U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.	70-7002
Certificate No.	GDP-2
Report No.	70-7002/97002(DNMS)
Applicant:	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:	March 3 through April 6, 1997
Inspectors:	C. R. Cox, Senior Resident Inspector D. J. Hartland, Resident Inspector
Approved By:	Timothy D. Reidinger, Acting Chief Fuel Cycle Branch

EXECUTIVE SUMMARY

United States Enrichment Corporation
Portsmouth Gaseous Diffusion Plant
NRC Inspection Report 70-7002/97002(DNMS)

This inspection report includes aspects of plant operations, maintenance, and plant support. The report covers a five-week period of resident inspection.

Operations

The inspectors identified a violation for a failure to maintain Technical Safety Requirement (TSR) required minimal staffing for the Tails Station and inadequate operator coverage during a special plant evolution. (Section O1.2)

The inspectors identified some examples of improper implementation of TSRs and non-conservative operability determinations. (Section O1.3)

The inspectors identified weaknesses in the problem reporting system, including the failure to initiate a problem report after discovering some blocked sprinkler heads. In addition, inspectors also noted some reports that did not document the actual concerns. (Section O1.4)

The inspectors noted a possible fuse aging problem for safety related cranes. One inspection follow-up item was identified. (Section O1.5)

Maintenance

The inspectors identified a violation when the plant entered Mode II with DC control power for UF_6 stage motors inoperable for four cascade cells and without verifying that the coolant high pressure relief system block valves were open. (Section M1.1)

The inspectors noted that although the Low Assay Withdrawal (LAW) procedures did not specify the use of a Local Control Center (LCC) as an alternate sample point for assay determination, the Safety Analysis Report (SAR) described the process as an acceptable alternative for assay verification. (Section M1.2)

Engineering

The inspectors noted that continued safety system actuations with the autoclaves was challenging the effectiveness of the interim corrective actions in the Compliance Plan. One inspection follow-up item was identified. (Section E2.1)

Plant Support

The inspectors identified a lack of documentation for challenges to initial classroom training for Criticality Safety. One inspection follow-up item was identified (Section C.5)

An investigation into potentially compromised classified material determined that the potentially compromised material was adequately protected.
(Section S8.1)

Report Details

Summary of Plant Status

The plant operated at approximately 1450 MW during most of this inspection period. High enriched uranium (HEU) refeeding operations were resumed during this inspection period.

I. Operations

O1 Conduct of Operations[1]

O1.1 General Comments

The inspectors observed selected operational activities. Specific events and noteworthy observations are detailed in the sections below.

O1.2 Failure to Maintain TSR Manning Requirements

a. Inspection Scope (IP 88100)

The inspectors observed the plant staff's response to an outgassing at the X-330 Tails Station.

b. Observations and Findings

On March 21, 1997, during a routine inspection at the X-330 Tails Station, the inspectors observed the plant staff's response to a smoke alarm that was activated from the compressor area on the cell floor. The inspectors noted that the plant staff's response to the alarm was delayed because the operator assigned to the Tails Station previously left the building to deliver a uranium hexafluoride (UF_6) sample to the X-710 building for analysis. An operator from another area in the plant had to be dispatched to confirm the outgassing before the building recall was sounded. Two operators were at the Tails Station at the time of the smoke alarm, troubleshooting a problem with the gamma spectrometer, but could not respond to the compressor area because they did not have their respirators.

The inspectors noted that the X-330 Tail Station was left unattended approximately 15-20 minutes. Adequate coverage was resumed when the operator returned from the X-710 building.

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[1]Topical headings such as O1, M8, etc., are used in accordance with the NRC standardized inspection report outline contained in NRC Manual Chapter 0610. Individual reports are not expected to address all outline topics, and the topical headings are therefore not always sequential.

Failure to meet the minimum staffing requirements for the X-330 Tails Station is a Severity Level IV violation of Technical Safety Requirement 3.2.2.a. (VIO 70-7002/97002-01)

c. Conclusion

The failure to maintain minimum staffing for the X-330 Tails Station was significant because it resulted in inadequate operator coverage during a special plant evolution and delayed the response to a minor outgassing.

O1.3 Poor Implementation of TSRs

a. Inspection Scope (IP 88100)

The inspectors reviewed the plant staff's implementation of TSR requirements.

b. Observations and Findings

The inspectors observed some examples of weak implementation of TSR requirements and non-conservative operability evaluations:

- After transition to NRC regulation on March 3, 1997, the inspectors identified that the Plant Shift Superintendent (PSS) office listed degraded Criticality Accident Alarm System (CAAS) coverage areas in the cascade buildings as a TSR Limiting Condition of Operations (LCO), when in fact the TSR was not applicable or required because those areas contained less than 1% assay material and/or less than 700 grams of uranium enriched to greater than 1% assay. The inspectors also observed inconsistency among the cascade buildings as to how the requirements were being implemented.

- When the inspectors identified a violation regarding a battery surveillance, as discussed in Section M1.1 of this report, the PSS initially declared only the affected battery cells inoperable instead of the entire DC control power system for the applicable cascade cells.

- When plant staff encountered a perceived problem with a CAAS cluster detector battery, they initially declared the cluster operable but degraded. Although it turned out that there was no problem with the battery, the inspectors determined that the decision was non-conservative, as the batteries were the safety-related power supply to the detectors. The plant staff concluded that, in the future, they would put a detector with a bad battery in "alert", which would trip that channel and reduce the logic to one-out-of-two on the remaining detectors in the cluster.

c. Conclusion

The examples identified by the inspectors did not result in any violations of the TSRs. However, they represent a weakness in the plant staff's understanding of the requirements which may have contributed to the violations identified in Section O1.2 and Section M1.1.

O1.4 Problem Reporting Deficiencies

a. Inspection Scope (IP 92105)

The inspectors reviewed the plant staff's implementation of the corrective action system.

b. Observations and Findings

The inspectors identified some weaknesses in the plant problem reporting system:

- A problem report (PR) was not generated after the fire protection staff discovered some blocked fire protection sprinklers in the X-330 building. As a result, no operability determination or safety evaluation was performed until requested by the inspectors. A later safety evaluation determined that the fire protection system was operable.

- The inspectors identified some examples of PRs that did not discuss what the actual concerns were. PR-PTS-97-2299, generated for the CAAS coverage issue discussed in Section O1.3 above, only documented that the inspectors inquired about the status but did not mention incorrect implementation of the TSR LCO.

  In addition, PR-PTS-97-2290 documented an electrical problem that was experienced when closing a breaker for DC power to an Area Control Room (ACR) panel. When the breaker was manually opened, several overload alarms for compressor motors came in and remained standing on other panels. The problem report, which was issued after inquiry from the inspectors, documented the breaker problem but not the standing overload alarms which required compensatory actions, i.e., a higher degree of operator's attention on the affected panels.

c. Conclusion

The inspectors determined that the examples identified had only minor safety significance. However, the inspectors concluded that the potential existed where minor issues could escalate if not properly documented in order that proper prioritization and corrective action could be taken.

O1.5 Tails Station Crane Failure

a. Inspection Scope (IP 88100)

The inspectors reviewed the crane pendant fuse failure resulting in a Tails cylinder filled with liquid UF_6 being suspended for approximately two hours.

b. Observations and Findings

On April 3, 1997, a crane at the Tails Withdrawal Station apparently lost power while moving a recently filled Tails cylinder containing liquid UF_6. The system engineer and maintenance personnel investigated and found that the control pendant fuse had blown. Electricians replaced the fuse and took voltage readings at various test points in the pendant. No abnormal voltage was detected. The crane was activated and the cylinder was placed in a safe condition. The liquid cylinder had been suspended for approximately two hours. Further inspection of the crane detected no other problems and the crane was declared operable.

The electricians and system engineer ascertained that the fuse's age was the cause of the failure. The inspectors questioned whether the fuse failure was a safety system actuation. Inspectors noted that the holding brake for the crane was part of the safety system whose function was to engage upon a loss of power to prevent dropping a cylinder. The brake would engage because the electro-magnet holding the brake open would lose power and the brake would close. The crane operators stated that the loss of power occurred while moving the crane's trolley so that the holding brake was already engaged under routine service when the fuse was blown. The licensee stated that since the brake was engaged during routine operations, no safety system actuation had occurred. The inspectors will track the fuse aging problem as an inspection follow-up item (IFI 70-7002/97002-03)

c. Conclusion

The initial operator actions were appropriate and the equipment functioned as designed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 TSR Mode Transition Violation

a. Inspection Scope (IP 88102)

The inspectors assessed the plant staff's implementation of the TSR surveillance program.

b. Observations and Findings

While reviewing surveillance data for the plant safety-related batteries, the inspectors discovered that several batteries contained cells which were documented with a specific gravity below the TSR-required value of 1.180. During follow-up, the inspectors determined that the plant staff did not correct the conditions, nor did they enter the required 90 day LCO action statement for cascade DC control power for the affected cascade cells. Not realizing they were in an action statement, the plant operators placed the following cascade cells in Mode II:

- March 5, 1997, Cell 27-2-15 (TSR 2.7.3.13)
- March 9, 1997, Cell 31-3-3 (TSR 2.2.3.14)
- March 13, 1997, Cell 27-2-1 (TSR 2.7.3.13)
- March 13, 1997, Cell 31-1-1 (TSR 2.2.3.14)

In addition, the licensee identified 11 cells that were placed in Mode II without verifying that the block valves for the coolant high pressure relief system were sealed open as required by the surveillance requirements of TSR 2.2.3.1.

The two examples are a Severity Level IV violation of TSR 1.6.2.2.d., which states that entry into an operational mode that is applicable to a particular LCO shall not be made unless the conditions for the LCO are met without reliance on provisions contained in the action statement.
(VIO 70-7002/97002-02)

c. Conclusion

The inspectors determined that the individual events were not safety significant. The batteries were required only when AC power supplies are lost. Alternative means of tripping cascade cells were also available from the switchyards. In addition, no block valves were found closed when inspected. However, the events, in aggregate, were indicative of a generic problem with the plant staff's implementation of the TSRs.

M1.2 Alternative Sampling for the Low Assay Withdrawal (LAW) Station

a. Inspection Scope (IP 88102)

The inspectors reviewed the assay sampling for the LAW Station while the mass spectrometer was inoperable. Inspection activities included reviewing procedures, observing activities, and interviewing personnel.

b. Observations and Findings

On March 5, 1997, the X-333 LAW Station was withdrawing product with the installed mass spectrometer inoperable. TSR requirements for LAW operations require assay samples to be compared with the gamma spectrometer. The

installed mass spectrometer readings were normally used but an authorized backup method allowed gas samples to be withdrawn from the LAW sample line. However, the LAW sample line during this period was plugged and therefore a sample could not be drawn. An alternate method for sampling in such a case was to obtain a gas sample at the Local Control Center (LCC) for the cascade stage that was the withdrawal point. The alternate process was described in Safety Analysis Report (SAR) Section 3.2. Sample withdrawal at the LCCs is a routine process used to verify the cascade gradient and to conduct inventories. However, the LAW procedure did not specifically state that the LCC was an alternate method for verifying withdrawal assay.

The inspectors determined that the sample operations were conducted in accordance with the plant procedures for withdrawing samples at the LCC. The samples were taken to the X-710 building for analysis and the results compared with the gamma spectrometer readings. The assay comparisons were within specifications.

The inspectors pointed out the procedure discrepancy to the facility operators who acknowledged the problem and stated that plant management had asked similar questions at about the same time as the inspectors. As a result, the LAW procedure was in the process of revision to clarify the use of the LCC as an alternate sample station as described in the SAR.

c. Conclusions

The inspectors determined that although the LAW procedure did not specify the use of the LCC as an alternate sample point, the SAR did describe the process as an acceptable alternative for assay verification.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Autoclave Safety System Actuations (IP 37550)

a. Scope

The inspectors reviewed two event notifications on high condensate level alarm activations on Autoclave No. 2 in the X-342 Building.

b. Observations and Findings

On March 25, 1997, Autoclave No. 2 in the X-342 Building went into steam shutdown, due to a high condensate level alarm. The operators investigated and determined that the safety signal alarm was a valid activation and an event notification was made to the NRC Headquarters Operations Officer (HOO) as required by the facility's notification procedure.

The system engineer and maintenance personnel inspected the autoclave and noted that the steam shutdown was actuated by a non-safety system signal from the roll motor buffer air system. A pressure switch would actuate a steam shutdown when buffer air pressure would drop below 15 pounds per square inch gauge (psig). The low buffer air pressure was the apparent source of the steam shutdown signal and when steam shutdown was initiated, the high condensate level alarm was actuated by accumulated condensation.

On April 3, 1997, a second steam shutdown on Autoclave No. 2 was activated. Again, the operators investigated and determined that the steam shutdown was the result of a valid high condensate level alarm and the proper notifications were made to the HOO. Further investigations by the system engineer determined the cause of the high condensate level was a malfunction in the steam trap on the condensate drain line. The steam trap malfunction was a repeat of previous activations for which the system engineer had developed an additional pre-operational test to detect. Apparently the test was not effective for the April 3 event. Compliance Plan Issue Three acknowledged design deficiencies which are to be addressed in a project named Nuclear Safety Upgrade. The design deficiencies have caused numerous non- safety related actuations of the condensate high level alarm as noted in past observation reports. Several interim corrective actions were identified in the compliance plan that were to reduce the spurious safety system actuations. The inspectors will review the event reports for these two events and the effectiveness of the Compliance Plan interim corrective actions as an inspection follow-up item (IFI 70-7002/97002-04)

c. Conclusions

While the two actuations appeared to be from unrelated causes, routine safety system actuations are a cause of concern. The effectiveness of the interim corrective actions identified in the Compliance Plan is challenged by continued safety system actuations.

IV. Plant Support

C5.1 Criticality Safety Training and Qualifications

a. Inspection Scope (IP 88020)

The inspectors reviewed the status of Compliance Plan Issue 10 "Nuclear Criticality Safety (NCS) Training for Managers." The inspectors reviewed the Compliance Plan, the training implementation procedures, criticality safety training lesson plans, test results, and other training files to verify the status of Issue 10.

b. Observations and Findings

The inspectors reviewed the training records of the supervisors which were identified by the Compliance Plan Issue 10, Plan of Action, Item 1, as requiring initial NCS training for supervisors. While reviewing the records, the Training Manager indicated that he had allowed some supervisors to "challenge" the classroom training by taking the examinations for the class. Passing the examination was considered successful completion of training in accordance with Procedure XP-2-TR-TR1030, "Conduct of Training," Revision 0, dated February 28, 1997. The inspectors reviewed the records of the six supervisors who the Training Manager could remember challenged the classroom training. The records of the six individuals had the graded tests indicating successfully passing the test but there was nothing in their training records to indicate the test they had taken was a challenge in lieu of the classroom training. The Training Manager further disclosed that he had determined the six supervisors could challenge the class rather than their Section Training Manager.

The lack of documentation and the Training Manager personally selecting candidates for challenging the classroom training was contrary to the current procedures. However, the training had been completed before the effect date of the procedures and before transition to NRC regulatory oversight. The Training Manager did acknowledge that the lack of records would present a problem for auditing training adequacy and did begin the process of reconstructing the training records. The reconstruction of training records for initial criticality safety training for managers will be tracked as an inspection follow-up item (IFI 70-7002/97002-05).

c. Conclusions

The lack of documentation of challenging initial classroom training was a concern because the inspectors could not determine how many people were allowed to challenge the training. XP-2-TR-TR1030, "Conduct of Training," Revision 0, dated February 28, 1997, cautioned that initial training should only be considered under special circumstances. In addition, the Training Manager was to be the final approving authority in the challenge process, rather than the initiator in the process.

S8. Miscellaneous Security and Safeguards Issues

S8.1 Possible Compromise of Classified Material

a. Inspection Scope

The inspectors reviewed the events involving the March 27, 1997, event notification regarding a possible compromise of classified material. The inspectors reviewed the material and interviewed plant personnel.

b. Observations and Findings

On March 27, 1997, a security contractor was conducting a review of engineering documents and drawings as part of the Department of Energy (DOE) Large Scale Declassification Review. The material reviewed was in USEC possession in an archive vault. The contractor found 17 documents dating from 1954 to 1958 that were not marked as classified but in accordance with 1997 classification guidelines should have been classified as Confidential-Restricted Data. The contractor contacted the Site Classification Officer and the security staff investigated the possible compromise of the 17 documents. The titles of the seventeen documents, also classified, were found to exist on three computer systems, two within the Controlled Access Area (CAA) and one in the Property Protection Area (PPA). Three "uncleared" workers had access to the information in the PPA. The three workers were interviewed and required to complete Standard Forms (SF) 312 "Classified Information Nondisclosure Agreement". The computers were purged of the classified information in accordance with computer security practices.

The NRC HOO was notified of the event on March 27, 1997 as part of the 10 Code Of Federal Registration (CFR) Part 95.57 immediate notification reporting requirement.

c. Conclusion

The confidential material did not appear to be compromised. The material in the archive was never checked out to anyone and the three uncleared personnel did not remember seeing the material and if they had, they would not have recognized the confidential nature of the material. The corrective actions were adequate to remove the confidential material from uncontrolled areas and computers.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of the facility management on April 3, 1997. The facility staff acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Lockheed Martin Utility Services (LMUS)

*D. I. Allen, General Manager
*J. E. Shoemaker, Enrichment Plant Manager
*M. Hasty, Engineering Manager
*R. W. Gaston, Nuclear Regulatory Affairs Manager
*G. S. Price, Maintenance Manager
*C. W. Sheward, Operations Manager

United States Enrichment Corporation

*J. H. Miller, USEC Vice President, Production
*L. Fink, Safety, Safeguards & Quality Manager

United States Department of Energy (DOE)

*J. A. Crum, Site Safety Representative

Nuclear Regulatory Commission (NRC)

G. L. Shear, Acting Deputy, Division of Nuclear Material Safety
*C. R. Cox, Senior Resident Inspector
*D. J. Hartland, Resident Inspector
Y. H. Faraz, Project Manager, NMSS

* Denotes those present at routine resident exit meeting held on April 3, 1997.

INSPECTION PROCEDURES USED

IP 88100 Plant Operations
IP 88102 Surveillance Observations
IP 88105 Management Oversight and Controls
IP 88020 Regional Criticality Safety

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

70-7002/97002-01	VIO	Failure to meet the minimum staffing requirements for the X-330 Tails Station.
70-7002/97002-02	VIO	Entry into an operational mode that is applicable to a particular LCO shall not be made unless the conditions for the limiting conditions for operation are met without reliance on provisions contained in the action statement.
70-7002/97002-03	IFI	Review of the crane fuse aging problem.
70-7002/97002-04	IFI	Review of two event reports and Compliance Plan effectiveness for autoclave high condensate level alarms.
70-7002/97002-05	IFI	Reconstruction of training records for initial criticality safety training for managers.

Closed

None

Discussed

None

Certification Issues - Closed

None

LIST OF ACRONYMS USED

IP	Inspection Procedure
CFR	Code of Federal Regulations
AC	Alternating Current
ACR	Area Control Room
CAAS	Criticality Accident Alarm System
DC	Direct Current
HEU	High Enriched Uranium
LCO	Limiting Condition for Operation
MW	Megawatt
NCS	Nuclear Criticality Safety
PR	Problem Report
PSS	Plant Shift Superintendent
TSR	Technical Safety Requirement
UF_6	Uranium Hexafluoride

LAW	Low Assay Withdrawal
LCC	Local Control Center
SAR	Safety Analysis Report
psig	pounds per square inch gauge
PPA	Property Protection Area
CAA	Controlled Access Area