrances. For those areas assessed, the inspectors also observed that the certificatee had adequately implemented TSR 3.23g(3) which required personnel be provided with functional portable lights when battery backup for emergency egress in process areas was not functional.

(2) Conclusions

The inspectors determined that the postings required by 10 CFR 19.11 regarding notices to workers were current and conspicuously posted. In addition, the certificatee adequately implemented the TSR for functional portable lights when battery backup for emergency egress in process areas was not functional.

d. Equipment Abandoned-In-Place(1) Scope and Observations (88100)

Following a brief loss of power to the Feed Plant Facility C-333A on August 25, 2004, the inspectors assessed the adequacy of the procedure for equipment abandoned-in-place. During this assessment the inspectors reviewed the following documents:

- ATRC-04-3528, CP4-CO-ON3001c, "C-315 Power Failure;"
- ATRC-04-3498, NRC Inspector Identified a Contradiction in a Procedure;
- CP2-CO-CO1034, "Out-of-Service/Abandoned in Place/Spare Equipment Control," Revision 7;
- CP4-CO-ON3001c, "C-315 Power Failure," Revision 2;
- CP4-CO-ON3001d, "C-331 Power Failure," Revision 3;
- CP4-CO-ON3001e, "C-333 Power Failure," Revision 3;
- CP4-CO-ON3001f, "C-335 Power Failure," Revision 4;
- CP4-CO-ON3001g, "C-337 Power Failure," Revision 3;
- CP4-CO-ON3001k, "C-333A Power Failure," Revision 1;
- CP4-CO-ON3001l, "C-337A Power Failure," Revision 1;
- E5E-15781-87, "Operations Monitor Area Power and Control Plan," Revision 9;
- E5E-15781-92, "Building C-333A, Power Distribution Panel Schedule and Interconnection Diagram," Revision 9;
- E5E-15781-204, "Building C-333A Motor Control Center;" Revision 3;
- E5E-17202-CF, "One Line Wiring Diagram, Auxiliary Power Subs 33A2 and 33A4," Revision 5;
- GA-E-E15002-M, "Tails Recycle C-333-A Power Control Sections and Details," Revision 8;
- GA-E-E15002-K, "Tails Recycle C-333-A Motor Control Center Single Line and Interconnection," Sections and Details, Revision 8;
- I5E-14893-J, "Line Recorder Upgrading Leak Control Panel Schematic," Revision 4; and
- UE2-PS-PS1040, "Procedure Periodic Review Process," Revision 3.

The inspectors noted that there was confusion in Building C-315 regarding the procedurally correct method for abandoning the high speed centrifugal compressors in place. The high speed centrifugal compressors had been abandoned-in-place when the Normetex pumps were made fully operational in the 1980s. The control panel in the ACR had orange "abandoned-in-place" tags for the compressors, and the valve breakers located on the cell floor were in the open position, but the compressors had out-of-service signs attached.

The inspectors noted that the procedure for abandoning equipment in place required that the controls for the compressors and valve breakers have caution tags applied and none had been applied. In response to the inspectors' issues, the certificatee tagged the compressors and associated valve breakers accordingly. The inspectors determined that the failure to place caution tags on equipment that had been abandoned-in-place constituted a violation of minor safety significance, as the equipment had been properly de-energized and isolated, and is not subject to formal enforcement action in accordance with Section IV of the NRC Enforcement Policy.

(2) Conclusions

During a routine assessment of a brief loss of power to the C-333A Feed Facility, the inspectors identified a minor violation for the failure to properly tag equipment that was abandoned-in-place.

e. Unanalyzed C-360 Elevator Pit Container

(1) Scope and Observations (88100)

The inspectors assessed a certificatee-identified nuclear criticality control issue concerning the presence of a container in the C-360 elevator pit. The inspectors reviewed the following documents:

- ATRC-04-3659, Discovered bucket in elevator pit with oil;
- ATRC-04-3894, Inclusion of the scale pit in the scope of NSCE 050;
- NCSA 360-003, "Operation and Maintenance of the C-360 Building Drain System," Revision 1;
- NCSA 360-005, "UF₆ Transfer Operation at C-360," Revision 1;
- NCSE 050, "Nuclear Criticality Safety Evaluation for UF₆ Transfer Operations in C-360 at the Paducah Gaseous Diffusion Plant," Revision 04; and
- CP4-CO-CN2051j, "C-360 UF₆ Transfer," Revision 26.

During performance of the pre-requisites of Procedure CP4-CO-CN2051j, an operator discovered a container in the C-360 elevator pit. The container apparently was in place

to serve as an oil pan in the pit. Step 6.4 of the procedure stated that “if parent cylinder assay is 1.0 wt. % ²³⁵U or greater, ensure no open containers with individual or group volumes exceeding 5.5 gallons in transfer station until receiving cylinder has been removed from transfer station.” The operator questioned whether the container should have been in the pit based upon the procedure limitations and initiated ATRC-04-3659.

The container had been in the elevator pit for a number of years, but had not been specifically analyzed for in a Nuclear Criticality Safety Analysis (NCSA). The inspectors noted that the procedure limitations appeared to be based on requirements in NCSA 360-005, as the scope of this NCSA included the elevator pit as part of the transfer station. Upon further review, the certificatee determined that the NCSA that governed the elevator pit was NCSA 360-003, which allowed containers of a depth of up to 3.5 inches to be in the elevator but did not restrict the total volume of the containers. The container exceeded both the depth and volume restrictions as it measured eight inches deep by eighteen inches long by twelve inches wide.

The certificatee determined that the event was not reportable, as the actual fluid level in the container did not exceed 3.5 inches. As corrective action, the certificatee removed the container from the C-360 elevator pit and revised the NCSAs and implementing procedure to clarify the requirements. The inspectors determined that the presence of the container with a depth exceeding 3.5 inches constituted a violation of minor safety significance, as the actual fluid level in the container did not exceed 3.5 inches, and is not subject to formal enforcement action in accordance with Section IV of the NRC Enforcement Policy.

(2) Conclusions

An operator appropriately questioned a long standing condition in the C-360 elevator pit and determined that an inappropriate container was present. The inspectors noted that an NCSA that limited total volume of containers was not applicable to the elevator pit. As corrective action, the certificatee removed the container from the C-360 elevator pit and revised the NCSAs and implementing procedure to clarify the requirements. One minor violation was identified.

f. Miscellaneous Operations Issues

(1) Bulletin 91-01 Reports (92700)

The certificatee staff made the following report pursuant to Bulletin 91-01 during the inspection period. The inspectors evaluated any immediate nuclear criticality safety (NCS) concerns associated with the report at the time of the initial verbal notification.

<u>Number</u>	<u>Date</u>	<u>Status</u>	<u>Title</u>
41020	09/04/04	Open	C-337 No. 5 Low Speed Purge and Evacuation Recirculating Cooling Water differential pressure instrument line plugged

g. Miscellaneous Open Item Closures (92701)

(Closed) VIO 07007001/2003011-02: Inspectors identified Process Building C-333 Area Control Room was not staffed consistent with the TSR minimum staffing requirements. The inspectors reviewed the certificatee's response and corrective actions and determined that they were adequate to address this violation. This item is closed.

(Closed) VIO 07007001/2003003-01: Inspectors identified an inattentive cascade operator. The inspectors reviewed the certificatee's corrective actions and determined that they were adequate to address this violation. This item is closed.

(Closed) CER 40082: Autoclave No. 3 in Tolls Transfer and Sampling Building C-360 head-to-shell steam leak. This event resulted from damage of the autoclave shell upon closing due to the crushing of the pigtail saddle support leg which was resting on the debris shield.

The certificatee modified the pigtail saddle support leg to no longer require the use of pins and to shorten it such that it could not rest on the debris shield, revised C-360 autoclave loading and heating Procedure CP4-CO-CN2051a to clarify the inspection expectations, and briefed UF₆ handling personnel of the lessons learned from this event. The inspectors reviewed the certificatee's corrective actions to address this event and determined that they were adequate. This item is closed.

(Closed) CER 40423: Failure of the C-360 Autoclave Number 3 High Pressure Isolation System. Steam was observed leaking from the top of C-360 Autoclave Number 3. Previously, the shell had been replaced on this autoclave as a result of damage that occurred. This was the first time an autoclave shell had been replaced. The certificatee attributed the root cause of this event to not loading a full cylinder into the autoclave as part of post maintenance testing. The event occurred when a full cylinder was subsequently loaded into the autoclave which caused the shell to close a quarter inch lower than when closed empty.

The certificatee's corrective actions included re-aligning the autoclave shell, loading and unloading a full cylinder into the autoclave, and opening and closing the autoclave to verify head-to-shell alignment. In addition, a new o-ring was installed, and alignment and high pressure decay tests were performed successfully. Lastly, the certificatee revised engineering document KY/G-90, "PGDP Post Maintenance Testing of TSR Components," to include the loading and unloading of a full cylinder upon autoclave shell replacement.

The inspectors reviewed the certificatee's corrective actions and determined that they were adequate to address this event. This item is closed.

(Closed) CER 40499: Failure of the C-360 Autoclave Number 1 High Pressure Isolation System. The operators observed that a stream of water was leaking from the head-to-shell interface. The certificatee attributed the direct cause of this event to be extrusion of the o-ring onto the head surface of the head-to-shell interface. Further investigation by the certificatee of subsequent C-360 autoclave water leakage occurrences showed that buildup of corrosion material in the o-ring groove caused to o-ring to protrude from

the groove and then extrude on the head surface. Buildup of corrosion material over time was preventing the o-ring from fully expanding into its groove to provide a head-to-shell seal.

Corrective actions taken as a result of the event included removal of all corrosion material from the o-ring groove, installation of a new o-ring, and a crew briefing of C-360 operators to clarify expectations to monitor the o-rings before each heat cycle for signs of extrusion. Subsequent corrective actions included revising maintenance Procedure CP3-GP-GP4109 to include more specific instructions for cleaning the o-ring groove and alignment specifications, and the use of a new type of o-ring that fit the groove better.

The inspectors reviewed the certificatee's corrective actions and determined that they were adequate to address this event. This item is closed.

(Closed) CER 40738: Failure of the Tails Withdrawal Building C-315 High Voltage UF₆ Release Detection System. The certificatee identified the root cause as a failure mode that disabled the PGLD System when the signal conditioner card selector switch was in the "normal" position. The inspectors reviewed the certificatee's corrective actions to address this event. The corrective actions included placing the selector switch in the "override" position and revising the test firing procedures to manually test the PGLD System on a periodic basis. The inspectors determined that the corrective actions were adequate to address this event. This item is closed.

(Update) URI 07007001/2004003-002: Adequacy of the design of two pressure switches being supplied by one pressure tap. The certificatee identified recirculating cooling water instrument sensing lines that were blocked with rust and debris. The blockage was cleared and efforts begun to define the extent of condition. This item remains open pending response to the technical assistance request regarding the adequacy of the design of two pressure switches being supplied by one pressure tap.

(Closed) Certificatee Event Report 40492: High pressure fire water system C-1 in Building C-333 frozen on the system main supply header standpipe. The certificatee revised two procedures to clarify and strengthen cold weather checks of equipment, including the supply header standpipe. The inspectors reviewed the certificatee's corrective actions to address this event and determined that they were adequate. This item is closed.

2. Maintenance and Surveillance

a. Maintenance and Surveillance Activity Reviews

(1) Scope and Observations (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; TSR Limiting Conditions for Operations were entered, when appropriate; removal and restoration of the affected components were properly accomplished; test acceptance criteria were clear and conformed with the TSR and the

SAR; and any deficiencies or out-of-tolerance values identified during the testing were documented, reviewed, and resolved by appropriate management personnel.

- Work Order (WO) 0413056, Surveillance Requirement (SR), Annual and Quarterly C-720 CAAS Surveillances, CAAS Cluster AL; SR 2.6.4.1a-1 Calibrate CAAS System equipment; SR 2.6.4.1b-1, Test the CAAS local cluster horns and building horns; SR 2.6.4.1b-3, Verify the condition of the battery backups to the electronic horns;
- WO 0409025, Surveillance Requirement 2.4.4.11-2, Calibrate C-337 Unit 6 Cell 5 datum and cell deviation according to Procedure CP4-GP-IM6130;
- CP4-GP-IM6130, "OOO Cell Datum and Deviation Calibration," Revision 9;
- WO 0409031, Surveillance Requirement 2.4.4.11-2, Calibrate C-337 Unit 1 Cell 5 datum and cell deviation according to Procedures CP4-GP-IM6130 and CP4-GP-IM4133;
- CP4-GP-IM4133, "Buggy Connection and Disconnection," Revision 10;
- WO 0412073, Replace process seal on C-331, Unit 3, Cell 5, Stage 7B;
- WO 0412074, Troubleshoot and repair C-360 West Crane hoist;
- WO 0412268, Surveillance Requirement 2.3.4.14-1, Test the system quarterly to verify that the scale cart will not move unless the pigtail is at atmospheric pressure and the key interlock energized for C-315 Scale Cart Number 4;
- WO 0413264, Perform post maintenance test for central processing unit on the C-333A Number 1 Process Logic Controller;
- WO 0413478, Troubleshoot and repair temperature instrumentation loop on the C-333A Number 2 South Autoclave;
- WO 0413704, Troubleshoot and repair cell manifold using Generic Work Package 222 on C-333, Unit 1, Cell 5; and
- ATRC-04-3653, NRC Identified: Contamination survey instrument without a current source check.

The inspectors observed that the certificatee staff effectively implemented work control practices and associated radiological controls during the above listed maintenance activities.

(2) Conclusions

Maintenance and surveillance activities were conducted appropriately and in accordance with approved procedures. Acceptance criteria contained in surveillance procedures were adequate and, when required, Assessment and Tracking Reports were initiated.

3. Chemical Safety

a. Process Safety Information

(1) Scope and Observations (88056)

The inspectors interviewed certificatee management and staff regarding process safety information (PSI) and reviewed PSI packages for selected chemicals to ensure that they were maintained current and that employees had access to the information they needed. The inspectors also examined the certificatee's inventory of hazardous chemicals.

The inspectors reviewed the PSI packages for the chlorine tri-fluoride (ClF_3) system, fluorine (F_2) system, water treatment plant and pump houses, and chlorination system (Cl_2). The PSI packages contained safety systems, chemical hazard, process technology, and process equipment information. The inspectors walked down safety systems referenced in the packages, compared portions of the process and instrumentation diagrams (P&IDs) with the installed systems, and found that the P&IDs accurately represented the installed equipment.

The inspectors also interviewed operations staff regarding PSI. Fluorine and ClF_3 operators were knowledgeable of the chemical hazards related to their job, as well as the location and use of material safety data sheets (MSDSs) for chemicals used in their process area. The inspectors noted that the MSDSs located in the fluorine facility were easily accessible.

The inspectors noted that, in the F_2 facility, the certificatee utilized a computerized program for real-time tank level information. The inspectors also noted that the hazardous chemical inventories were below the quantities listed in the Site Emergency Plan, which listed the maximum capacities allowed to be stored on-site. The inspectors determined that the certificatee had information on the quantities, forms, and storage locations of the most hazardous chemicals on site.

(2) Conclusions

Process safety information was maintained current for the existing plant configuration and was readily accessible to employees. The certificatee's program inventory of hazardous chemicals was adequate to control the chemical hazards.

b. Standard Operating Procedures, Site-Wide Safety Procedures, and Chemical Safety Training

(1) Scope and Observations (88058, 88059, and 88061)

The inspectors observed operations throughout the facility and reviewed selected standard operating procedures (SOPs) to verify that appropriate procedures were being used. The inspectors reviewed training documentation to verify that operators were qualified to perform their work.

The inspectors toured the water treatment plant, pump houses, F₂ and ClF₃ facilities, and UF₆ feed, sampling, and withdrawal facilities. During the plant tours, the inspectors noted that postings and procedures were available to the operators. Plant personnel working in chemical areas wore the proper personal protective equipment. The inspectors did not observe any issues where the housekeeping could have affected the radiological safety or emergency egress of the facility.

The inspectors interviewed operators and observed activities in the following facilities: F₂ distribution centers, product/tails withdrawal, and sampling and transfer. The inspectors also reviewed and discussed with operators and supervisors the SOP for handling and storage of ClF₃, F₂, and mixed gas in Building C-350. The inspectors noted that operators were knowledgeable of the operating procedures. The inspectors noted that reviewed procedures adequately identified safety significant controls, job related hazards, process parameters, safety analysis requirements, and steps to mitigate unusual events.

The inspectors reviewed chemical safety training documentation for selected cascade and F₂ facility operators to verify that they were qualified to perform their work. The inspectors noted that the training included safety and health hazards, safety significant controls, hazard communication, and housekeeping. The inspectors determined that operators were appropriately qualified for their positions.

(2) Conclusions

The inspectors determined that chemical operations were conducted with appropriate operating procedures. The inspectors also determined that operators were appropriately qualified for their positions.

c. Detection and Monitoring

(1) Scope and Observations (88060)

The inspectors examined calibration, preventive maintenance, and functional test records from a selection of detection and monitoring equipment. The inspectors also observed maintenance personnel performing a calibration of F₂ detectors.

The inspectors reviewed calibration and/or functional test records for UF₆, F₂, chlorine gas, and ClF₃ detection systems; Cl₂ vacuum regulators; and, the high pressure alarm for Building C-350. The inspectors also observed calibration and functional testing of the F₂ alarm and detection system. The inspectors noted that maintenance personnel had the procedure in-hand and that they were using calibrated equipment. The inspectors determined that calibrations and functional testing of safety controls were current and that the procedures used to perform the tests contained adequate detail.

(2) Conclusions

The inspectors determined that the detection and monitoring program was adequately implemented to ensure that important safety significant instrumentation was calibrated.

In addition, the inspectors determined that functional tests were performed to ensure operability and reliability of selected equipment.

d. Audits and Inspections

(1) Scope and Observations (88066)

The inspectors reviewed the certificatee's audit program to verify that audits were performed, and that audit findings were resolved in a timely manner.

The inspectors reviewed the Nuclear Safety and Quality compliance review of the Process Safety Management and Risk Management Plan, performed in June 2004. The inspectors noted that the audit report was of sufficient depth and appropriately targeted. Observations and findings were appropriately captured in the corrective action program with assigned responsible managers and completion dates. The certificatee kept track of open and closed corrective actions to ensure that they were adequately addressed. There were no concerns noted in this area.

(2) Conclusions

The inspectors determined that the Nuclear Safety and Quality compliance review of the Process Safety Management and Risk Management Plan was of sufficient depth and appropriately targeted, and findings were resolved in a timely manner.

4. Environmental Protection

a. Program/Procedure Changes, Internal Audits and Inspections, Quality Control of Analytical Measurements, Quality Control Records, Monitoring Stations, Monitoring Program Reports

(1) Scope and Observations (88045)

The certificatee's environmental program was reviewed to verify that commitments were met and the impact on the environment and the public was minimal. The inspectors reviewed procedures for the collection of soil, sediment, vegetable, surface water, and environmental air station samples. The inspectors also reviewed the procedures for the chain of custody for the samples. The procedures provided proper guidance for the collection and control of these environmental samples.

The inspectors reviewed the certificatee's analytical reports for the environmental program. Monitoring results for thermoluminescent dosimeters, soil, sediment, and vegetation for calendar year (CY) 2003 were reviewed to assess the radiological impact to the environment due to plant operations. Also, the inspectors reviewed the surface water results for CY 2004 to date. For the samples selected, the inspectors determined that the certificatee's environmental samples were collected at the required frequency and the activity levels were below the action levels with three exceptions. The certificatee performed evaluations for the exceptions, and the inspectors confirmed that the activities were within the regulatory limits.

The inspectors observed the collection of the weekly sample media from the air monitors. Also, the inspectors observed the condition of selected environmental monitoring locations around the perimeter of the facility. No significant problems were noted.

(2) Conclusions

The inspectors determined that the certificatee's environmental program was being implemented in accordance with regulatory commitments.

5. Management Organization And Controls

a. Organizational Structure, Procedure Controls, Internal Review and Audits, Safety Committees

(1) Scope and Observations (88005)

The inspectors verified that no significant changes in the organization had occurred since the previous inspection. The inspectors verified that adequate management controls were maintained. The inspectors reviewed the configuration control and corrective action procedures. Based on interviews and the documents reviewed, no problems were identified. Also, the inspectors reviewed four quarterly internal audit reports that covered the areas of environmental protection, waste management, management systems and controls, engineering systems and controls, and the corrective action program and verified that corrective actions to deficiencies identified were tracked to completion.

The inspectors reviewed selected recent safety committee meeting minutes. The inspectors noted that a quorum was present at the Plant Operations Review Committee (PORC) and that agenda items were discussed prior to approval. The inspectors reviewed documentation to verify that the required safety reviews and approvals were performed. The inspectors noted that the PORC was meeting at the required frequency and that recommendations made by the board were properly documented and addressed.

(2) Conclusions

The inspectors determined adequate management controls were maintained. Safety committees and audits reviewed were being conducted in accordance with certificatee requirements.

6. Facility Support

(a) Emergency Preparedness

(1) Scope and Observations (88050)

The inspectors reviewed emergency preparedness activities to ensure that they were conducted in accordance with certificate requirements. The inspectors toured

emergency facilities and selectively examined emergency equipment and kits specified in the Emergency Plan. The inspectors verified that the equipment was maintained in good condition and was checked and serviced at the required frequencies. The inspectors also verified that written agreements with offsite support agencies were updated and renewed at the required frequency. The inspectors reviewed a sampling of records to ensure training was being provided that was consistent with the frequency and performance objectives outlined in the Emergency Plan.

The inspectors also verified that evacuation drills and communication checks were being conducted at the required frequencies. Although not required by the Emergency Plan, the inspectors noted that the certificatee had not conducted a full-scale emergency exercise involving a criticality accident since the NRC assumed regulatory oversight in 1997. Since such an exercise involved unique challenges to responders, the certificatee intended to evaluate the need to perform one in the future.

The inspectors noted that deficiencies identified during exercise and drill critiques were documented in the Emergency Management Action Tracking System (EMATS) which was separate from the certificatee's ATR System. The inspectors noted that EMATS required deficiencies of safety significance be documented in the ATR System as well. The inspectors reviewed the open items list for the EMATS System and did not identify any significant items that were not also in the ATR System.

(2) Conclusions

The inspectors did not identify any violations of certificate requirements during review of emergency preparedness activities.

b. Training

(1) Scope and Observations (88010)

The inspectors reviewed training program activities to ensure that they were conducted in accordance with regulatory requirements. The inspectors observed portions of Training Module, "TSR Familiarization," and a pilot course for autoclave safety systems for instrument maintenance technicians. In addition, the inspectors reviewed a sampling of training development and administrative guides and training records for uranium hexafluoride and chemical operations personnel including initial, periodic, and on-the-job training. No deficiencies were identified. The inspectors noted that the training department was updating their database to include new training codes which would enhance their ability for ensuring personnel were qualified to perform specific tasks.

(2) Conclusions

The inspectors did not identify any violations of certificate requirements during review of training program activities.

7. Fire Safety

a. High Pressure Fire Water System (HPFWS)

(1) Scope and Observations (88055)

Systems and controls designed and installed to prevent or mitigate the consequences of a lube oil fire were reviewed to determine whether adequate measures were implemented to assure the availability and reliability of the most significant controls (engineered and administrative).

The inspectors accompanied the fire system engineer on a walk down of the high pressure fire water system from its supply source in the cooling tower water basin through the fire suppression water sprinkler systems in the cascade buildings. Significant safety features and functions reviewed included: the cooling tower water basin, fire pumps, portions of the water distribution system, and portions of the wet pipe sprinkler system.

(2) Conclusions

The high pressure fire water system was maintained in an operable condition to mitigate the potential consequences of a design-based lube oil fire. The fire protection department staff was knowledgeable of the current system status and configuration.

b. Fire Department Readiness

(1) Scope and Observations (88055)

Fire department management and personnel were interviewed and records were reviewed to determine the general state of training and readiness. Through the review of records and discussions with the on-shift crew, the inspectors confirmed that the staffing levels specified in the SAR were met and that fire fighter qualifications and training were up-to-date. No concerns were identified.

(2) Conclusions

The fire department was staffed and trained in accordance with Safety Analysis Report commitments.

c. Inspection, Testing, and Maintenance

(1) Scope and Observations (88055)

The inspectors interviewed cognizant personnel and randomly sampled preventative maintenance records for selected fire protection systems for several buildings. The inspectors determined that preventative maintenance was performed in accordance with

plant procedures to ensure availability and reliability of the following fire protection systems or equipment:

- fire pumps
- fire hydrants and control valves
- manual fire alarm pull stations
- automatic sprinkler systems
- fire extinguishers

During walkdown inspections, the inspectors noted no obvious deficiencies in the material condition of fire protection systems and equipment or concerns about the operability of selected equipment examined. The pumps and the elevated storage tank on the HPFWS were available to provide an adequate water supply for fire protection. The inspectors noted that the annual fire water pump tests were performed to demonstrate that they were fully functional. The inspectors noted no obvious deficiencies on the impairment list that could have significantly reduced the level of fire protection for the process buildings.

(2) Conclusions

Preventive maintenance was performed in accordance with plant procedures to ensure availability and reliability of fire protection systems and equipment. There were no obvious deficiencies in the material condition of fire protection systems and equipment or concerns about the operability of selected equipment examined.

d. Control of Combustibles

(1) Scope and Observations (88055)

The inspectors performed walk downs of plant areas to ensure that combustibles were adequately controlled. The inspectors reviewed the certificatee's control of combustibles to minimize the severity and spread of a fire in Buildings C-310, C-315, C-331, C-333, C-333A, C-337A and selected plant areas. The inspectors walked through the process and plant areas and interviewed plant employees.

The inspectors observed that combustibles were adequately controlled. The configuration and quantities of combustible material observed during the inspectors' walkthroughs were at levels that minimized the potential of a severe fire. Procedures were established to describe acceptable combustible loading for process buildings along with implementation requirements. No concerns with the implementation of combustible controls were identified.

The areas surrounding the process buildings were kept free of combustibles and the potential for exterior fire exposure hazards was minimized. The certificatee adequately controlled combustibles in and around various UF₆ cylinder handling and storage locations, and the risk of the UF₆ cylinders being exposed to a significant fire was minimal.

(2) Conclusions

Combustibles were adequately controlled within the process buildings to minimize potential fire severity and fire propagation. Combustibles were also adequately controlled to minimize potential fire exposure hazards to the process buildings and to the storage of UF₆ cylinders.

e. Manual Fire Suppression Response

(1) Scope and Observations (88055)

The inspectors reviewed the availability of firefighting equipment for onsite emergency response and maintenance of updated pre-fire plans. The inspectors also reviewed formal agreements for offsite fire department assistance in the event of a fire. The inspectors interviewed plant employees, reviewed documentation, and examined selected equipment within the scope of the inspection.

The certificatee maintained an emergency squad consisting of operations and safety responders, a fire brigade, and a full-time fire department to provide an initial response to a fire and other emergencies. The inspectors noted that the minimum staffing for fire services was maintained.

The inspectors noted no apparent concerns in the material condition of the fire department apparatus and equipment needed to respond to the plant's design basis fire in a cascade building. Pre-fire plans for process buildings were maintained up-to-date and revised in accordance with schedules established by procedure. The inspectors also noted that mutual aid agreements between the plant and offsite fire departments were established and maintained to ensure offsite assistance in the event of a major fire.

(2) Conclusions

The certificatee provided reasonable assurance that equipment required for firefighting was maintained available and reliable for firefighting operations. Pre-fire plans and mutual aid agreements were established and maintained for emergency response and suppression of a major fire at the plant.

f. Fire Hazard Analysis

(1) Scope and Observations (88055)

The certificatee performed annual building appraisals for the major buildings listed in the SAR. The building appraisals include a building inspection and a fire hazard evaluation. The inspectors reviewed selected portions of the certificatee's building appraisals. The appraisals were performed by qualified individuals, and the reports were of good quality. The appraisals identified recommendations for corrections or improvements. The inspectors verified that the recommendations were entered into the ATR System for tracking and trending. No major safety issues were identified.

(2) Conclusions

The certificatee's annual building appraisal program was adequate.

8. **Exit Meeting Summary**

The inspection scope and results were summarized on September 27, 2004, with General Manager Russ Starkey and members of the facility management. The inspectors asked the certificatee staff whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

1. PARTIAL LIST OF PERSONS CONTACTED

United States Enrichment Corporation

- * R. Starkey, General Manager
- * S. Penrod, Plant Manager
- * S. Cowne, Nuclear Regulatory Affairs Manager
- * K. Ahern, Scheduling
- * M. Boren, Nuclear Regulatory Affairs
- * R. Helme, Engineering Director
- * L. Jackson, Operations Manager
- * P. Jenny, Plant Services Manager/Security Manager
- * M. Keef, Production Support Manager
- * J. Labarraque, Quality Assurance
- * M. Mack, Operations
- * M. McClure, Maintenance
- * K. Stratemeyer, UF₆ Handling Manager

* Denotes those present at the exit meeting on September 27, 2004.

2. INSPECTION PROCEDURES USED

IP 88005	Management Organization and Control
IP 88010	Training
IP 88045	Environmental Protection
IP 88050	Emergency Preparedness
IP 88055	Fire Protection
IP 88056	Process Safety Information
IP 88058	Standard Operating Procedures
IP 88059	Site-Wide Safety Procedures
IP 88060	Detection and Monitoring
IP 88061	Chemical Safety Training
IP 88066	Audit and Inspection
IP 88100	Plant Operations
IP 88101	Configuration Control
IP 88102	Surveillance Observations
IP 88103	Maintenance Observations
IP 88105	Management Organization and Control
IP 92700	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92701	Follow-up

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
07007001/2003011-02	Closed	VIO	Inspectors identified Process Building C-333 Area Control Room was not staffed consistent with the TSR minimum staffing requirements.
07007001/2003003-01	Closed	VIO	Inspectors identified an inattentive cascade operator.
07007001/2004007-01	Open/Closed	VIO	Failure to follow TSR requirement
07007001/2004003-02	Update	URI	Two differential pressure switches on one pressure tap
40082	Closed	CER	Number 3 Autoclave in Tolls Transfer and Sampling Building C-360 head to shell steam leak.
40423	Closed	CER	Failure of the C-360 Autoclave Number 3 High Pressure Isolation System.
40499	Closed	CER	Failure of the C-360 Autoclave Number 1 High Pressure Isolation System.
40738	Closed	CER	Failure of the Tails Withdrawal Building C-315 High Voltage UF ₆ Release Detection System.
41020	Open	CER	C-337 #5 LSPE RCW DP instrument line plugged.
40492	Closed	CER	High pressure fire water system C-1 in Building C-333 frozen on the system main supply header standpipe.

4. LIST OF ACRONYMS USED

ACR	Area Control Room
ADAMS	Agencywide Documents Access and Management System
ARP	Alarm Response Procedure
ATR(s)	Assessment and Tracking Report(s)
CAAS	Criticality Accident Alarm System
CFR	Code of Federal Regulations

Cl ₂	Chlorination System
ClF ₃	Chlorine Tri-fluoride
CY	Calender Year
EMATS	Emergency Management Action Tracking System
F ₂	Fluorine System
GDP	Gaseous Diffusion Plant
HPFWS	High Pressure Fire Water System
MSDSs	Material Safety Data Sheets
NCS	Nuclear Criticality Safety
NCSA	Nuclear Criticality Safety Analysis
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PDR	Public Document Room
PGDP	Paducah Gaseous Diffusion Plant
PGLD	Process Gas Leak Detection System
P & ID	Process and Instrumentation Diagram
PLC	Programmable Logic Controller
PORC	Plant Operations Review Committee
PSI	Process Safety Information
SAR	Safety Analysis Report
SOP	Standard Operating Procedures
TSR	Technical Safety Requirement
UF ₆	Uranium Hexafluoride
USEC	United States Enrichment Corporation
WO	Work Order

5. LIST OF DOCUMENTS REVIEWED FOR C-360 CAAS SYSTEM WALKDOWN

Drawings

- C5E-19766-D01, "CAAS Accumulator Tanks Buildings C-360 and C-410," Revision 0;
- C5E-19766-E01, "CAAS Accumulator Tanks Buildings C-400 and C-409," Revision 0;
- E5A-19766-SK006, "CAAS Accumulator Typical Grounding Details," Revision 0;
- E5E-19766-H01, "Criticality Alarm System C-360 Building Horn Relay Cabinet Connection Diagram," Revision B2;
- E5E-19105-A05, "Criticality Alarm System C-360 Safety System Schematic," Revision 10;
- I5E-19105-A10, "High Assay Upgrade Project, Radiation Alarm System C-360," Revision 8;
- I5E-19766-A01, "CAAS Audibility Upgrade Instrument Panel Fabrication Details," Revision 0;

- I5E-19766-E01, "Criticality Accident Alarm System Equipment Location," Revision 1;
- I5E-19766-E02, "Criticality Accident Alarm System Electronic Building Horn Tabulation," Revision 0;
- I5E-19766-F06, "C-360 Facility CAAS Perimeter Area Audibility Survey," Revision 1;
- M5E-19766-A06, "CAAS-Accumulator Air System Building C-360, Piping System, Piping and Instrumentation Diagram," Revision 3;
- M5E-19766-B06, "CAAS-Accumulator Air System Building C-360, Piping System, Plans and Sections," Revision 1;
- M5E-19766-C06, "CAAS-Accumulator Air System Building C-360, Piping System, Sections and Details," Revision 0;
- M5E-19766-D06, "CAAS-Accumulator Air System Building C-360, Piping System, Sections and Details," Revision 0;
- M5E-19766-E06, "CAAS-Accumulator Air System Building C-360, Piping System, Hanger Details," Revision 0;

Procedures

- CP2-CO-CA2030, "Operation of the Criticality Accident Alarm System (CAAS)," Revision 13;
- CP2-EG-NS1071, "Configuration Management System (CMS) Control," Revision 1;
- CP3-EG-EG1086, "Engineering Conduct of Operations," Revision 2;
- CP4-CO-CP2021, "Operation of the C-360 110-Volt Control Power System," Revision 0;
- CP4-GP-IM6496, "Response Time Testing for Criticality Accident Alarm System," Revision 1;
- CP4-GP-IM6515, "C-360/C-36A CAAS Maintenance and Testing," Revision 10;
- CP4-GP-IM6527, "Use of Portable Air Compressor for Charging CAAS Air Accumulators," Revision 0;
- CP4-SF-SF1104, "Conduct of Quarterly Criticality Accident Alarm System Horn Familiarization Soundings," Revision 1;

ATRs

- ATRC-04-3585, NRC inspector identified CAAS accumulator tanks saddle base plate and mount have gaps;

- ATRC-04-3586, NRC inspector identified loose nuts on CAAS accumulator tanks mounting pad embed plates;
- ATRC-04-3587, NRC inspector identified CAAS accumulator tank relief valve mounting and tailpipe dimensions do not match drawings;
- ATRC-04-3588, NRC inspector identified the number of bolts securing the CAAS accumulator tanks to the embed do not match the drawings;
- ATRC-04-3590, NRC inspector identified valve position discrepancies between drawings;
- ATRC-04-3591, NRC inspector identified CAAS local horn control cluster panel missing clamps;
- ATRC-04-3592, NRC inspector identified CAAS air compressor discharge check valve not shown on drawing;
- ATRC-04-3595, NRC inspector identified C-360 accumulator tank relief valve did not have a periodic test;
- ATRC-04-3596, NRC inspector identified the check valves forming the boundary between the non-safety related and augmented quality (AQ) portions of the C-360 do not have a periodic maintenance or testing program;
- ATRC-04-3622, NRC inspector identified the installed temperature indicator does not match the drawing for CAAS accumulator tanks;
- ATRC-04-3770, NRC inspector identified that the requirement for calibrating the CAAS accumulator tank pressure instrumentation following a criticality or seismic event had not been flowed down into I&C procedures;
- ATRC-04-3771, NRC inspector identified that the requirement for calibrating the CAAS pressure instrumentation using a Fluke Model 8060A Digital Multi-Meter, only when ambient temperatures were between 41 EF and 106 EF had not been flowed down into I&C procedures;
- ATRC-04-1787, Building C-360 CAAS beacon failed to actuate during CAAS surveillance;
- ATRC-04-3010, Building C-360 CAAS beacon failed to actuate during CAAS surveillance;

Miscellaneous

- Regulatory Guide 3.71, "Nuclear Criticality Safety Standards for Fuels and Material Facilities," August 1998;
- Safety Analysis Report Section 3.12.6, "Criticality Accident Alarm System;"

- Technical Safety Requirement 2.1.4.5, "Criticality Accident Alarm System" for C-360;
- ANSI/ANS-8.3, Criticality Accident Alarm System;"
- Calculation SPC-CSE-19352-69, "PGDP Setpoint Analysis Calculation for CAAS Air Pressure Instrument Loop," Revision 1;
- Engineering Notice (EN) C-812-99-014, "Effects of Leakage from the C-400 CAAS Air System Upon System Operation," Revision 0;
- EN-C-812-99-013, "Use of Portable Air Compressor for Charging CAAS Air Accumulators Under the Requirements of NCSA GEN 10-01," Revision 0;
- EN-C-812-99-010, "Evaluation of the Impact of Using CAAS Alarm Horns that Result in System Response Times Greater than 0.5 Seconds," Revision 0;
- EN-C-832-99-037, "Additional Dose Received by Evacuating Personnel Due to a Delay in CAAS Horn Actuation," Revision 0;
- EN-C-822-01-009, "CAAS Air Pressure Regulator Setpoints," Revision 10;
- EN-C-812-99-015, "Setpoint Analysis for CAAS Air Pressure Indication and Low Air Pressure Alarm," Revision 0;
- Engineering Evaluation (EV) C-814-99-010, "Verify CAAS Accumulator Tank ASME Section VIII Code Calculations are Valid," Revision 0;
- Operability Evaluation (OE) PR-PAD-97-0082, "CAAS Time Response Operability Evaluation," Revision 0;
- Work Order (WO) P0106620, Perform Annual and/or Quarterly CAAS Cluster Calibration in C-360;
- WO P0203750, Perform Annual and/or Quarterly CAAS Cluster Calibration in C-360;
- WO P0311945, Perform Annual and/or Quarterly CAAS Cluster Calibration in C-360;
- WO P0403724, Perform Annual and/or Quarterly CAAS Cluster Calibration in C-360;
- WO P0314530, Perform Annual and/or Quarterly CAAS Cluster Calibration in C-360;