May 26, 2000

Mr. J. N. Adkins
Vice President - Production
United States Enrichment Corporation
Two Democracy Center
6903 Rockledge Drive
Bethesda, MD 20817

SUBJECT: NRC INSPECTION REPORT 70-7001/2000003(DNMS)

Dear Mr. Adkins:

On May 3, 2000, the NRC completed a routine resident inspection at your Paducah Gaseous Diffusion Plant. The enclosed report presents the results of this inspection. During the period covered by the inspection report, the conduct of safety-related activities at the Paducah Gaseous Diffusion Plant was generally adequate.

Based upon the information developed during the inspection, the NRC identified three cited violations. The violations involved an improper change to the Safety Analysis Report associated with the intent/non-intent procedure review process; ineffective corrective action for a nuclear criticality safety nonconformance; and inappropriate storage of classified materials at the site. The violations are of concern because they are indicative of a lack of rigor applied in a number of disciplines. The violation for changing the intent/non-intent screening process is of particular concern because it is the primary means available to ensure plant staff perform an appropriately focused, safety-centered, multi-disciplinary review of procedure changes.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Electronic Reading Room (PERR) link at the NRC homepage, namely >http://www.nrc.gov/NRC/ADAMS/index.html.

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

Sincerely,

/RA/

Patrick L. Hiland, Chief
Fuel Cycle Branch

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

Enclosures: 1. Notice of Violation
2. Inspection Report 70-7001/2000003(DNMS)

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

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NOTICE OF VIOLATION

United States Enrichment Corporation
Paducah Gaseous Diffusion Plant

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

During an NRC inspection conducted from March 7 through May 3, 2000, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," Revision 1, the violations are listed below:

1. Title 10 of the Code of Federal Regulations Part 76.68, “Plant Changes,” permits, in part, that the Corporation may make changes to the plant or plant operations, as described in the Safety Analysis Report without prior Commission approval provided: 1) a written safety evaluation is conducted; 2) the change does not decrease the effectiveness of the plant’s safety, safeguards, and security programs, and; 3) the change does not involve a change in any condition of the Certification of Compliance.

   The Certificate of Compliance, Item 9 requires the Corporation to conduct its activities in accordance with the Technical Safety Requirements.

   Technical Safety Requirement 3.9.2 requires, in part, that each proposed procedure change that constitutes an intent change shall be identified to, and reviewed and approved by, the Plant Operations Review Committee.

   Contrary to the above, on June 15, 1999, the Corporation changed Safety Analysis Report Section 6.11.4.4. and removed a requirement to conduct intent/non-intent reviews of all procedure changes: 1) without performing a written safety evaluation of the change; 2) without performing an assessment of the impact on plant safety, safeguards, and security program effectiveness, and; 3) which involved a change to the Certificate of Compliance, by limiting the scope of Technical Safety Requirement 3.9.2 to only those procedure changes that resulted in a Safety Analysis Report change.

   This is a Severity Level IV Violation (Supplement VI). **(VIO 070-07001/2000003-01).**

2. Title 10 of the Code of Federal Regulations, Part 76.93, “Quality Assurance,” requires, in part, that the Corporation establish, maintain, and execute a Quality Assurance Program.

   Section 2.16 of the Quality Assurance Program, “Corrective Action,” requires, in part, that conditions adverse to quality are promptly identified and corrected as soon as practical.

   Contrary to the above, from March 3, 1997 to April 12, 2000, the Corporation failed to promptly identify and correct as soon as practical a condition adverse to quality. Specifically, the Corporation failed to perform a thorough evaluation of nonconforming one-kilogram uranium hexafluoride standard cylinders in use at the Paducah plant and thus failed to identify and correct the cylinders that did not conform with the wall thickness parameter specified in the governing Nuclear Criticality Safety Evaluation 1493-03, “UF6 Standard Storage,” effective October 1, 1996.

   This is a Severity Level IV violation (Supplement VI). **(VIO 70-7001/2000003-04)**.

3. Title 10 of the Code of Federal Regulations, Part 95.25, .27, and .29, “Protection of Classified Information in Storage,” requires, in part, that the Corporation shall establish and implement measures to protect against and identify instances of unauthorized access to classified matter in storage.

   Section 6 of the Paducah Classified Matter Security Plan, required, in part, that the Corporation shall store classified matter in appropriate containers, storage locations, repositories or under operational control and routine patrols.

   Contrary to the above, since March 3, 1997, the Corporation has not ensured that some classified matter was stored in an approved container, storage location, repository, or under operational control and routine patrols sufficient to protect against and identify instances of unauthorized access to the classified matter.

   This is a Severity Level IV violation (Supplement VI). **(VIO 70-7001/2000003-06)**.

Pursuant to the provisions of 10 CFR 76.70, United States Enrichment Corporation is hereby required to submit a written statement or explanation in reply to Violation 70-07001/ 200000003-01 to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, with a copy to the Regional Administrator, Region III, and a copy to the NRC Resident Inspector at Paducah, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). Your reply to Violation 70-07001/20000003-01 should be clearly marked as a "Reply to a Notice of Violation" and should include: (1) the reason for the violation, or, if contested, the basis for disputing the violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an Order or a Demand for Information may be issued as to why the Certificate should not be modified, suspended, or revoked, or why such other action, as may be proper, should not be taken. Where good cause is shown, consideration will be given to extending the response time.

The NRC has concluded that information regarding the reasons for Violations 70-7001/2000003-04 and 70-7001/2000003-06, the corrective actions taken and planned to correct the violations and prevent recurrence, and the date when full compliance will be achieved are already adequately addressed in this Inspection Report. Therefore, a specific response to Violations 70-7001/2000003-04 and 70-7001/2000003-06 is not required. However, you are required to submit a written statement or explanation, pursuant to 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 address identified above within 30 days of the date of this letter transmitting this Notice.

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

Because your response will be placed in the NRC PERR, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PERR without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (for example, explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

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

Dated this 26th day of May 2000

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	70-7001
Certificate No:	GDP-1
Report No:	70-7001/2000003(DNMS)
Licensee:	United States Enrichment Corporation
Facilities:	Paducah Gaseous Diffusion Plant (PGDP)
Locations:	5600 Hobbs Road P.O. Box 1410 Paducah, KY 42001
Dates:	March 7 through May 3, 2000
Inspectors:	K. G. O'Brien, Senior Resident Inspector J. M. Jacobson, Resident Inspector W. G. Snell, Senior Decommissioning Inspector R. G. Gattone, Decommissioning Inspector
Approved By:	Patrick L. Hiland, Chief Fuel Cycle Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

United States Enrichment Corporation
Paducah Gaseous Diffusion Plant
NRC Inspection Report 70-7001/2000003(DNMS)

Plant Operations

- The plant operations staff took appropriate immediate and interim actions to address an event involving the loss of lube oil to the process motors of Building C-335 Unit 3 and developed long-term corrective actions to prevent a loss due to a similar problem in the future. (Section O1.1)

- The inspectors identified a violation, in that, the plant staff deleted from the Safety Analysis Report a Technical Safety Requirement-mandated intent/non-intent assessment of procedure changes in conflict with the requirements of 10 CFR 76.68. As a result, the plant staff also inappropriately made changes to the procedure process which limited the scope of intent/non-intent procedure change assessments to only those procedure changes that also involved a change to the Safety Analysis Report. (Section O1.2)

Maintenance

- The plant staff appropriately responded to and reported a criticality accident alarm cluster which was discovered to have three modules in a fault condition. In a subsequent review, the plant staff identified a non-cited violation for a similar failure in May 1998 which was not reported. The inspectors noted that the regulatory requirements of two functional modules for all areas requiring criticality alarm coverage were not fully understood by a number of plant staff. (Section M1.1)

Engineering

- In responding to questions raised by the inspectors concerning a 1996 nonconformance, the plant staff identified a condition adverse to quality involving one-kilogram uranium hexafluoride standard cylinders that did not meet the geometry specifications in the governing nuclear criticality safety evaluation. The inspectors noted that the plant staff had opportunities to identify the issue when the initial nonconformance had been identified in 1996 and as part of the corrective actions for a 1997 violation. As such, the inspectors considered the resolution of the initial nonconformance a violation of the Quality Assurance Program for ineffective corrective action. (Section E1.1)

Plant Support

- The inspectors identified a weakness in the plant staff's review and approval of a classified storage vault. The plant staff took appropriate compensatory actions to protect classified information in the area. (Section S1.1)

- The plant staff identified a non-cited violation for a failure to properly control information identifying a vulnerability associated with the protection of classified matter. Upon discovery, the plant staff took prompt action to properly protect the classified matter and provided additional training to responsible plant staff concerning the identification and protection of information discussing vulnerabilities in the classified matter protection program at the site. (Section S1.2)

- The inspectors identified a violation in that the plant staff were not storing some classified matter in accordance with the site security plan for classified matter and the regulatory requirements. Subsequently, the plant and corporate security staff developed and initiated appropriate corrective measures necessary to ensure proper storage of the classified matter in a timely manner. (Section S1.3)

Report Details

I. Operations

O1 Conduct of Operations

O1.1 Building C-335 Unit 3 Shutdown

a. Inspection Scope (88100)

The inspectors reviewed an incident involving a loss of lube oil for the motors in Building C-335 Unit 3 which necessitated the shutdown of the unit. The inspectors reviewed the initial incident response, the root cause investigation, and corrective actions for the event which did not result in any release of uranium hexafluoride (UF_6).

b. Observations and Findings

On March 21, the plant staff responded to indications that the lube oil supply to the compressor motors in the cells of Building C-335 Unit 3 had been significantly reduced. The Unit 3 Cell 10 motors tripped because the vibration levels due to the loss of lube oil supply exceeded the setpoint of the vibration monitoring system. The facility operators then took actions to trip the remaining cells of the unit based on the low lube oil pressure alarms in the Area Control Room. The initial and followup event response involved ensuring there were no UF_6 leaks or deposits as a result of wet air in-leakage; reestablishing cascade gas flows based on a new cascade pressure gradient; checking the cascade exhaust stack emissions to ensure radioactive effluents remained within normal parameters; and inspecting compressor bearings and shafts for damage. The actions taken by the operations staff appeared to be appropriate for the circumstances. The inspectors noted that the initial assessment of the extent of wet air in-leakage was hampered by a number of non-functional line recorders in Building C-335. The plant staff had identified this issue some time ago and had developed an action plan to try and improve the reliability of the line recorders in the various cascade buildings.

Following the event, the plant staff performed a detailed investigation to identify the cause of the loss of lube oil supply to the motor bearings. The investigation identified that the cause of the event was a combination of valve manipulations performed prior to and during the weekly lube oil check and a stuck level float in the lube oil supply tank located at the roof of the process building. The lube oil system involved pumping the oil from a storage tank on the ground floor to the unit supply header providing oil to the process motor bearings and to the supply tank (excess oil for emergency supply). As a result of the operator actions and level problem, a continued error in the feedback loop controlling the inventories of lube oil in the supply and storage tanks was introduced and led to a decrease in the amount of oil in the supply tank and supply header and an increase in the amount of oil in the storage tank without a change in the lube oil level indication. The plant staff developed corrective actions to address the cause of the event which included establishing additional checks of the lube oil system level indications after valve manipulations to ensure the level indications are consistent with the expected level changes.

An additional issue identified during the followup investigation was the fact that the vibration levels for Cell 1 exceeded the setpoint, but the cell did not automatically trip. The plant staff performed troubleshooting activities to attempt to identify the cause of the

failure, but were not able to successfully reproduce the failure. When a simulated high vibration signal was introduced into the trip circuit, the circuit relays performed as expected. The plant staff concluded that either the vibration trip relay was slightly loose in its socket or the contacts were slightly corroded. To address this issue, the plant staff instituted an additional preventive maintenance check of the circuit to actuate the trip circuit and ensure the relays functioned as expected with the high vibration input signal.

c. Conclusion

The plant operations staff took appropriate immediate and interim actions to address an event involving the loss of lube oil to the process motors of Building C-335 Unit 3 and developed long-term corrective actions to prevent a loss due to a similar problem in the future.

O1.2 Changes to Plant Operating Procedures

a. Inspection Scope (88100)

The inspectors reviewed the changes made to plant operating procedures as a result of issues associated with the Building C-335 Bottoms Surge Drums and the change process.

b. Observations and Findings

In response to issues discussed in NRC Inspection Report 70-7001/2000001(DNMS), the plant staff initiated a modification to the plant procedures to change the manner in which caution tags may be used. The operations staff changed a controlling operations administrative procedure to remove a previous prohibition of the use of caution tags for normally aligned systems. The inspectors reviewed an evaluation performed to authorize the procedure modification and noted that the evaluation did not appear to have assessed whether the procedure modification was an intent or a non-intent change to the procedure. Technical Safety Requirement (TSR) 3.9.2 required the Plant Operations Review Committee (PORC) to review all intent changes to procedures. The inspectors noted that the procedure change removed a requirement previously added by plant management to address safety issues identified by the Department of Energy. The change process did not include a discussion of how the previous safety concerns would be resolved without reliance on the changed requirement.

The inspectors discussed the apparent failure to perform an intent evaluation of the procedure change with operation, procedures, and regulatory staff. The inspectors were informed that an intent evaluation of the procedure had been completed as a part of the procedure revision form using the plant change review process. The inspectors reviewed the referenced materials and noted that the reviews mentioned by the plant staff were not intent change evaluations. Instead, the referenced materials included a screening and Safety Analysis Report change evaluation process. Specially, the referenced materials required the evaluator to determine if the proposed procedure change was a change to the plant or plant operations as described in the SAR. The referenced materials did not require the evaluator to evaluate whether the change was an intent change. Procedural instructions and training for the referenced evaluation materials required that a procedure change had to result in a change to the Safety Analysis Report (SAR) for the change to be considered an intent change. The inspectors noted that this approach was inconsistent with TSR 3.9.2 which required both SAR and procedural intent changes to be identified,

based upon different criteria, and to be approved by PORC. The plant staff indicated the current procedure change process, which did not include a safety evaluation of procedure changes independent of the SAR, was modified in 1999 following PORC-approved changes to the SAR.

Based upon the changes made to the procedure revision and review process, the inspectors reviewed the SAR Request for Application Change 99C019, "Streamline of Change Process," approved June 15, 1999. The inspectors noted that this SAR change deleted a requirement in SAR Section 6.11.4.4, "[Procedure] Reviews," for an intent/non-intent screening of all new and revised procedures. As a result, the revised section only required new or revised procedures to receive a 10 CFR 76.68, "Safety Analysis Report," change review. The inspectors also determined that evaluations performed to authorize this SAR change had not evaluated the impact of deleting the intent/non-intent screening requirement. In addition, the evaluations did not identify that the SAR change indirectly eliminated a SAR requirement to implement a TSR-required PORC review of intent changes to procedures. Specifically, the revised SAR criteria limited PORC review of procedure changes to only those procedure changes that also required an SAR change. However, TSR 3.9.2 required the PORC to review all procedure changes that constituted an intent change, irrespective of whether the change required an SAR change or not. As a result of the SAR change and the subsequent procedure process changes, the inspectors determined that the plant staff had not explicitly conducted intent change reviews for procedures changed since June 1999. In addition, the inspectors noted, through a small sampling review of changes conducted since June 1999, that documentation of the change reviews was insufficient to determine if the reviews of safety-related procedure changes, an activity affecting quality, had been properly performed.

Title 10 of the Code of Federal Regulations Part 76.68, "Plant Changes," permits, in part, that the Corporation may make changes to the plant or plant operations, as described in the Safety Analysis Report without prior Commission approval provided: 1) a written safety evaluation is conducted; 2) the change does not decrease the effectiveness of the plant's safety, safeguards, and security programs, and; 3) the change does not involve a change in any condition of the Certification of Compliance. The Certificate of Compliance, Item 9 requires the Corporation to conduct its activities in accordance with the Technical Safety Requirements. Technical Safety Requirement 3.9.2 requires, in part, that each proposed procedure change that constitutes an intent change shall be identified to, and reviewed and approved by, the Plant Operations Review Committee. The plant staff's change to Safety Analysis Report Section 6.11.4.4 which removed a requirement to conduct intent/non-intent reviews of all procedure changes: 1) without performing a written safety evaluation of the change; 2) without performing an assessment of the impact on plant safety, safeguards, and security program effectiveness, and; 3) which involved a change to the Certificate of Compliance, by limiting the scope of Technical Safety Requirement 3.9.2 to only those procedure changes that resulted in a Safety Analysis Report change, is **a Violation (VIO 070-07001/2000003-01).**

c. Conclusion

The inspectors identified a violation, in that, the plant staff deleted from the Safety Analysis Report a Technical Safety Requirement-mandated intent/non-intent assessment of procedure changes in conflict with the requirements of 10 CFR 76.68. As a result, the

plant staff also inappropriately made changes to the procedure process which limited the scope of intent/non-intent procedure change assessments to only those procedure changes that also involved a change to the Safety Analysis Report.

O8 Miscellaneous Operations Issues

08.01 Certificatee Event Reports

The certificatee made the following operations-related event reports during the inspection period. The inspectors reviewed any immediate safety concerns indicated at the time of the initial verbal notification. In the case of retracted notifications, the inspectors reviewed the basis for the certificatee's retraction of the notification at the time of the retraction. The inspectors will evaluate the associated written report for each of the events following submittal.

Number	Status	Title
36662	Open	Failure of Criticality Accident Alarm System Air Horn During the Performance of Surveillance Testing
36709	Open	Air Leak on the Building C-310 Cylinder Valve Closure System
36766	Open	Primary Condensate Alarm on the Building C-333A Autoclave 2 South Water Inventory Control System
36793	Open	Primary Condensate Alarm on the Building C-333A Autoclave 2 North Water Inventory Control System
36850	Open	Failure of the Temperature Control System on Cluster "AD" Due to Failure of a Temperature Switch
36880	Open	Trouble Alarm Received on the Building C-337A Criticality Accident Alarm System "N" Cluster With All Three Modules in a "Fault" Condition

08.02 Bulletin 91-01 Reports

The certificatee made the following reports pursuant to Bulletin 91-01 during the inspection period. The inspectors reviewed any immediate nuclear criticality safety (NCS) concerns associated with the report at the time of the initial verbal notification. Any significant issues emerging from these reviews are discussed in separate sections of the report.

Number	Date	Summary
36712	2/21/2000	Material storage areas transferred from Department of Energy to the certificatee contain uncharacterized, potentially fissile material that does not comply with criticality safety program requirements.
36821	3/21/2000	Valves being dispositioned as part of the transfer of material storage areas were incorrectly handled as exempt equipment.
36831	3/24/2000	During chemical cleaning of motor brake pads in the Building C-400 alkali tank, it was discovered that the brake pads were placed in the alkali tank before being verified to meet unconditional release limits.
36885	4/12/2000	Cylinders were discovered in the Building C-710 Isotopic Lab that violated the wall thickness design specification.
36952	5/1/2000	A Building C-360 drain configuration was discovered to deviate from assumptions in Nuclear Criticality Safety Evaluation 3972-11.

O8.3 (CLOSED) CER 70-7001/97002-18: On March 21, 1997, an NCS walkdown of the Building 400 Chemical Operations Facility identified an air capture system and a negative air machine (NAM) which were not covered by an approved NCS Approval (NCSA). Follow up actions to address this issue were tracked by the certificatee under Assessment and Tracking Report (ATR) PR-EN-97-1540, “Air Capture System and NAM for C-400."

The inspectors reviewed the results of the certificatee’s investigation into this finding and the follow up actions that were implemented. The investigation identified several root causes that included a failure of management to implement the existing procedures and controls, as well as deficiencies in those procedures and controls that contributed to the management oversights. Six specific corrective actions were developed which included: 1) Revise NCS Evaluation/NCSA (NCSE/A) GEN-09 to cover the fixed air capture systems in C-400 and C-720; 2) Revise procedures and conduct training necessary to implement

the new NCSA GEN-09 controls based on item #1; 3) Revise "Modification Design Control" procedures to ensure any requirement to develop and implement NCSA's are resolved prior to declaring a system operable; 4) Issue a procedure to provide guidance administering management of projects; 5) Perform a review of Engineering Service Orders (ESOs) completed between October 1, 1996 and December 20, 1996 to identify any modifications that could impact nuclear criticality safety; and 6) After all corrective actions are completed, perform an end-point assessment to determine if the corrective actions were effective.

Action items 4 through 6 have been completed while items 1 and 2 are still open. Because operation of the fixed air capture systems in C-400 (and C-720) was suspended on March 21, 1997, as a result of this issue, and will not be started until NCSA GEN-09 is completed, follow up on items 1 and 2 were downgraded in priority to a condition adverse to quality (CAQ) from a significant CAQ (SCAQ), with scheduled completion dates of August 11, 2000 for item 1 and December 31, 2000 for item 2. Actions to address items 4 through 6 included upgrading the procedure (CP2-EG-EG1046) governing the nuclear modification design process for coordinating modification activities with NCSAs, and providing formal training on the changes. A review of CP2-EG-EG1046, Design Change Process, Rev. 2, determined that it appeared adequate to ensure that when necessary, an NCSE/A would be completed prior to implementing a plant modification.

Based on the fact that items 1 and 2 are being tracked for resolution by the certificatee, and that the primary issue regarding the operation of a system without an NCSA has been addressed, this item is being closed.

O8.4 (CLOSED) VIO 97011-01a, b, & c: Three examples were identified where the certificatee failed to notify the appropriate NRC office of a reportable event within the required time period. The certificatee responded to the violation under cover letter dated January 22, 1998.

The certificatee stated that the reason these events were not reported in the required time periods was that the Plant Shift Superintendents (PSSs), who were responsible for making the reportability determinations, failed to make rigorous reviews of the events which in turn resulted in a failure to identify the need for and to conduct the required notifications. Corrective actions included the implementation of a Long-Term Order (No. 300-97-027 dated October 21, 1997, Accuracy of Initial Assessment of Problem Reports) requiring an oncoming shift to review the previous shift's reportability evaluations of problem reports as a second check of any reportability determinations. In addition, each PSS and Assistant PSS was required to complete an evaluation of five problem reports to determine reportability. The evaluations included the bases for the determinations and were peer reviewed. The completed evaluations were then placed in required reading for the PSSs and Assistant PSSs. The lesson plan used to train PSSs on reporting requirements was also revised to include an exercise portion which included an evaluation of selected problem reports to determine reportability.

The inspectors reviewed and verified that the PSSs had conducted evaluations of five problem reports to determine the reportability requirement for each report. It was also verified that Training Module 509.04.02, NRC Event Reporting, had been revised, with a Section 17, Exercise, and an Appendix A, Index of Example Problem Reports, having been added, and that the PSSs had been trained under this module. The adequacy of these corrective actions was evaluated by determining whether any similar violations related to

NRC event notification had occurred during 1998 and 1999 following the completion of the corrective actions. Two similar events regarding a failure to notify the NRC within the required time period were identified (VIO 70-7001/99007-01 and VIO 70-7001/98003-01), and both of these were determined to have had a different root cause for the failure. Therefore, it is concluded that the actions taken by the certificatee to correct the violation and prevent recurrence were adequate. This item is closed.

O8.5 (CLOSED) IFI 70-7001/97207-01: All employees who were designated to use firefighting equipment were not receiving annual training as specified in OSHA regulation, 29 CFR 1910.157(g).

Following the identification of this item, the certificatee scheduled hands-on training per Training Module C00330 506.01.19, Firewatch Training, for all applicable personnel. The inspectors reviewed the training records from January 1998 and verified that this training had been completed, and that the module had a periodicity of 12 months. Discussions with training personnel determined that this module was still being conducted on a 12 month frequency.

The inspectors had no further questions. This item is closed.

08.4 (CLOSED) IFI 70-7001/97208-09: A double loss of contingency (NCS Level III event) could occur without a follow up root cause investigation, which could result in a failure to correct the underlying cause.

In 1998, Procedure CP2-BM-CI1031, Corrective Action Process at PGDP, was revised and additional guidance was provided in Appendix C to assist personnel in the proper classification of an NCS event for follow up actions. When an event occurs that results in the initiation of an Assessment and Tracking Report (ATR), the ATR is forwarded to a Screening Manager for evaluation, and if it is an NCS issue, is sent to the PSS/APSS to direct any necessary immediate actions, and subsequently provided to the Screening Committee (SC). The SC has the responsibility to determine whether the event should be classified as CAQ or SCAQ based on the criteria in Appendix C of CP2-BM-CI1031. An NSC Level III may or may not be classified as a SCAQ. The criteria calls for an assessment of the event, and a determination of the need for a SCAQ classification based on other current or recent similar investigations and other relevant information. If classified as SCAQ, a determination of the root cause would be made and corrective actions initiated to preclude recurrence. These procedural requirements appear adequate to ensure that a root cause evaluation is conducted when appropriate for NSC Level III events.

The inspectors had no further questions. This item is closed.

O8.6 CER 70-7001/97003-15 (CLOSED): On May 28, 1997, three centrifugal impellers were removed from the C-331 building and transported to the C-720 building. After arrival at C-720, an inspection of the impellers identified a GEN-27 tag inside the plastic wrapping on one of the impellers, indicating the impeller had not been characterized prior to movement.

The inspectors reviewed the certificatee's response to this event by reviewing the following documents: Problem Reports PR-MM-97-2791 and PR-SU-97-1880; NCSA No. GEN-20 versions approved on July 3, 1996 and August 2, 1997; and NCSA No. GEN-27 versions approved on September 16, 1996 and August 2, 1997. Section 3 of GEN-27 stated that, "Prior to moving this equipment from its present location, the equipment shall be inspected

for uranium deposition by performing either two independent Non-Destructive Assay (NDA) inspections, two independent visual inspections (view all cavities), or an NDA inspection and a visual inspection;..." The failure to follow GEN-27 was a violation.

Upon discovering the GEN-27 tag on one of the impellers, the area was roped off, a 200 foot exclusion area was established, and Nuclear Criticality Safety and the Plant Shift Supervisor were contacted. Because the other two impellers had no NCSA tags, personnel questioned whether the impeller had been properly tagged as legacy PGDP equipment. Therefore, they conservatively assumed that the impellers were newly identified K-25/Portsmouth equipment and handled them in accordance with NCSA GEN-20. Although the impellers had not been characterized in accordance with GEN-20, the personnel who moved the impellers indicated they could see that the impellers were clean and could not have contained an unsafe mass. Subsequent inspections of the impellers verified that each contained less than 50 grams of U-235. Per NCSA GEN-20, no spacing was required for equipment containing less than 50 grams of U-235.

The certificatee was unable to provide documentation of a root cause investigation for this specific incident. However, there had been numerous issues regarding legacy material that were already being investigated and corrective actions underway. As a result, this event was added to the list of other related issues already being tracked, with the assumption that it was sufficiently related, and that corrective actions already under way would be adequate to ensure a similar event would not occur again. The corrective actions taken, which included revisions of several procedures, appear to have been adequate in that a similar event has not occurred in the several years since this incident. Because this was a non-repetitive, certificatee-identified and corrected violation, it is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy **(NCV 2000003-002)**.

The inspectors had no further questions. This item is closed.

O8.7 (CLOSED) VIO 97003-10: Contrary to TSR 2.2.4.4 and 2.2.4.12, the certificatee failed to weigh all UF_6-filled cylinders using the Building C-333A or C-337A scales prior to heating in the Building C-333A or C-337A autoclaves.

The certificatee determined that the violation occurred because Step 5.4 of Procedure CP4-CO-CN2045a, "Operation of the C-333A and C-337A Vaporizer Facilities," conflicted with the aforementioned TSRs. Procedure CP4-CO-CN2045a allowed cylinders to be heated without being weighed in Buildings C-333A or C-337A as long as a previous weighing had been conducted in Building C-360.

The inspectors verified that TSRs 2.2.4.12 and 2.2.4.21 were revised on May 21, 1997 to allow cylinders to be weighed with calibrated scales in C-333A, C-337A, or C-360 prior to heating.

The inspectors verified that Step 5.4 of Procedure CP4-CO-CN2045a, "Operation of the C-333A and C-337A Vaporizer Facilities," was revised on May 21, 1997 to require that all cylinders that have not been weighed at C-360 must be weighed at C-333A or C-337A before heating.

Based on an interview with the C-360 Facility Manager, about 95% of the cylinders were received and weighed in Building C-360. Operations staff referred to a Nuclear Materials Control and Accountability (NMC&A) form that included the cylinder weight measured by the C-360 scale upon receipt. If Operations staff did not see the weight on the form, then they weighed the cylinder with the C-333A or C-337A scale before heating. Additionally, Procedure CM 6023 required Operations staff to perform an inspection of each cylinder which included verification that measured weights were below the limits prior to heating.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective actions were appropriate and properly implemented. This item is closed.

O8.8 (CLOSED) VIO 97004-01: Contrary to TSR 3.4 and Procedure CP3-CO-CO1003, Building C-310 operators had not been trained on the design and normal and off-normal operation of a NaF production oven that was used.

The violation occurred because the Facility Owner in Building C-310 failed to follow the Modification Design Control Procedure UE-2-TO-EG1031 for training and procedural requirements as a result of not recognizing that oven operation required qualified operators. Failure to recognize that oven operation required qualified operators occurred because managers had allowed non-operators (e.g., engineers) to test and operate equipment after it had been accepted by Operations.

The inspectors reviewed:

- a work request form dated August 7,1997 documenting that the oven was disconnected from the sodium fluoride (NaF) trap jet;
- an SCAQ report that stated that a long term order was issued to restrict oven operation;
- a memo dated September 8, 1997 from Operations clarifying the responsibilities associated with authorizing operability of any modifications;
- Action Response Status Form dated October 17, 1997, and associated attendance records confirming that crew briefings were conducted for Operations Managers in Cascade, UF_6 Handling, Chemical Engineering, and Design Engineering to communicate the expectations for the operation of equipment by “qualified” operators as defined by Procedure CP3-CO-C01003;
- the NaF oven alarm response procedure CP4-CO-AR8310 which covered response to Hi-N_2, Lo-N_2, and Lo-Jet Supply conditions; and
- Procedure CP4-TS-DT4108 which included specific actions that Operations staff need to take regarding oven operations.

The inspectors determined that: (1) Operations and Engineering management were not aware of any similar issues that existed where engineers and other staff (not qualified operators) operated equipment; (2) Operations staff now use the NaF oven alarm response procedure CP4-CO-AR8310 to handle off-normal oven situations; (3) the oven is now disconnected from the cascade; and (4) Technical Services now follows Procedure CP4-TS-DT4108 during oven use.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective actions were appropriate and properly implemented. This item is closed.

O8.9 (CLOSED) VIO 97007-02: Contrary to 10 CFR 76.93, Section 3.15 of the SAR, and Section 2.6.1 of the QAP, the certificatee failed to control preparation, issuance, and revision of the tare weight listings used for filling "Q" cylinders in the withdrawal area.

The violation was caused by personnel that were unfamiliar with the requirements for recognizing that the Tare Weight Books were a controlled document as described in the Document Control (DC) procedure UE2-TO-RM1031, "Document Control Program."

The inspectors reviewed Procedure CP4-SS-NM111 effective July 14, 1997, which included a revised Section 6.2.2 requiring future revisions of the Tare Weight Book to be submitted to DC.

During an interview, the Manager of NMC&A stated that the Tare Weight Book was made a controlled document on August 29, 1997. The Manager of NMC&A also stated that NMC&A reviewed other reports generated by other departments to determine if others needed to be included in the DC program, and none were found.

The inspectors reviewed a memo dated October 22, 1997 titled, "Lessons Learned from NOV Concerning Controlled Documents," and it provided guidance on the recognition of documents which should be submitted for control through the DC system.

The inspectors reviewed attendance records generated in late 1997 documenting that Document Control Program training was provided for Group Managers.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

O8.10 (CLOSED) VIO 97008-01: Contrary to TSR 3.9.1, Section 6.11 of the SAR, and Procedure CP2-PS-PS1038, "Use of Procedures at PGDP," the certificatee failed to document the reason for, and the special entry and exits points of, procedures used to restart the purge cascade.

The certificatee determined that the training on the requirements of Procedure CP2-PS-PS1038 was inadequate regarding the documentation requirements for the use of a partial procedure, and this resulted in the violation. The certificatee also determined that the lack of a procedure for recovery from a loss of high speed cells was a contributing cause of the violation.

The inspectors reviewed records documenting that crew briefings were completed that included discussions about the violation and the requirements of Procedure CP2-PS-PS1038, "Use of Procedures at PGDP."

The inspectors reviewed selected attendance records documenting that crew briefings for managers in Engineering, Site and Facilities Support, Maintenance, Production Support, and Operations were conducted to discuss the violation and Procedure CP2-PS-PS1038.

The certificatee revised appropriate Training Development Administrative Guidelines (TDAGs) to include training on Procedure CP2-PS-PS1038. The inspectors reviewed TDAGs generated in February and March 1998 for Cascade Operations, Chemical Operations, and Power Operations, and they included training on Procedure CP2-PS-PS1038.

The inspectors reviewed the Procedure Development/Revision Form documenting that Procedure CP4-CO-ON3044, "Recovery From a Loss of All High Speed Cells" was developed and approved on May 15, 1998.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

O8.11 (CLOSED) VIO 97008-02: Contrary to TSR 3.9.1 and Section 6.11 of the SAR, the certificatee failed to use approved procedures to direct the manager's response to the motor fire in Building C-310 and to maintain current written procedures for operations, including system startup, shutdown, normal operations, and abnormal operations.

The certificatee determined that the violation was caused by failure to follow the required procedural/administrative controls for updating procedures and a lack of enforcement of accountability for properly updating controlled procedure manuals.

The Cascade Standard Operation Procedure Manuals were reviewed and corrected by Cascade Operations personnel. The inspectors reviewed documentation that Cascade Standard Operation Procedure Manuals were reviewed. A memo from Charlotte Powell to Howard Pulley dated October 6, 1997, confirmed that all Operations groups completed the Procedure Walkdown/Verification Packages and filed Problem Reports (PRs) on any discrepancies that were identified.

The Enrichment Plant Manager directed that a plant-wide review of all controlled procedure manuals be conducted to determine if other manuals exhibited similar discrepancies. The inspectors reviewed memos generated in October 1997 from managers in Power Operations, Maintenance, Production Support, Work Control, Engineering, Administrative Support, Records Management, Site and Facilities Support, Environmental Health and Safety, Materials Management, Business Management, Safety Safeguards and Quality, and Nuclear Regulatory Affairs to Howard Pulley stating that they had completed review of all applicable procedures and procedure manuals, and deficiencies will be corrected.

The inspectors reviewed an Action Response Form dated April 15, 1998, stating that Procedure UE4-TO-RM1101, "Document Process Procedure" was revised to include the self-assessment process in accordance with Procedure CP2-QA-QS1031, "Conduct of Internal Surveillances." Item 6.11.2 of Rev. 1 of Procedure UE4-TO-RM1101 dated April 15, 1998, stated, "Negative findings shall be reported to management through the problem reporting system."

A revision was made to the "Employee Discipline Handbook" which made errors in maintenance of controlled documents an offense subject to escalated disciplinary action. The inspectors noted that page 40 of the Employee Discipline Handbook dated April 1998 stated that errors in maintaining business records, controlled documents, or other regulatory procedure reporting noncompliance is an offense subject to serious actions.

The inspectors reviewed an Action Response Status Form dated June 30, 1998, which stated that Paducah Gaseous Diffusion Plant implemented an Intranet application to put electronic versions of procedures on-line.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

O8.12 (CLOSED) VIO 97008-04: Contrary to TSR 3.9.1, Sections 6.11.4.1 and 6.8.2.4 of the SAR, and Procedure UE2-HR-CI1030, "Problem Reporting," the certificatee failed to file PRs for applicable deficiencies and alarms in a timely manner.

The certificatee determined that the violation resulted because some staff were unaware of the specific time requirements associated with PRs and procedural guidance regarding conditions that warrant a PR.

The certificatee ran a series of articles in the plant newspaper (i.e., "Inside P") to discuss PR timeliness and applicability of situations which would dictate when PRs should be written. The inspectors reviewed selected articles printed in Inside P in late 1997 which provided information about PR timeliness and applicability of situations which would dictate when PRs should be written.

A plant-wide bulletin was issued discussing the lack of awareness about requirements for writing PRs. The inspectors reviewed the Employee Bulletin dated October 3, 1997, which discussed the lack of awareness about requirements for writing PRs.

The inspectors reviewed documentation that Procedure UE2-HR-CI1030 was put on hold on March 23, 1998. Procedure UE2-HR-CI1030 was superceded by Procedure CP2-BM-CI1031, "Corrective Action Process at PGDP" on February 26, 1998. The inspectors noted that Procedure CP2-BM-CI1031 stated that the PR initiator must promptly give the ATR to a screening manager to determine if the ATR needs to be sent to the Plant Shift Superintendent/Assistant Plant Shift Superintendent or forwarded to Commitment Management before the end of the shift.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

O8.13 (CLOSED) VIO 97011-07: Contrary to TSR 3.11.2, the certificatee operated the Building C-335 Freon and UF_6 system holding drums in a standby mode, while containing Freon and UF_6 enriched to greater than one weight percent in uranium-235, without a documented criticality safety evaluation or approval from March 3, 1997 to November 19, 1997.

The certificatee determined that the violation occurred because: (1) the Request for Criticality Safety Evaluation (RCSE) was inadequate and there was no requirement to have the system owner review the NCSE or perform a "Dry Run" of the operation prior to implementation; and (2) staff failed to recognize the existence of an "As Found Condition" and take effective actions to address the discrepancy.

Procedure CP4-EG-NS1101, "Evaluation of Requests for Criticality Safety Approval" was revised to provide more explicit expectations for acceptance of the RCSE by NCS staff as well as require the owner organization to review the NCSE Process Description and the Hazard Identification Evaluation section and perform a "Dry Run" of the operation prior to implementation of the NCSE/A. The inspectors reviewed CP4-EG-NS1101, Rev.1, effective August 13, 1997, and noted that it: (1) contained expectations for acceptance of RCSEs for NCS evaluations; (2) required a dry run of the operation by the affected organization; and (3) required the owner organization to review the NCSE Process Description and the Hazard Identification Evaluation section.

System Engineering Standing Order 97-SE-003 provided interim guidance to the Shift Engineer, who reviewed all PRs, on the review scope and timeliness criteria associated with PR reviews for 10 CFR 76.68 issues. The inspectors reviewed Standing Order No. 97-SE-003 dated October 10, 1997, which stated its purpose to provide consistent screening of PRs to identify the need for 10 CFR 76.68 reviews, provide general timeliness guidelines for processing of 10 CFR 76.68 reviews, and provide guidance for non-compliance reports. The inspectors noted that Section 2 of the Standing Order provided guidance for reviewing PRs to determine if 10 CFR 76.68 evaluations are needed. Section 3 of the Standing Order was to establish timeliness requirements for completion of 10 CFR 76.68 reviews. Section 4 of the Standing Order provided guidance for reporting of non-conforming items until upgrades of the non-conforming reporting requirements are completed.

The inspectors reviewed Cascade Operations Long Term Order No. 97-012, Rev. 0 which implemented minimum temperature requirements for the holding drums to maintain any UF_6 in the gaseous state.

The inspectors reviewed selected attendance records of NCS Crew Briefings in February 1998 which discussed the violation and how inadequate evaluations prevented identification of a system without an appropriate NCSA.

The inspectors reviewed an Action Response Status Form dated March 31, 1998, which documented that a 100 percent review of all Maintenance Engineering related NCSEs was conducted. The Process Description and Hazards Identification/Analysis sections of the NCSEs were reviewed with reference to actual field operations. Discrepancies were identified via PRs and ATRs where appropriate.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

O8.14 (CLOSED) VIO 97014-02: Contrary to TSR 3.11.2 and NCSA GEN-15, the certificatee stored a laundry cart and vacuum cleaner exceeding the 5.5 gallon capacity limit in fissile control areas (FCAs) without prior approval of the NCS staff.

The certificatee determined that the violation resulted from inadequate lesson plans. The training material did not address what could constitute a portable container which might be capable of having a capacity greater than 5.5 gallons, nor did it alert workers that bringing those items into FCAs could violate the NCSA.

The inspectors reviewed a Business Prioritization System Report Response Sheet that stated the laundry cart was removed from the FCA on November 25, 1997.

The inspectors reviewed a memo dated March 5, 1998, that stated the vacuum cleaner was removed from the FCA.

Applicable staff were instructed about proper container sizes that are permitted in all plant FCAs. The inspectors reviewed a memo dated March 3, 1998, that stated the staff in Building C-400 were briefed on proper container sizes that are permitted in all plant FCAs. The inspectors reviewed a memo dated March 5, 1998, that stated the staff in Building C-720 were briefed on proper container sizes that are permitted in all plant FCAs.

Crew briefings were given to appropriate personnel. The inspectors reviewed a Crew Briefing Package titled, "Crew Briefing on Volume Limits in Fissile Control Areas." The documentation indicated that the crew briefing was provided to Operations, Maintenance, and Production Support personnel on April 8, 1998.

The inspectors reviewed an Action Response Status Form dated April 30, 1998, that stated the aforementioned crew briefing material was incorporated into the existing NCS refresher training modules.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Criticality Accident Alarm System Cluster Fault

a. Inspection Scope (88102)

The inspectors reviewed the circumstances surrounding a reported inoperable criticality accident alarm system (CAAS) for the Building C-337 "N" CAAS Cluster (Event Report 36880).

b. Observations and Findings

On April 10, the plant staff reported that all three modules (detectors) of Cluster "N" of Building C-337 were in a fault condition. Plant maintenance staff discovered the condition during troubleshooting activities initiated after a trouble alarm was received in the Building C-300 Plant Control Facility. At the time of discovery, the cluster was the only cluster providing CAAS coverage for a portion of the process piping running between Buildings C-337 and C-360 and, as such, was required to be operable by TSR 2.2.4.3. The maintenance staff were able to reset the cluster within approximately seven minutes of the trouble alarm and returned it to service in accordance with applicable procedures. The plant staff subsequently provided a 24-hour event notification to the NRC pursuant to 10 CFR 76.120(c)(2).

The plant staff subsequently replaced the cluster with another cluster in order to troubleshoot the cause of the fault in the instrument maintenance shop. As of the end of the inspection period, the plant maintenance staff had not been able to exactly reproduce the fault condition, although the particular cluster involved appeared to be more sensitive to radiofrequency disturbances than other clusters.

In a subsequent review, the plant staff identified that on six other occasions, a cluster with three modules in fault had been discovered. On one of these occasions, May 23, 1998, the monitored area did not have redundant coverage by another CAAS cluster or clusters and, as a result, the event was reportable. However, the event was not reported at the time due to an oversight by plant staff. The event was reported to the NRC upon discovery on April 27 (Event Report 36934). In discussing the issue with the inspectors, certain of the plant staff indicated that only one functioning detector per cluster was required for operability of the cluster. The inspectors noted that this was an incomplete understanding of the system design requirements since 10 CFR 76.89(b) required that coverage of all monitored areas must be provided by two detectors. As such, any cluster providing the sole coverage for a monitored area (containing more than 15 grams of fissile materials) was required to have two functioning detectors in order to be operable. The plant staff acknowledged that there had been a misunderstanding of the requirements of 10 CFR 76.89 and how those requirements fit in with the CAAS TSR requirements. The plant staff performed a review of the ATRs for the previous three years, but did not identify any occasions on which two modules for the same cluster were in a fault condition. The plant staff also developed an ATR to identify that the SAR discussion did not fully address the impact of having two modules in one cluster in a fault condition.

The regulations in 10 CFR 76.120(c)(2) require the certificatee to notify the NRC within 24 hours of any event in which equipment required by TSR to be available and operable is disabled or fails to function as designed. Due to the certificatee's immediate and long-term corrective actions, the failure to notify the NRC of the inoperable CAAS cluster discovered on May 23, 1998, is a non-repetitive, certificatee-identified, and corrected violation and is being treated as a **Non-Cited Violation (NCV 70-7001/2000003-03)**, consistent with Section VII.B.1 of the NRC Enforcement Policy.

c. Conclusion

The plant staff appropriately responded to and reported a criticality accident alarm cluster which was discovered to have three modules in a fault condition. In a subsequent review, the plant staff identified a non-cited violation for a similar failure in May 1998 which was not reported. The inspectors noted that the regulatory requirements of two functional modules for all areas requiring criticality alarm coverage were not fully understood by a number of plant staff.

M8 Miscellaneous Maintenance Issues

M8.1 (CLOSED) VIO 97003-11: Contrary to Section 2.5, "Procedures," of the Quality Assurance Program, the certificatee used an inadequate procedure to perform post maintenance testing for certain criticality accident alarm systems (CAAS). Procedure CP4-GP-IM6209 did not include sufficient acceptance criteria to ensure that all of the slave horns associated with Buildings C-333, C-333A, C-337, and C-337A CAAS clusters sounded following an actuation signal.

The violation was caused by: (1) instrument and electrical drawings that contained no information regarding the slaved relationship of the CAAS horns; (2) failure to do a thorough review of the instrument and electrical drawings, including field verification; (3) inadequate review and validation of Procedure CP4-GP-IM6209 and resulting failure to identify that it did not include the information missing from the instrument and electrical drawings; and (4) inadequate CAAS training resulting in failure to note discrepancies between the procedurally expected results and the actual field CAAS horn response.

The inspectors reviewed:

- an ATR Closure Package that stated that TSR surveillances were performed on C-333A's "AA" and "AB" clusters and C-337's "V" and "X" clusters;

- a revised copy of Procedure CP4-GP-IM6209, "CAAS Horn Actuation Verification Sheet," which included slaved horn locations for C-337 and C-333A;

- Engineering Notice EN-C-812-97-036 dated May 21, 1997, which addressed revisions to the safety system drawings for C-337, C-337A, C-333, and C-333A;

- Section 6.3 of Procedure CP3-EG-EG1074 which provided guidance for initiating, revising, and processing design and modification drawings;

- CAAS training module dated July 16, 1997, which discussed objectives that include actual field conditions (e.g., operating conditions of the detector modules and the indications given on CAAS equipment on the cluster, local alarm, remote alarm, and alarm control locations for each condition);

- Business Prioritization System Issue Response Sheet dated August 5, 1997, which stated that Maintenance personnel received revised CAAS training;

- Procedure CP4-GP-IM6209, dated August 8, 1997, which required documentation of each individual CAAS horn verified as operable with initials;

- Appendix B to Procedure CP4-GP-IM4128 dated August 13, 1997, which indicated slave horn locations;

- records that required reading was accomplished to familiarize staff with the specifics of changes to the "UE Policy and Procedure Control Process" procedures;

- a Field Walkdown Verification Sheet dated August 27, 1997, documenting that plant drawings accurately reflected proper horn locations (the horn locations correlated with those indicated in Appendix B to Procedure CP4-GP-IM4128); and

- records reflecting that instrument and electrical CAAS safety system drawings were updated to correct discrepancies identified during field walkdowns in November 1997.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective actions were appropriate and properly implemented. This item is closed.

M8.2 (CLOSED) VIO 97004-06: Contrary to Section 2.11 of the QAP, scheduling and conduct of preventative maintenance and adjustment to the autoclave head and shell alignment prior to the performance of the TSR-mandated surveillance did not ensure that appropriate test conditions were established for the TSR surveillance test.

The violation occurred because: (1) requirements regarding preconditioning were not adequately described in implementing procedures for Maintenance and Operations; and (2) there were no procedural guidelines provided for future reviews of preventative maintenance tasks.

The inspectors reviewed:

- a Procedure Development/Revision Form dated June 27, 1997, for changing Procedure CP4-EG-EG1002, "Post Maintenance Testing of TSR Components" to add notes stating, "Prior to replacing O-ring or adjustment of limit switches during preventative maintenance (not corrective maintenance), a containment integrity (pressure) test must be performed by CP4-CO-CN6054c to collect and document as found conditions," and "Prior to cleaning of primary condensate level probes, detection/initiation channel testings (CP4-GP-IM4119) must be performed to collect and document as found conditions."

- Procedure CP4-GP-MM4159 effective July 1, 1997, which had several reminders that Cascade Operations must perform as found pressure decay tests;

- a record that Work Control routed all preventative maintenance work through Engineering for interim preconditioning screening until preventative maintenance tasks/work requests were reviewed and incorporated into the Computerized Maintenance Management System;

- a record that Procedure CP2-EG-EG1030 was revised on November 21, 1997 to include steps necessary for initial identification of TSR surveillances required prior to preventative maintenance; and

- a record that, on January 21, 1998, preventative maintenance tasks for preconditioning of TSR surveillances were reviewed to create a list of preconditioning tasks which require that TSR surveillances be performed prior to the maintenance task.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

M8.3 (CLOSED) VIO 97007-05a: Contrary to 10 CFR 76.93, the certificatee failed to adequately control maintenance of the C-315 fire protection system.

The violation occurred because personnel responsible for the implementation of the Limiting Conditions for Operation (LCO) required actions failed to follow procedural steps and this resulted in their missing that a required action (i.e., providing a temporary water supply for C-315) was not done.

The inspectors reviewed a memo to the Fire Services (FS) Supervisors dated August 6, 1997, which discussed implementation of the requirements in Procedure CP4-SS-FS6117, "Fire Protection Impairment Permit," and reminded them to: (1) document all required compensatory measures on all Fire Protection Impairment Permits (FPIPs); (2) fax a copy of FPIPs for TSR required systems to PSSs for review; (3) personally verify that TSR required actions performed by FSs are complete; and (4) record all TSR required LCO actions performed by FSs in the shift log and fax a copy of the log entries to the PSS.

The inspectors reviewed Procedure CP2-CO-CN1031, "Tracking of Inoperable TSR Structures, Systems, and Components," and verified that it was changed to include a requirement that the PSS discuss the specific TSR required actions with the affected front line manager prior to declaring a TSR required system inoperable for planned work or upon discovering a system is inoperable due to emergent conditions.

The inspectors reviewed Procedure CP4-SS-FS3001, "Fire Protection System Compensatory Measures," to verify that it included TSR and non-TSR compensatory measures to be taken for inoperable fire protection systems and components. The inspectors also reviewed attendance sheets documenting that a crew briefing was conducted on Procedure CP4-SS-FS3001 for Fire Safety staff.

Based on review of a memo and attendance sheets, the inspectors verified that, by December 11, 1997, Maintenance, Operations, and Site and Facility Services prepared a lessons learned summary and had their front line managers present the summary to their work groups.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

M8.4 (CLOSED) VIO 97007-05b: Contrary to 10 CFR 76.93, the certificatee failed to adequately control maintenance of the Building C-335 "C" CAAS cluster.

The violation resulted when Instrument Maintenance failed to follow the steps described in the work package and procedure used to perform the work, and Maintenance failed to recognize the need to verify that the nitrogen cylinder valve was opened after testing.

Based on an interview with Regulatory Affairs staff and review of Shift Superintendent's Daily Logs dated August 5 and 6, 1997, the certificatee verified that the nitrogen cylinder valves on the other 28 clusters were open.

The inspectors reviewed Revision 3 of Procedure CP4-GP-IM6209, "Criticality Accident Alarm System Functional Tests," effective August 8, 1997 to verify that the "Data Sheet 3, CAAS Post Maintenance Functional Test Verification Sheet" included a place to document verification that the nitrogen cylinder valve was opened after testing.

The inspectors reviewed records documenting that, by October 31, 1997, no proceduralized CAAS maintenance evolutions which require the manipulation of the nitrogen cylinder valve and/or the plant air valve can be completed without documenting that the valves are in the open position.

Based on review of a memo and attendance sheets, the inspectors verified that, by December 11, 1997, Maintenance, Operations, and Site and Facility Services prepared a lessons learned summary and had their front line managers present the summary to their work groups.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

M8.5 (CLOSED) VIO 97007-05c: Contrary to 10 CFR 76.93, the certificatee failed to adequately control maintenance of the Building C-400 NAM.

The violation resulted from failure to take prompt action to remove the NAM unit from service following notification of an out-of-tolerance reading. Additionally, the procedure did not provide clear guidance concerning actions to take when a NAM unit is observed to be out-of-tolerance.

The inspectors reviewed an ATR indicating that the NAM unit was tagged out with defective equipment.

The inspectors reviewed Functional Directive 97-027 dated September 17, 1997, and verified that it was sent to Operations, Work Control, Engineering, Production Support, and Site Facility Services as an interim compensatory measure to provide additional guidance to NAM users until procedure changes could be made.

The inspectors reviewed Procedure CP2-GP-MS2033, "Operation of 1000 and 2000 CFM Negative Air Machines," that was revised on November 12, 1997, and noted that it incorporated the guidance contained in Functional Directive 97-027.

The inspectors reviewed records indicating that, by December 11, 1997, Maintenance, Operations, and Site and Facility Services prepared a lessons learned summary and had their front line managers present the summary to their work groups.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

II. Engineering

E1 Conduct of Engineering

E1.1 Nuclear Criticality Safety Corrective Actions

a. Inspection Scope (88100)

The inspectors reviewed the status of corrective actions taken for a nuclear criticality safety evaluation nonconformance associated with the one-kilogram (1-kg) UF_6 cylinders used onsite.

b. Observations and Findings

During early April, the inspectors discussed the status of corrective actions concerning an NCSE nonconformance associated with 1-kg cylinders with the NCS staff. The nonconformance involved the identification that certain of the 1-kg cylinders used to produce UF_6 standards were made with nickel instead of the monel assumed in the original calculations of the governing NCSE, NCSE 1493-03, "UF_6 Standard Storage," effective October 1, 1996. The plant staff had identified the nonconformance over three years earlier and were tracking it as a condition adverse to quality, but the NCS staff had determined that continued operations using the 1-kg cylinders were acceptable until a change to the NCSE could be made. This assessment was based on the fact that nickel was less reactive than monel, due to its higher neutron absorption properties, and thus the calculations in the NCSE for monel were bounding for the nickel cylinders as well.

The inspectors inquired about the length of time that had transpired since the initial identification of the nonconformance and whether there were any problems with continuing operations based upon the requirements in the NCSE or NCSA. In following up on the inspectors' questions, the NCS staff initially concluded that the material composition of the cylinders did not conflict with the requirements in the NCSA. However, the NCS staff review subsequently identified an additional nonconformance for the 1-kg cylinders. Specifically, the plant staff discovered that some of the 1-kg cylinders had wall thicknesses as low as 0.065 inches, whereas the thickness credited in the NCSE was 0.109 inches. The lower thickness measurement meant that the cylinder neutron absorption properties were not as great as calculated and thus the reactivity calculations were non-conservative. As a result, the plant staff halted the operations with the 1-kg cylinders and provided a 24-hour Bulletin 91-01 notification to the NRC for the loss of a single contingency control (geometry of the cylinders).

The inspectors noted that the initial assessment of the scope of the problem and the associated corrective actions for the nonconformance were not comprehensive. In particular, the initial indication that a configuration control issue might exist for the population of 1-kg cylinders onsite was not rigorously pursued to understand the full breadth of the issue. As a result, a fissile operation was allowed to continue for approximately three years with nonconforming equipment which invalidated assumptions in the governing NCSE in a non-conservative manner. The inspectors also noted, however, that the batch of cylinders analyzed in the NCSE was significantly greater than the storage batch allowed by the NCSA, so an immediate safety concern did not exist. Nevertheless, the initial corrective actions taken and planned for the original nonconformance were not effective in assuring that the geometry control credited in the NCSE was actually available in the cylinders out in the plant.

The inspectors also noted that the corrective actions taken in response to Violation 97011-07, involving a nonconformance in which the system description in the approved NCSE and the actual field conditions of the UF6/R-114 Separation System were in disagreement, were not thorough. Known nonconformances being tracked as open conditions adverse to quality in the corrective action program were not evaluated against the revised NCSE development and approval process, developed as corrective action for the 1997 violation, which included a review and "dry run" of the NCSE prior to implementation to ensure the actual field configuration matched that analyzed in the NCSE. Had a thorough evaluation occurred, the wall thickness problem would likely have been identified in 1997.

The regulations in 10 CFR 76.93, "Quality Assurance," require, in part, that the Corporation establish, maintain, and execute a Quality Assurance Program. Section 2.16 of the Quality Assurance Program, "Corrective Action," requires, in part, that conditions adverse to quality are promptly identified and corrected as soon as practical. The failure to promptly identify and correct the 1-kg cylinder nonconformance which invalidated the wall thickness geometry parameter credited in the NCSE after initial indications that different 1-kg cylinders were in use is **a Violation of 10 CFR 76.93 (VIO 70-7001/2000003-04)**. In response to the inspectors' questions, the plant staff reviewed all the NCS open items for identified conditions adverse to quality in the corrective action program to ensure a similar configuration control discrepancy did not exist. As a result of the NCS open item review, the hold put on the operation until the NCSE was revised, and the fact that NCSE 1493-03 had been developed and approved prior to the NCSE process revision, the inspectors concluded that adequate corrective actions for the violation had been taken and a response for the violation was not warranted.

c. Conclusion

In responding to questions raised by the inspectors concerning a 1996 nonconformance, the plant staff identified a condition adverse to quality involving one-kilogram uranium hexafluoride standard cylinders that did not meet the geometry specifications in the governing nuclear criticality safety evaluation. The inspectors noted that the plant staff had opportunities to identify the issue when the initial nonconformance had been identified in 1996 and as part of the corrective actions for a 1997 violation. As such, the inspectors considered the resolution of the initial nonconformance a violation of the Quality Assurance Program for ineffective corrective action. Based on the plant staff's subsequent review of the criticality safety open items in the corrective action program and a nuclear criticality safety program revision developed after the effective date of the 1996 nuclear criticality safety evaluation, the inspectors concluded that a response to the violation was not warranted.

E8 Miscellaneous Engineering Issues

E81. (CLOSED) VIO 97003-13: Contrary to Section 2.16 of the QAP, the certificatee failed to identify: (1) that the March 3, 1997 NCS memo implemented an unauthorized change to the applicability requirements of NCSA GEN-27 and Procedure CP2-TS-TS2030, "Handling and Storage of Legacy Process Equipment;" and (2) the root cause and necessary corrective actions to preclude the recurrence of violations of NCSA GEN-27 and Procedure CP2-TS-TS2030 in Building C-720.

The violation occurred due to a lack of formal guidance for NCS to follow when providing interpretations to Operations regarding the applicability of an NCSA. Additionally, a screening method was unavailable to prevent circumventing PORC approval when providing interpretations of NCSA requirements.

The inspectors reviewed:

- Engineering Notice EN-C-832-97-011 effective May 29, 1997 which rescinded the March 3, 1997 memo and reestablished applicability of NCSA GEN-27 to all plant facilities;

- documentation that a site-wide walkdown was completed on June 23, 1997 to identify all GEN-27 equipment and bring it into compliance with NCSA GEN-27 and Procedure CP2-TS-TS2030;

- documentation that a crew briefing was conducted for NCS staff on August 6, 1997, that included a discussion of corrective actions taken in response to the violation, the expectations concerning use of Engineering Notices for customer guidance, and a review of Engineering Notice Procedure CP3-EG-EG1080;

- a memo dated August 26, 1997, to the NCS Manager documenting that more than 1000 memos (including e-mails and internal correspondence) were reviewed to determine if other guidance that could have been an unauthorized change to the applicability requirements of an NCSA or procedure existed, and no applicable examples were identified;

- documentation that new Procedure CP3-EG-EG1086, "Engineering Conduct of Operations" was issued to, in part, provide engineering guidance regarding interpretations and level of approval for the guidance; and

- Procedure CP3-EG-EG1086 effective October 10, 1997, which included: (1) a process to ensure that design changes are identified, documented, controlled, evaluated, and approved or disapproved; and (2) a statement that Engineering Notices, memos, or informal communications are not used to supersede or change the applicability of approved plant procedures, work instructions, or NCSAs.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective actions were appropriate and properly implemented. This item is closed.

E8.2 (CLOSED) VIO 97004-09: Contrary to TSR 3.9, an engineering project to modify the autoclaves had been approved and initiated without the proper development, approval, and control of installation and test procedures.

The violation occurred because test plans for Engineering Service Order (ESP) Z90830 were revised twice without being resubmitted to the PORC for approval as required by Procedure CP3-EG-EG1074, "Design Document Change Process." Insufficient training on the modification process resulted in responsible individuals failing to implement the procedure (i.e., they were not aware that the test plans must be handled as design output documents).

The inspectors reviewed a memo dated August 8, 1997 which comprised a Stop Work Order for modification work packages that had been issued to construction and maintenance crafts and had not been declared operable.

The inspectors observed that a memo dated August 8, 1997 from an Organization Manager titled, "Modification Installation Package Recovery Plan," addressed deficiencies identified in the implementation of modification packages, and it addressed identified problems (e.g., changes to installation instructions, work packages, and test plans will be performed, documented, reviewed and controlled per Procedure CP3-EG-EG1074, "Design Document Change Process" and/or Procedure CP2-EG-EG1074, "Engineering Change Requests").

Revised test plans and associated review documentation were reviewed and approved by the PORC. The inspectors reviewed a memo dated August 12, 1997 regarding PORC Meeting 97-082. The PORC met on August 12, 1997 and it reviewed and approved Procedure CP2-EG-EG6032, "Soap and Vacuum Test Plan Instrument Tubing to PES02," and Procedure CP2-EG-EG6033, "Soap and Vacuum Test Plan Instrument Tubing to PE507."

The inspectors reviewed a Required Reading/Crew Briefing File Sheet titled, "Modification Test Plans-Are They Procedures or Work Instructions?" which was provided to Electrical Engineering, Design Engineering, Configuration Management, Instrument and Computer Engineering, Procurement Engineering, Civil and Structural Engineering, and Mechanical and Process Design Engineering.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

E8.3 (CLOSED) VIO 97004-10: Contrary to 10 CFR 76.68(a), the certificatee failed to evaluate whether: (1) a change to the SAR possession limit for uranium enriched to 10 percent impacted the effectiveness of the safeguards program; and (2) the deletion of an SAR requirement to test the cell trip system for each cell within a five year period upon approval of RAC 97C014, Rev. 2, constituted an unreveiwed safety question.

The violation was caused by inadequate level of detail and technical rigor regarding the Plant Change Review (PCR) documentation for the proposed changes which resulted in poor communication of the logic used to reach the conclusions presented. The inadequate level of detail and technical rigor regarding the PCR documentation was reflective of a lack of adequate training and monitoring of expectations to ensure that the staff adequately support the approved changes to the SAR.

The inspectors reviewed the PORC meeting minutes for the August 19, 1997 meeting and noted that it included review of the violation (i.e., the PORC was reminded that the PCR should provide enough information to justify and explain the reason for changes with correct, adequate information provided in the documentation).

The inspectors reviewed a memo from Regulatory Affairs dated August 22, 1997, which directed possession limit controls to ensure that possession limits would not be exceeded.

The inspectors reviewed a memo from the Regulatory Affairs group to appropriate plant management titled, "Level of Detail and Technical Rigor in PCRs." The memo reviewed the violation and discussed expectations regarding technical rigor and level of detail.

The inspectors reviewed an action response status form dated September 23, 1997, stating, "NRA has decided to delete SAR changes associated with the deletion of the five year surveillance interval and has initiated RAC 97C014, Rev. 3 to accomplish this task." RAC 97C014, Rev. 3 titled, "Background and Technical Justification" stated, "RAC 97C014, Rev. 2, PCRC-97-0108, Rev. 2, and SE97-018, Rev.1 will be revised to remove references to the TSR changes now documented under RAC 97C191, Rev. 0." RAC 97C014, Rev. 3 also stated, "The SAR changes ...related to the five year testing frequency will be reworked such that the SAR section wording is returned to what was in place prior to approval of 97C014, Rev. 2."

The inspectors reviewed records of an Internal Surveillance Report conducted from September 22, 1997 to October 3, 1997 that included verification of technical content and logic of completed PCRs.

The inspectors reviewed records of training dated October 31, 1997, titled, "Crew Briefing on Inadequate PCRs." Additionally, the inspectors reviewed a memo from Regulatory Affairs dated October 28, 1997, titled, "Required Reading/Crew Briefing Due to NOV 97004-10," and it discussed training for all PCR evaluators, reviewers, and approvers.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

E8.4 (CLOSED) VIO 97004-11: Contrary to TSR 3.11.5, the certificatee failed to establish double contingency (i.e., two controlled parameters (mass or assay and spacing) for the process of storing legacy equipment containing fissile and potentially fissile materials.

The violation resulted from inadequate communication during the implementation of the action plan in early 1997 to identify, scan, and space legacy equipment in accordance with NCSAs GEN-27 and GEN-20. Less than adequate orientation/training of involved personnel caused staff not to understand the need for performing scans on legacy equipment.

The inspectors reviewed attendance sheets for June and July 1997 showing that 185 staff received training on Module 501.50.16 CB which included NCSA GEN-27 and GEN-20 requirements.

The inspectors reviewed a memo dated July 17, 1997 titled, "Review of NCSAs to Identify Potential Criticality Safety Concerns," that stated that the review was completed to identify other existing requirements that might result in similar violations, and no NCSA control requirements were found that would result in similar violations.

The inspectors reviewed Item 6 of the revised NCSA GEN-27 effective August 3, 1997, which stipulated that, in the event legacy items are discovered that cannot be adequately characterized for uranium loading prior to movement, a complete inspection, pursuant to applicable provisions of the NCSA, shall be performed as soon as possible for each piece of such equipment.

The certificatee's letter to NRC dated August 6, 1997 stated that, following assay characterization, proper spacing and tagging or posting, as required was confirmed by August 4, 1997.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

E8.5 (CLOSED) VIO 97008-08: Contrary to 10 CFR 76.68, the certificatee failed to evaluate the safety impact of the as-found nonconformances in the purge cascade system configuration between August 13 and September 5, 1997.

The certificatee determined that the violation resulted because adequate procedural guidance was not provided to shift personnel to ensure that nonconforming conditions are evaluated in accordance with 10 CFR 76.68 in a timely and thorough manner.

The inspectors reviewed PCR-C-97-1588, Rev. 0 dated September 5, 1997, which documented the completed engineering evaluation of the non-conforming condition in accordance with 10 CFR 76.68.

System Engineering Standing Order 97-SE-003 was issued to provide interim guidance to the Shift Engineer, who reviewed all PRs, on the review scope and timeliness criteria associated with PR reviews for 10 CFR 76.68 issues. The inspectors reviewed Standing Order No. 97-SE-003 dated October 10, 1997, which stated its purpose to provide consistent screening of PRs to identify the need for 10 CFR 76.68 reviews, provide general timeliness guidelines for processing of 10 CFR 76.68 reviews, and provide guidance for non-compliance reports. The inspectors noted that Section 2 of the Standing Order provided guidance for reviewing PRs to determine if 10 CFR 76.68 evaluations are needed. Section 3 of the Standing Order established timeliness requirements for completion of 10 CFR 76.68 reviews. Section 4 of the Standing Order provided guidance for reporting of non-conforming items until upgrades of the non-conforming reporting requirements are completed.

Problem Reporting Procedure UE2-HR-CI1030 was revised to augment the Shift Engineer PR screening actions such that potential 10 CFR 76.68 issues are appropriately reviewed in a timely manner. The inspectors reviewed pages 10 and 10a of Procedure UE2-HR-CI1030, and noted Item 6.2.1.E. instructed the PSSs to determine if the problem is potentially reportable to the NRC (e.g., changes to the plant made without NRC approval per 10 CFR 76.68). The inspectors also noted that Item 6.2.2 provided instructions to the Shift Engineer to identify and respond to issues regarding 10 CFR 76.68 evaluations.

The interim guidance of System Engineering Standing Order 97-SE-003 was incorporated into procedures and therefore no longer required. The inspectors reviewed Procedure CP2-BM-CI1031, Rev. 0, “Corrective Action Process at PGDP,” dated February 26, 1998, which provided instructions to Systems/Shift Engineers to identify conditions that require a 10 CFR 76.68 evaluation. The inspectors noted that Rev. 0 of Procedure CP4-EG-EG1001, “Systems Engineering Conduct of Operations” defined: (1) Shift Engineer responsibility to include review of ATRs to identify conditions that may require a PCR; and (2) Shift Engineer Responsibility to include initiation of 10 CFR 76.68 PCRs for as-found conditions. The inspectors reviewed Procedure CP4-EG-EG1001, Rev. 0, “Systems Engineering Conduct of Operations” dated March 5, 1997, and noted that it included instructions for timely 10 CFR 76.68 reviews. The inspectors reviewed Procedure CP2-BM-CI1031, Rev. 0, “Corrective Action Process at PGDP” dated February 26, 1998, which defined criteria for, and directed disposition of, non-conforming items.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

E8.6 (CLOSED) VIO 97011-06: Contrary to TSR 3.10.5, the PORC failed to conduct a review of the decrease in the approved margin of safety documented in the evaluations for use of fissile waste drums due to wall thicknesses less than the minimum value previously assumed.

The certificatee determined that the violation resulted because the requirements

associated with making changes as specified in engineering procedures were not adequately communicated to the NCS organization. An NCS Manager did not recognize that the drum wall thickness was a design input parameter to the NCSA. Additionally, NCS staff failed to ensure that Engineering Guidance received the appropriate level of approval.

The engineering evaluation and engineering notice, used to evaluate the impact of wall thickness on the NCSE were reviewed and approved by the PORC. The inspectors reviewed documentation that PORC Meeting 97-121 on November 20, 1997, included review and approval of EN-C-832-97-050, Rev. 0, "Acceptable Wall Thickness for Maximum 5.5 Gallon Drums."

NCSE/As associated with 5.5 gallon waste storage drums were revised to incorporate the calculations documented in the PORC approved engineering evaluation and engineering notice. The inspectors reviewed documentation that PORC Meeting 98-68 on July 30, 1998, included review and approval of revisions to NCSEs KY/S-218, KY/S-253, and GEN-31 which were associated with 5.5 gallon water storage drums, and the revisions incorporated the calculations documented in the PORC approved engineering evaluation/notice.

The inspectors reviewed documentation that Engineering Notices (ENs) and Engineering Evaluations (EVs) generated by NCS during calendar years 1996 and 1997 were reviewed to determine if generation of any of these documents resulted in inadvertent changes to existing NCSE/As. Nineteen EVs and 68 ENs were reviewed. One additional issue was identified involving EN-C-832-97-043, Rev. 0, "NCS Exemption for Operation of the Autoclave Air Amplifier," and EV-C-832-97-014, Rev. 0, "NCS Exemption for Operation of the Autoclave Air Amplifier." EV-C-832-97-014, Rev. 0 provided the technical basis for exempting the air amplifier from NCSA controls. EN-C-832-97-043, Rev. 0 provided the mechanism for communicating the results of EV-C-832-97-014 to appropriate plant personnel. Although the operation of the autoclave air amplifier was not considered a fissile material operation, the technical basis for exempting the operation from NCS requirements was inappropriate (i.e., EV-C-832-97-014 did not consider backflow from the autoclave to the air amplifier). ATR-C-98-4105 was generated to document this deficiency, and the procedure for performing this operation was placed on hold. The inspectors reviewed ATR-C-98-4105 which stated that: (1) the operation of the air amplifier in Building C-360 was a non-fissile operation and was improperly implemented by EN-C-832-97-043, Rev. 0; (2) non-fissile operations are procedurally controlled; and (3) a procedure was revised to require use of an air amplifier equipped with a check valve to prevent material from backing into the air amplifier from the autoclave. Subsequently, the check valve procedure was used as a conservative basis for not needing an NCSA, and this was reviewed and approved by the PORC on July 10, 1998.

Therefore, the inspectors determined that the root cause was reasonable, and the corrective action was appropriate and properly implemented. This item is closed.

V. Plant Support

Security and Safeguards

S1.1 Control of Classified Information

a. Inspection Scope (81820)

The inspectors reviewed the plant staff's handling of classified information received from an offsite location.

b. Observations and Findings

During the inspection period, the inspectors observed the plant staff's interim storage of classified documents received from an offsite location. The inspectors noted that the documents were personally delivered to the site. The documents were stored in a room which the plant staff believed met the requirements to be a classified vault. Upon further review by the inspectors, however, the room appeared to allow access without significant deterrence. The plant staff concurred with the inspectors' findings and subsequently removed the area from the approved vault storage listing. The classified information was placed in approved storage containers. As of the end of the inspection period, the plant staff were pursing modifications to the room to enable it to be placed back on the approved vault storage list.

c. Conclusion

The inspectors identified a weakness in the plant staff's review and approval of a classified storage vault. The plant staff took appropriate compensatory actions to protect classified information in the area.

S1.2 Compromise of Classified Information

a. Inspection Scope (81820)

The inspectors reviewed the circumstances surrounding a compromise of classified national security information and the immediate corrective actions implemented by the plant staff.

b. Observations and Findings

During the inspection period, the plant staff identified items which appeared to be legacy classified matter that had not been properly controlled and which could not be easily relocated to approved storage locations. As a result of the finding, the plant management immediately assigned individuals with appropriate security clearances to continuously monitor the classified matter and initiated efforts to further assess the actual classification status of the matter. Plant management also requested and received from the NRC Security and Facilities Division approval to designate the area containing the legacy matter as a Restricted or Closed Area in accordance with the requirements of 10 CFR 95.29. Subsequent to the NRC's approval of the area containing the legacy matter as a Restricted or Closed Area, plant security management decreased monitoring of the matter from continuous to once every four hours.

As a part of the process for assessing the classified status of the legacy matter, some plant

staff documented the nature and location of the legacy matter on an unsecured, uncontrolled computer system. Documenting the nature and location of the legacy matter on the unsecured computer system identified a security vulnerability associated with the plant management's ongoing storage of the legacy matter. The staff also documented on the same computer system information which indicated that the legacy matter was classified. As a result of the inappropriate disclosure of the location of the classified matter, the plant security management reinitiated continuous monitoring of the materials. The plant staff also provided additional training to authorized derivative classifiers and other involved staff to ensure the requirements for appropriately classifying and protecting information revealing a vulnerability were understood.

The NRC-approved Security Plan required the plant staff to protect classified matter and information regarding vulnerabilities associated with security for the classified matter at the same level. Due to the certificatee's prompt and comprehensive corrective actions, the failure to appropriately control a vulnerability associated with the protection of classified matter, is a non-repetitive, certificatee-identified, and corrected violation and is being treated as a **Non-Cited Violation (NCV 70-7001/2000003-05)**, consistent with Section VII.B.1 of the NRC Enforcement Policy.

c. Conclusions

The plant staff identified a non-cited violation for a failure to properly control information identifying a vulnerability associated with the protection of classified matter. Upon discovery, the plant staff took prompt action to properly protect the classified matter and provided additional training to responsible plant staff concerning the identification and protection of information discussing vulnerabilities in the classified matter protection program at the site.

S1.3 Protection of Classified Matter

a. Inspection Scope (81820)

The inspectors reviewed the status of certain classified matter at the site.

b. Observations and Findings

During the inspection period, the inspectors identified certain classified matter which did not appear to be stored in a manner consistent with the site security plan and 10 CFR 95. The inspectors discussed the observations with the plant management and determined that the method used to protect the classified matter, while in storage, was consistent with long standing informal plant policies. Further, the security management noted that the site security plan did clearly define some terms necessary to ensure that unacceptable practices were easily identified. Based upon a review of ongoing plant conditions, the inspectors determined that the current storage methods did not preclude easy access to the classified information and did not ensure that improper access to the classified information would be apparent after the fact. The inspectors discussed the current storage methods with NRC Headquarters Division of Security and Facilities. The NRC Headquarters staff indicated that methods used to store classified matter were intended to preclude easy access and to ensure that unauthorized accesses could be easily identified.

Irrespective of the long standing storage practices, the plant security management

concurred with the inspectors observations, and initiated a comprehensive review of the current practices. In addition, the security management for USEC, Paducah, and Portsmouth began the development of options for deterring unauthorized access to the classified matter. The options included methods for identifying when an unauthorized access may have occurred, consistent with the regulations. The corrective actions also included changes to the site security plan to clarify the definition of operational controls necessary to ensure compliance with the regulations.

Parts 95.25, .27, and .29 of Title 10 of the Code of Federal Regulations and Section 6 of the Paducah Security Plan for the Protection of Classified Matter, require, in part, that classified matter in storage shall be protected in approved containers, storage locations, repositories, or under operational control and routine patrols. The failure since March 3, 1997 to ensure that some classified matter was stored in approved containers, storage locations, repositories, or under operational control and routine patrols is a **Violation (NOV 070-07001/2000003-06).**

As of the end of the inspection period, the security management had developed a corrective action plan to resolve the inconsistencies between the current practice and the general requirements included in the security plan and the applicable regulations. The inspectors and NRC Headquarters security staff reviewed the corrective actions and determined that the actions should preclude unauthorized access to classified matter and should provide sufficient indications if an unauthorized access occurred, consistent with the regulations and the site security plan. The security management corrective action plan estimated the completion of all required actions by June 30, 2000.

c. Conclusion

The inspectors identified a violation in that the plant staff were not storing some classified matter in accordance with the site security plan for classified matter and the regulatory requirements. Subsequently, the plant and corporate security staff developed and initiated appropriate corrective measures necessary to ensure proper storage of the classified matter in a timely manner.

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of the certificatee's staff and management at the conclusion of the inspection on May 3, 2000. The certificatee staff present for the exit meeting acknowledged the findings. The inspectors asked the certificatee staff whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

United States Department of Energy

G. A. Bazzell, Site Safety Representative

United States Enrichment Corporation

*M. A. Buckner, Operations Manager
*L. L. Jackson, Nuclear Regulatory Affairs Manager
*J. A. Labarraque, Safety, Safeguards and Quality Manager
*S. R. Penrod, Enrichment Plant Manager
*H. Pulley, General Manager

U.S. Nuclear Regulatory Commission

*J. M. Jacobson, Resident Inspector
*K. G. O'Brien, Senior Resident Inspector

*Denotes those present at the exit meeting March 6, 2000.

Other members of the plant staff were also contacted during the inspection period.

INSPECTION PROCEDURES USED

IP 88020:	Nuclear Criticality Safety
IP 88100:	Plant Operations
IP 88102:	Surveillance Observations
IP 88103:	Maintenance Observations
IP 81820:	Physical Protection Facility Approval and Safeguarding of National Security Information and Restricted Data

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

070-07001/2000003-01	VIO	Improper Safety Analysis Report Change to intent/non-intent review process
070-07001/2000003-04	VIO	Ineffective corrective action for resolution of nonconforming one-kilogram cylinders used for uranium hexafluoride standards production
070-07001/2000003-06	VIO	Failure to store classified matter in accordance with 10 CFR 95 and the site security plans
36662	CER	Failure of criticality accident alarm system air horn
36709	CER	Air leak on Building C-310 cylinder valve closure system
36766	CER	Primary condensate alarm on Building C-333A Autoclave 2 South
36793	CER	Primary condensate alarm on Building C-333A Autoclave 2 North
36850	CER	Inoperable Building C-746Q criticality accident alarm temperature control system
36880	CER	Trouble alarm involving three modules in fault for Building C-337A Criticality Accident Alarm system Cluster “N”

Closed

70-7001/97002-18	CER	Negative air machine not covered by approved NCSA
70-7001/97011-01a,b,c	VIO	Reportable events not reported within appropriate time periods
70-7001/97207-01	IFI	Annual training firefighting lapsed for some employees
70-7001/97208-09	IFI	Root cause analysis for certain criticality safety events not proceduralized
70-7001/97003-15	IFI	Legacy equipment not properly characterized
70-7001/2000003-02	NCV	Legacy equipment not properly characterized
70-7001/97003-10	VIO	Improper scales used to weigh cylinders before heating
70-7001/97004-01	VIO	Building C-310 operators not trained on sodium fluoride production oven

70-7001/97007-02	VIO	Failure to control preparation, issuance, and revision of tare weight listings for cylinders
70-7001/97008-01	VIO	Failure to document reason for and special entry and exit points for procedures to restart purge cascade
70-7001/97008-02	VIO	Failure to use approved procedures in response to motor fire in Building C-310
70-7001/97008-04	VIO	Failure to file problem reports for deficiencies and alarms in timely manner
70-7001/97011-07	VIO	Operation of the Building C-335 UF6 Separation System Holding Drums in standby mode without nuclear criticality safety evaluation
70-7001/97014-02	VIO	Storage of items with improper volumes in fissile control areas
70-7001/97003-11	VIO	Inadequate acceptance criteria for surveillances of criticality accident alarm system slaved horns
70-7001/97004-06	VIO	Pre-conditioning of autoclave seal surveillance tests
70-7001/97007-05a	VIO	Failure to adequately control maintenance to the Building C-315 fire protection system
70-7001/97007-05b	VIO	Failure to adequately control maintenance to Cluster “C” of the Building C-335 criticality accident alarm system
70-7001/97007-05c	VIO	Failure to adequately control maintenance to the Building C-400 Negative Air Machine
70-7001/97003-13	VIO	Failure to properly review and approve changes to a nuclear criticality safety approval
70-7001/97004-09	VIO	Failure to develop appropriate procedures to implement an autoclave modification
70-7001/97004-10	VIO	Failure to perform appropriate SAR change reviews
70-7001/97004-11	VIO	Failure to establish double contingency for the storage of legacy equipment containing fissile or potentially fissile materials
70-7001/97008-08	VIO	Failure to evaluate the safety impact of as-found nonconformances in the purge cascade system
70-7001/97011-06	VIO	The Plant Operations Review Committee failed to conduct a review of changes in the wall thicknesses for fissile waste materials drums

70-7001/2000003-03	NCV	Failure to report an inoperable criticality accident alarm system in 1998
70-7001/2000003-05	NCV	Improper handling of information which identified a security vulnerability

Discussed

NONE

LIST OF ACRONYMS USED

ADC	Authorized Derivative Classifier
ATEF	Advanced Technology Enrichment Facility
ATR	Assessment and Tracking Report
CAAS	Criticality Accident Alarm System
CAQ	Condition Adverse to Quality
CER	Certificatee Event Report
CFR	Code of Federal Regulations
DC	Document Control
DNMS	Division of Nuclear Materials Safety
DOE	Department of Energy
EN	Engineering Notices
EO	Executive Order
EOC	Emergency Operations Center
ESO	Engineering Service Order
EV	Engineering Evaluations
FCA	Fissile Control Areas
FPIP	Fire Protection Impairment Permits
FS	Fire Services
HPFW	High Pressure Fire Water
IFI	Inspector Followup Item
IP	Inspection Procedure
LCO	Limiting Conditions for Operation
NaF	Sodium Fluoride
NAM	Negative Air Machine
NCS	Nuclear Criticality Safety
NCSA	Nuclear Criticality Safety Approval
NCV	Non-Cited Violation
NDA	Non-Destructive Assay
NMC&A	Nuclear Materials Control and Accountability
NCSE/A	Nuclear Criticality Safety Evaluation/Approval
NMSS	Nuclear Materials Safety and Safeguards
NRC	Nuclear Regulatory Commission
PCR	Plant Change Review
PERR	Public Electronic Reading Room
PGDP	Paducah Gaseous Diffusion Plant
PORC	Plant Operations Review Committee
PR	Problem Report
PSS	Plant Shift Superintendent
RCSE	Request for Criticality Safety Evaluation
RWP	Radiological Work Permit
SAR	Safety Analysis Report
SC	Screening Committee
SCAQ	Significant Condition Adverse to Quality
SRD	Secret Restricted Data
TDAG	Training Development Administrative Guidelines
TSR	Technical Safety Requirement
UF_6	Uranium Hexafluoride

USEC	United States Enrichment Corporation
VIO	Violation
Y2K	Year 2000