October 27, 2000

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

SUBJECT: PORTSMOUTH INSPECTION REPORT 70-7002/2000010(DNMS)
AND NOTICE OF VIOLATION

Dear Mr. Adkins:

On October 5, 2000, the NRC completed a routine resident inspection at your Portsmouth Gaseous Diffusion Plant. The purpose of the inspection was to determine whether activities authorized by the certificate were conducted safely and in accordance with NRC requirements. At the conclusion of the inspection, the inspectors discussed the findings with members of your staff.

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

Based on the results of the inspection, the NRC has determined that two violations of NRC requirements occurred. The violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding the violations are described in detail in the enclosed report. The violations are of concern because your staff failed to properly implement the Technical Safety Requirements for the use of electronic personal dosimeters during Criticality Accident Alarm System outages.

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

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available **electronically** for public inspection in the NRC Public Document Room **or** from the *Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from* the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

We will gladly discuss any questions you have concerning these observations.

Sincerely,

/RA/

Patrick L. Hiland, Chief
Fuel Cycle Branch

Docket No. 70-7002
Certificate No. GDP-2

Enclosures: 1. Notice of Violation
2. Inspection Report 70-7002/2000010(DNMS)

cc w/encls: J. M. Brown, Portsmouth General Manager
P. J. Miner, Manager, Regulatory Affairs/Commitment Management, Portsmouth
H. Pulley, Paducah General Manager
S. A. Toelle, Manager, Nuclear Regulatory
Assurance and Policy, USEC
Portsmouth Resident Inspector Office
Paducah Resident Inspector Office
R. M. DeVault, Regulatory Oversight Manager, DOE
S. J. Robinson, Portsmouth Site Manager, DOE
J. R. Williams, State Liaison Officer

Distribution:
Docket File w/encls
PUBLIC IE-07 w/encls
G. Mulley, OIG w/encls
R. Pierson, NMSS w/encls
T. Sherr, NMSS w/encls
P. Castleman, NMSS w/encls
W. Troskoski, NMSS w/encls
M. Mclaughlin, NMSS w/encls
Y. H. Faraz, NMSS w/encls
J. L. Caldwell, RIII w/encls
C. D. Pederson, RIII w/encls
RIII Enf. Coordinator w/encls
R. Bellamy, RI w/encls
EJM, RII w/encls
D. B. Spitzberg, RIV w/encls

DOCUMENT NAME: C:\PORTS2000010.wpd

To receive a copy of this document, indicate in the box:"C" = Copy without enclosure "**E**"= Copy with enclosure"**N**"= No copy

OFFICE	RIII		RIII		RIII			
NAME	Hartland:js		Phillips		Hiland			
DATE	10/ /00		10/ /00		10/ /00			

OFFICIAL RECORD COPY

NOTICE OF VIOLATION

United States Enrichment Corporation
Portsmouth Gaseous Diffusion Plant

Docket No. 70-7002
Certificate No. GDP-2

During an NRC inspection conducted from August 29, 2000, through October 10, 2000, two violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, Revision 1, the violations are listed below.

1. Action A.3 of Technical Safety Requirement (TSR) 2.2.3.2 requires that personnel allowed in the area that is restricted due to an inoperable Criticality Accident Alarm System (CAAS) be provided with an alternate means of criticality alarm notification such as a device that will alarm on sensing a 10 mrem/hour dose rate.

   Contrary to the above, on August 31, 2000, plant staff entered a restricted area due to an inoperable CAAS in Building X-330 with electronic personnel dosimeters (EPD) that alarmed at 1000 mrem/hour instead of the required 10 mrem/hour dose rate.

   This is a Severity Level IV violation (Supplement VI). **(VIO 070-07002/2000010-01)**

2. Technical Safety Requirement 3.9.1 requires, in part, that written procedures shall be prepared, reviewed, and approved for activities described in Appendix A to Safety Analysis Report Section 6.11.

   Safety Analysis Report Section 6.11, Appendix A, describes criticality alarms as an activity for which procedures shall be implemented.

   Contrary to the above, Procedure XP2-HP-DS2031, "Operation Of Model EPD-2 Electronic Personnel Dosimeter," was not adequately prepared, reviewed, and approved in that it authorized non-compliance with TSR action statements for CAAS. Specifically, Procedure XP2-HP-DS2031 allowed multiple personnel to utilize one EPD as an alternate means of criticality alarm notification during CAAS outages. In addition, the procedure recognized that the EPDs were not audible in some high noise areas.

   This is a Severity Level IV violation (Supplement VI). **(VIO 070-07002/2000010-02)**

The NRC has concluded that information regarding the reasons for the violations, 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 Inspection Report 70-7002/2000010(DNMS). Therefore, specific responses are 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 response as a "Reply to a Notice of Violation," and send it 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 Portsmouth, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

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

Because your response will be placed in the NRC Public Electronic Reading Room (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 27th day of October, 2000

U.S. NUCLEAR REGULATORY COMMISSION
REGION III

Docket No:	70-7002
Certificate No:	GDP-2
Report No:	70-7002/2000010(DNMS)
Facility Operator:	United States Enrichment Corporation
Facility Name:	Portsmouth Gaseous Diffusion Plant
Location:	3930 U.S. Route 23 South P.O. Box 628 Piketon, OH 45661
Dates:	August 29, 2000, through October 10, 2000
Inspectors:	D. J. Hartland, Senior Resident Inspector C. A. Blanchard, Resident Inspector
Approved By:	Patrick L. Hiland, Chief Fuel Cycle Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

United States Enrichment Corporation
Portsmouth Gaseous Diffusion Plant
NRC Inspection Report 70-7002/2000010(DNMS)

Operations

The inspectors identified two violations while observing plant staff's response to a Criticality Accident Alarm System (CAAS) actuation in Building X-330. One was a violation of a Technical Safety Requirement (TSR) action statement in that plant staff entered a restricted area due to a CAAS inoperability with electronic personal dosimetry (EPDs) set to alarm above the required 10 mrem/hour dose rate. In addition, the inspectors identified that the procedure governing the use of EPDs authorized non-compliance with the action statement in that it allowed for multiple personnel to utilize a single EPD and recognized the EPDs were inaudible in some high noise areas. (Section O1.1)

The inspectors identified an issue regarding the lack of formality in controlling valve line-ups for plant air used to trip cascade cell breakers, as required by the TSRs, in the Building X-533 Switchyard. Plant staff took appropriate action to develop valve designators, pin charts, and procedural guidance for maintaining the valve line-ups. (Section O1.2)

The inspectors continued to monitor plant activities and have not identified any adverse impact from the transition to the new organizational structure and reduction in force that became effective on June 30, 2000. No issues were identified during a recent increase in cascade power and return to service of the side purge cascade. (Section O1.3)

Engineering

The inspectors determined that plant staff took appropriate action to address some deficiencies discovered from the modification to the Low Assay Withdrawal Station pyrotronics smoke detection system. (Section E1.1)

Report Details

I. Operations

O1 Conduct of Operations

O1.1 Use of Electronic Pocket Dosimeters

a. Inspection Scope (88100)

The inspectors observed plant staff's response to a spurious Criticality Accident Alarm System (CAAS) actuation in Building X-330.

b. Observations and Findings

On August 31, the inspectors observed an emergency response to a CAAS actuation in Building X-330. Plant staff promptly evacuated the building and reported to monitoring stations as required. Staff were interviewed and accident dosimeters were surveyed to confirm that a criticality did not occur. In addition, Health Physics (HP) personnel with survey instruments and radios entered the building and approached the affected CAAS from three directions and confirmed that no abnormal radiation levels were present.

The inspectors noted that the Plant Shift Superintendent (PSS) had declared the affected CAAS unit inoperable shortly after the actuation due to the lack of assurance that the unit was functioning properly. However, the inspectors observed that the HP technicians entered the building with electronic personal dosimeters (EPDs) that alarmed at 1000 mrem/hour instead of the 10 mrem/hour required by Technical Safety Requirement (TSR) 2.2.3.2 action statement required for an inoperable CAAS. During followup discussions, HP personnel stated that the basis for using the EPDs with the higher setpoint was to avoid delay in entering the building due to an alarming EPD in the event that a life-saving action was required. The technicians stated that the survey instruments would detect any excessive radiation levels.

Upon review, the inspectors noted that emergency responders were not exempt from compliance with the TSR action statements unless TSR 1.6.4 was formally implemented. The inspectors noted that TSR 1.6.4 was implemented only when an actual emergency existed and immediate actions were needed to protect public and employee health and safety. In addition, the inspectors noted that regardless of the operability status of the CAAS, use of the EPDs at the lower setpoint was prudent because radiation levels above that setpoint were an indication of an abnormal condition that required further review by the Incident Commander, including possible activation and assistance from the Emergency Operations Center. After further dialogue, plant management issued a daily operating instruction (DOI) that required the use of EPDs set to alarm at the 10 mrem/hour setpoint in response to all CAAS activations. Plant staff also intended to revise applicable procedures to incorporate the DOI.

Action A.3 of TSR 2.2.3.2 requires that personnel allowed in the area that is restricted due to an inoperable CAAS be provided with an alternate means of criticality alarm notification such as a device that will alarm on sensing a 10 mrem/hour dose rate. Contrary to the above, on August 31, HP personnel entered a restricted area due to an inoperable CAAS in Building X-330 with EPDs that alarmed at 1000 mrem/hour instead of the required 10 mrem/hour dose rate, a **Violation (70-7002/2000010-01)**.

Upon further review of the use of EPDs, the inspectors noted that Procedure XP2-HP-DS2031, "Operation Of Model EPD-2 Electronic Personal Dosimeter," recognized that the EPDs were not audible in some high noise areas, such as the cascade cell floors, and required frequent monitoring of the EPDs in those areas. In addition, the procedure allowed multiple personnel to utilize one EPD as an alternate means of criticality alarm notification during CAAS outages to meet the TSR action statements. The procedure had no restrictions other than the individual wearing the EPD "must inform others in the group of any EPD alarm and immediately exit the area." The procedure did not provide restrictions regarding high noise areas, number of personnel allowed, maintaining visual contact, etc. The inspectors concluded that the procedure did not ensure compliance with the applicable TSR action statements which required an alternate means of notification such as an alarming dosimeter. As immediate corrective action, plant management issued a DOI which required all personnel entering an area impacted by an inoperable CAAS to wear an EPD. Plant staff later revised applicable procedures to require the use of earpieces in high noise areas to ensure audibility.

Technical Safety Requirement 3.9.1 requires, in part, that written procedures shall be prepared, reviewed, and approved for activities described in Appendix A to Safety Analysis Report (SAR) Section 6.11. SAR Section 6.11, Appendix A, describes criticality alarms as an activity for which procedures shall be implemented. Contrary to the above, Procedure XP2-HP-DS2031, "Operation Of Model EPD-2 Electronic Personal Dosimeter," was not adequately prepared, reviewed, and approved in that it authorized non-compliance with TSR action statements for CAAS. Specifically, Procedure XP2-HP-DS2031 allowed multiple personnel to utilize one EPD as an alternate means of criticality alarm notification during CAAS outages. In addition, the procedure recognized that the EPDs were not audible in some high noise areas. This is a **Violation (70-7002/2000010-02).**

c. Conclusions

The inspectors identified two violations while observing plant staff's response to a CAAS actuation in Building X-330. One was a violation of the TSR action statement in that HP personnel entered a restricted area due to a CAAS inoperability with EPDs set to alarm above the required 10 mrem/hour dose rate. In addition, the inspectors identified that the procedure governing the use of EPDs authorized non-compliance with the action statement in that it allowed for multiple personnel to utilize an EPD and recognized that the EPDs were inaudible in some high noise areas.

O1.2 Valve Line-ups For Cell Trip Capability

a. Inspection Scope (88100)

The inspectors toured the Building X-533 Switchyard and observed activities for compliance with certificate requirements.

b. Observations and Findings

On September 19, during a routine tour of the Building X-533 Switchyard, the inspectors noted during discussion with operators the informality in controlling valve line-ups for plant air used to trip breakers for cell power in the switchyard. TSR 2.2.3.14 required

that a pressure of greater than 195 psig was available to trip air circuit breakers for cell motors in response to a large uranium hexafluoride (UF_6) release which would allow cascade systems to go to sub-atmospheric pressure.

The inspectors noted that there were no designators for identifying individual valves and no pin charts or procedural controls for valve line-ups for the air system. Operators typically documented any change to a valve position in the operator log book. The inspectors were not aware of any instances in the past where a valve misalignment resulted in an operability issue due to the lack of formal controls. The inspectors discussed the issue with operations management who documented it in Problem Report 00-4467. As corrective action, plant staff were developing designators, pin charts, and procedural guidance for maintaining the valve line-ups.

c. Conclusions

The inspectors identified an issue regarding the lack of formality in controlling valve line-ups for plant air used to trip cascade cell breakers, a system required by the TSRs, in the Building X-533 Switchyard. Plant staff took appropriate action to develop valve designators, pin charts, and procedural guidance for maintaining the valve line-ups.

O1.3 Observations of Plant Activities

a. Inspection Scope (88100)

The inspectors observed plant activities for compliance with certificate requirements.

b. Observations and Findings

The inspectors continued to monitor plant activities for any adverse impact in response to the transition to the new organizational structure and reduction in force that was implemented on June 30, 2000. The inspectors reviewed the most recent set of performance indicators and did not note any adverse trends. The inspectors also reviewed a sampling of qualifications of replacement staff and verified that training requirements were complete or restrictions were in place, as applicable.

The inspectors also monitored the incremental increase in cascade power from 600 megawatts during the summer to 1300 megawatts at the end of the inspection period. Plant staff experienced several problems during the power increase last year, including compressor deblades and minor outgassings due to seal failures. The inspectors noted that the more recent power increase was conducted without incident due primarily to a successful effort to improve the material condition of cascade equipment during the past year.

The inspectors also observed activities related to the return-to-service of the side purge cascade following the fire in December 1998. The recovery effort included removal/cleaning of debris from piping and replacement/treatment of damaged equipment. Cell 25-7-2 remained out-of-service and will be scrapped. The inspectors observed operator performance during the return-to-service and did not identify any issues.

c. Conclusions

The inspectors continued to monitor plant activities and have not identified any adverse impact from the transition to the new organizational structure and reduction in force that became effective on June 30, 2000. No issues were identified during a recent increase in cascade power and return to service of the side purge cascade.

O8 Miscellaneous Operations Issues

O8.1 Certificatee Event Reports (90712)

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. The inspectors will evaluate the associated written reports for each of the events following submittal, as applicable.

Number	Date	Status	Title
37405	10/03/00	Open	Safety System Actuation, Autoclave Shell High Steam Pressure Shutdown System in Building X-342, Autoclave No. 2.

O8.2 Bulletin 91-01 Reports (97012)

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 this report or in future inspection reports.

Number	Date	Title
37268	8/29/00	24-Hour Report - NCS violation; Nuclear Criticality Safety Approval (NCSA) was violated when it was discovered that maximum spray distance from a pressurized pipe was actually 106 feet which is greater than the original implementation distance of 15 feet. The report was later updated after it was determined the 15-foot spray distance was accurate.
37308	9/11/00	4-Hour Report - NCS violation; NCSA was discovered to be deficient because it failed to provide adequate guidance on handling and storing used sintered metal filters removed from favorable geometry vacuums.
37383	9/26/00	4-Hour Report - NCS violation; it was discovered that the Building X-705 complexing hand-table ductwork was not covered by an NCSA. The hand-table had not been in operation since 3/03/97

and remained out of service. The report was later updated after it was determined that the ductwork contained less than 6 grams U-235 which would not require an NCSA.

II. Maintenance

M8 Miscellaneous Maintenance Issues

M8.1 (Closed) IFI 70-7002/99003-01: Enhancements for guidance regarding independent verification. Plant staff developed and provided a training bulletin for Procedure XP2-PO-FO1032, "Independent/Concurrent Verification." The inspectors will continue to monitor plant activities for compliance with the procedural requirements and this item is closed.

III. Engineering

E1 Conduct of Engineering

E1.1 Design Change Deficiencies

a. Inspection Scope (88100)

The inspectors reviewed deficiencies discovered by plant staff resulting from a modification to the Low Assay Withdrawal (LAW) Station pyrotronic smoke detection system.

b. Observations and Findings

On September 27, during routine testing of the LAW compressor pyrotronic smoke detection system, the operators observed that the system did not alarm as expected when one of two smokeheads located over one of the compressors was activated. During the followup investigation, plant staff determined that a design modification to the pyrotronics system, which was to change the logic for alarming the system when one instead of both smokeheads were activated, was not completed as intended in August 2000. In response, plant staff made a 24-hour notification to the NRC due to the apparent safety system failure but later retracted the event after determining that cascade automatic data processing smokeheads provided redundant coverage in that area.

Plant staff determined that the root cause for failure to install the modification was inadequate implementation/documentation of the work package and inadequate post-modification testing. Plant staff used the routine surveillance procedure to perform the post-modification testing which was determined to be inadequate because it did not ensure that each smokehead was tested individually. Plant staff also determined that the modification was installed at the withdrawal station but that the post-modification testing was inadequate there as well.

As corrective action, plant staff implemented the modification at the LAW compressor area and successfully retested the entire pyrotronics system. In addition, engineering management issued a lessons learned to reinforce the requirements for validating

modification implementation and properly performing post-modification testing. Plant staff also intended to revise the surveillance procedure and perform a self-assessment to ensure that the plant modification process was being properly implemented.

Inadequate post-modification testing of the pyrotronics system was a violation. However, the problem did not result in the inoperability of the system due to redundant coverage and plant staff took immediate and effective actions to address the issue. Therefore, this non-repetitive certificatee identified and corrected violation is being treated as a Non-cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy.

c. Conclusion

The inspectors determined that plant staff took appropriate action to address some deficiencies discovered from the modification to the LAW pyrotronics smoke detection system.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) CER 35132 (98-17): Fire in Building X-326 which caused damage to side purge equipment containing radioactive material. Plant staff determined that contributing root causes were that plant design did not provide for temperature monitoring and an automatic motor trip function on high process gas temperature. As corrective action, plant staff installed instrumentation to monitor temperature prior to side purge restart. In addition, applicable procedures were revised to ensure that appropriate precautions were taken for centrifugal compressors with excessive vibrations and that a formal mechanism was in place to determine the cause for compressor failures. The inspectors have no further issues and this item is closed.

IV. Plant Support

P8 Miscellaneous Plant Support Issues

P8.1 (Closed) URI 70-7002/99015-02: Review of actions taken to enhance nuclear criticality exercises and drills. Emergency management committed to conduct annual criticality evacuation drills for buildings covered by CAAS as required by American National Standards Institute Standard 8.19. In addition, emergency management also committed to performing an annual criticality exercise that drilled the entire emergency response organization. The inspectors have no further concerns and this item is closed.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of the facility management on October 5, 2000. The facility staff acknowledged the findings presented and indicated concurrence with the facts, as stated. The inspectors asked the plant staff whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

United States Enrichment Corporation

J. Anzelmo, Work Control Manager
*M. Brown, General Manager
*D. Couser, Training & Procedures Manager
J. Cox, Plant Services Manager
*S. Fout, Operations Manager
*R. Helme, Engineering Manager
*R. Lawton, Nuclear Safety & Quality Manager
*P. Miner, Regulatory Affairs/Commitment Management Manager
*P. Musser, Enrichment Plant Manager
*R. Smith, Plant Support Manager
*M. Wayland, Maintenance Manager

*Denotes those present at the exit meeting on October 5, 2000.

INSPECTION PROCEDURES USED

IP 88100: Plant Operations
IP 88100: Engineering
IP 90712: In-office Reviews of Written Reports on Non-routine Events

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened	Item Type	Summary
70-7002/2000010-01	VIO	Entry into restricted area due to inoperable CAAS with EPDs at wrong setpoint
70-7002/2000010-02	VIO	Inadequate procedure for use of EPDs
37405	CER	Safety System Actuation, Autoclave Shell High Steam Pressure Shutdown System in Building X-342, Autoclave No. 2
Closed		
70-7002/99003-01	IFI	Enhancements for guidance regarding independent verification
70-7002/99015-02	URI	Review of actions taken to enhance nuclear criticality exercises and drills
35132 (98-17)	CER	Fire in Building X-326 which caused damage to side purge equipment containing radioactive material.
Discussed		
None		

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
CAAS	Criticality Accident Alarm System
CER	Certificate Event Report
CFR	Code of Federal Regulations
DNMS	Division of Nuclear Material Safety
DOE	Department of Energy
DOI	Daily Operating Instruction
EPD	Electronic Personal Dosimeter
HP	Health Physics
IFI	Inspection Follow-up Item
LAW	Low Assay Withdrawal
NCS	Nuclear Criticality Safety
NCSA	Nuclear Criticality Safety Approval
No.	Number
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PERR	Public Electronic Reading Room
PSS	Plant Shift Superintendent
SAR	Safety Analysis Report
TSR	Technical Safety Requirements
UF_6	Uranium Hexafluoride
URI	Unresolved Item
USEC	United States Enrichment Corporation
VIO	Violation