

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 70-7002/98018(DNMS)

Facility Operator: United States Enrichment Corporation

Facility: Portsmouth Gaseous Diffusion Plant

Location: 3930 U.S. Route 23 South
P.O. Box 628
Piketon, OH 45661

Dates: November 23, 1998 through January 12, 1999

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 70-7002/98018(DNMS)

This inspection report includes aspects of plant operations, maintenance, and engineering. The report covers a seven week period of routine resident inspections.

Plant Operations

- The inspectors concluded that the plant fire brigade's response to a fire in Building X-326 was adequate, and proper precautions were taken to protect plant personnel and fire fighters. The NRC dispatched an Augmented Inspection Team to the site to followup on the event. The findings of the team will be documented in Inspection Report 70-7002/98019(DNMS). (Section O.1)
- The inspectors identified several process motor load monitors not adjusted to the procedurally required alarm settings in Building X-330. Several days later, the inspectors identified load monitors not adjusted correctly in Building X-326. The inspectors noted that the Safety Analysis Report credited operator action to mitigate accidents in the cascade. The inspectors also noted the monitors were a primary mechanism in alerting operators of abnormal conditions. One violation was identified. (Section O1.2)

Maintenance and Surveillance

- The inspectors concluded that the certificatee did not perform the required safety evaluation per 10 CFR 76.68 prior to implementing the use of benchmark work packages. One minor violation was identified. (Section M1.1)
- The inspectors concluded that the certificatee had prior opportunity to address noncompliance with the preventive maintenance program with regard to submittal of deferral sheets for past due preventive maintenance. One minor violation was identified. (Section M1.2)

Engineering

- The inspectors concluded that the certificatee took appropriate action to resolve an issue regarding safety evaluations to address interim plant operations and configuration during execution of plant modifications. (Section E1.1)
- The inspectors identified poor documented justification for accepting a vendor on the approved supplier list with unresolved audit findings. In addition, the inspectors identified a weakness in the approved supplier list guidance procedure in that it did not establish acceptance criteria for approval of suppliers. (Section E7.1)

Report Details

I. Operations

O1 Conduct of Operations

O1.1 Fire In Building X-326

a. Inspection Scope (88100)

The inspectors responded to a fire in Building X-326.

b. Observations and Findings

On December 9, a fire occurred inside purge cascade cell 25-7-2 resulting in extensive damage to the cell components. The cell was isolated from the rest of the cascade, and after removing several other cells from service due to the resulting transient, the certificatee was able to return the top purge to service and stabilize the cascade front later that day. Although there was some release of uranium hexafluoride (UF₆) in the building, radiation monitors and air samplers outside the building showed no evidence of a measurable release. Four plant employees received minor injuries, requiring onsite medical treatment.

The certificatee did not intend to return the side purge cascade to service until the extent of the damage to the equipment was assessed and the specific cause of the fire was determined. A likely cause was a mechanical failure in a compressor which resulted in overheating due to friction. The heated metal apparently led to a metal-gas reaction between the aluminum components and the UF₆ being processed, resulting in breaching of the system integrity.

The inspectors on the scene noted that the sprinkler system operated as designed, preventing the spread of the fire to adjacent equipment. The plant fire brigade's response was adequate, and proper precautions were taken to protect plant personnel and fire fighters. The NRC dispatched an Augmented Inspection Team to the site later that day to followup on the event. The findings of the team will be documented in Inspection Report 70-7002/98019(DNMS).

c. Conclusion

The inspectors concluded that the plant fire brigade's response to the fire was adequate, and proper precautions were taken to protect plant personnel and fire fighters. The NRC dispatched an Augmented Inspection Team to the site later that day to followup on the event. The findings of the team will be documented in Inspection Report 70-7002/98019(DNMS).

O1.2 Setting Cell Motor Load Alarm

a. Inspection Scope (88100)

The inspectors toured plant facilities and assessed existing conditions for compliance with procedures and other certificate requirements.

b. Observations and Findings

On December 13, during a tour in area control room (ACR) No. 2 in Building X-330, the inspectors observed two alarms illuminated on the cell 31-5-7 panel. The illuminated load monitor lights indicated that the motors for stages 5 and 6 were operating above or below the nominal 10 percent stage motor amperage load. In discussions with the inspectors, the front line manager (FLM) explained that the cascade front was located in stages 5 and 6 of cell 31-5-7; therefore, the operators could not adjust the load monitors because of significant variations in motor amperage load. The front had moved from its normal position in Building X-326 to Unit 31-5 in Building X-330 as a result of the fire discussed in Section O1.1 above. However, the inspectors observed that the load monitors were not adjusted to the required 10 percent above and below nominal motor load for the remaining stages of cell 31-5-7 and adjacent cells.

The FLM explained that operators should have adjusted the load monitors to 10 percent above and below nominal motor load but did not believe the adjustment was procedurally required. In a subsequent discussion with the inspectors, the Shift Operation Manager explained that Procedure XP4-CO-CP2643, "X-330 Process Power System," incorporated the Safety Analysis Report (SAR) requirement to maintain load alarms at 10 percent above and below nominal motor load. The inspectors noted that the operators took immediate action to ensure that all the load monitors in ACR No. 2 were correctly adjusted.

The inspectors reviewed the safety function of the load monitors. The inspectors noted that the SAR states that a change in cell motor amp load, indicated by the motor ammeter, was the operator's initial indication of several system and equipment abnormalities. The inspectors also noted that the SAR accident analysis credited operator timely response to the load alarms to mitigate accidents initiated by equipment failure.

Technical Specification Requirement (TSR) 3.9.1, requires that written procedures shall be prepared, reviewed, approved, implemented, and maintained to cover activities described in SAR, Section 6.11.4.1, and listed in Appendix A to SAR, Section 6.11. Appendix A to SAR, Section 6.11 requires that "cell load alarm" shall be covered by written procedures. Paragraph 8.3 of Procedure XP4-CO-CP2643, "X-330 Process Power System," requires, in part, that the motor load monitor setpoints be adjusted to 10 percent above and below the nominal motor load. On December 13, the inspectors identified motor load monitor setpoints for stages of cell 31-5-7 and adjacent cell stages in ACR No. 2 were not adjusted to 10 percent above and below the nominal motor load, a violation of TSR 3.9.1 (**VIO 70-7002/98018-01**).

c. Conclusion

The inspectors identified several process motor load monitors that were not adjusted to the procedurally required alarm settings in Building X-330. The inspectors noted that the SAR credited operator action to mitigate accidents in the cascade. The inspectors also noted the monitors were a primary mechanism in alerting operators of abnormal conditions. One violation was identified.

O8 Miscellaneous Operations Issues

O8.1 (Open) URI 70-7002/98005-03: Apparent discrepancy between the SAR accident analysis and the certificatee "see and flee" policy. The policy required that all plant personnel in the cascade buildings report to the ACR regardless of the size of a UF_6 release, while the accident analysis took credit in some cases for operator action in the field to mitigate an accident. The certificatee had not yet prepared a corrective action plan to address this issue. The certificatee intended to install alarming airborne radioactivity monitors throughout the buildings to allow for immediate assessment of the extent of a release. In the meantime, incident commanders have been instructed to permit operators to leave the ACR and perform required surveillances in the field as conditions permit. This unresolved item will remain open pending implementation of the intended corrective action plan.

O8.2 Certificatee Event Reports (CERs) (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.

<u>Number</u>	<u>Date</u>	<u>Status</u>	<u>Title</u>
35076	11/23/98	Open	Safety system failure: autoclave No. 2, Building X-344, steam/air leak at locking ring sealing surface during cylinder heating.
35101	12/01/98	Open	Failure of Building X-326 electrical circuit to shut down an operating cell from the control room.
N/A	12/07/98	Open	10 CFR 95.57(b) - a security officer failed to verify the access media was in place at the portal prior to granting the employee plant access.
N/A	12/09/98	Open	10 CFR 95.57(b) - security section self-assessment discovered uncleared subcontractors without proper ratio of cleared escorts at the Building X-745B.
35130	12/09/98	Closed	Ohio Environmental Protection Agency notification courtesy call to inform of a fire in Building X-326 which occurred and was extinguished.

The inspectors will track the issues associated with this notification by CER 35132. This item is closed.

<u>Number</u>	<u>Date</u>	<u>Status</u>	<u>Title</u>
35139	12/10/98	Open	Failure of Building X-330 cell 29-2-5 local cell trip circuit.
35147	12/13/98	Open	Failure of Building X-326 cell 27-1-12 local cell trip circuit.
N/A	12/17/98	Open	10 CFR 95.57(b) - classified document discovered in a locker in the Building X-344.
N/A	12/18/98	Open	10 CFR 95.57(b) - Building X-100 Information Services reproduction area vault was left unsecured and unattended for 20 minutes.
35132	12/09/98	Closed	10 CFR 76.120(c)(4) - notification of fire damage to equipment containing radioactive material.
35193	12/25/98	Closed	Power lost to #1 boiler in X-600 Steam Plant causing opacity exceedence to the No. 2 and No. 3 boilers.

Power was lost to the No. 1 boiler due to a ground fault in a blower motor electrical circuit. Steam production was restored within 2 hours. During followup, the inspectors did not identify any significant safety issues and this item is closed.

<u>Number</u>	<u>Date</u>	<u>Status</u>	<u>Title</u>
N/A	01/04/99	Open	10 CFR 95.57(b) - two uncleared commercial drivers were discovered within the site property protection area without a cleared escort.

08.3 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) approval 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.

<u>Number</u>	<u>Date</u>	<u>Title</u>
35131	12/09/98	4-Hour Report - NCS violation - loss of moderation and mass control.
35169	12/17/98	24-Hour Report - NCS violation - Building X-333 surge drum was discovered with greater than 3 percent U-235 enrichment.

<u>Number</u>	<u>Date</u>	<u>Title</u>
35234	01/08/99	4-Hour Report - NCS violation - Building X-326 had no NCS approval in place for Evacuation Booster Station, which has been abandoned for approximately 20 years.

II. Maintenance and Surveillance

M1 Conduct of Maintenance and Surveillance

M1.1 Implementation of Benchmark Work Packages Without Safety Evaluation

a. Inspection Scope (88103)

The inspectors reviewed the certificatee's implementation of the use of pre-approved work packages.

b. Observations and Findings

On December 2, work control management briefed the inspectors on the implementation of the use of "benchmark" or pre-approved work packages. The packages were developed for routine repetitive tasks and had received technical reviews, thus requiring only a planner signature and work start approval prior to initiating the maintenance activity. Changes to the packages would require reviews and approvals as required by the existing work control process.

During the discussion, the inspectors noted that the certificatee did not change the applicable work control procedures to approve the use of the benchmark packages. The procedure change would have required a safety evaluation per 10 CFR 76.68. The safety evaluation would have included a review to ensure compliance with SAR Section 6.4.8, which provided a description of the work control process. Instead, the certificatee used a daily operating instruction (DOI) to provide limited guidance on how the packages would be processed. In response, the certificatee put a hold on the implementation of the benchmarks until the required reviews were performed.

As followup, the inspectors reviewed the intended benchmark packages. The inspectors noted that one of the packages, replacement of autoclave cylinder thermocouples, had apparently been recently updated to include testing using a calibrated heat source. The inspectors concluded that the instructions were beyond skill-of-the-craft and should have been included in an approved procedure. The certificatee agreed to include the activity on the list to be proceduralized, as corrective action to VIO 70-7002/97005-02.

The use of a DOIs to authorize the use of the benchmarks in lieu of revising the work control procedure is a violation of 10 CFR 76.68. However, the certificatee put a hold on the use of the benchmarks before any were used in the field, pending revision to the work control procedure. Therefore, the issue is being treated as a violation of minor safety significance and is not subject to formal enforcement action.

c. Conclusions

The inspectors concluded that the certificatee did not perform the required safety evaluation per 10 CFR 76.68 prior to implementing the use of the benchmark work packages. One minor violation was identified.

M1.2 Noncompliance With Preventive Maintenance (PM) Procedural Requirements

a. Inspection Scope (88103)

The inspectors reviewed the certificatee's implementation of the PM program.

b. Observations and Findings

During the inspection period, the certificatee experienced three breaker failures while attempting to trip cells from the ACRs. TSRs 2.2.3.14 and 2.7.3.13 provided the requirements for DC control power to ensure that cell trip capability would be available. As a result, the certificatee appropriately made 24-hour notifications to the NRC in each case due to the safety system failures, as documented in Section O8.2.

The certificatee determined that an immediate operability concern did not exist for breakers that remained in service due to the alternative means of tripping cells from the local control centers, the switchyards, and Building X-300 as discussed in the TSR basis statements. To ensure timely tripping of cells on demand, the certificatee took compensatory action to require continuous manning of the switchyards.

The certificatee determined that the failures were isolated to breakers used for cells in Building X-326 and 29 size equipment in Building X-330. The certificatee determined that the root cause was improper lubrication on the breaker trip rollers and committed to revise the applicable maintenance procedures prior to returning any affected cells to service. The inspectors will use the 30-day report to the NRC to track the certificatee's actions to resolve this issue.

As followup to this issue, the inspectors noted that the 5-year PM on several breakers was past due. The inspectors also noted that the certificatee was not implementing Procedure XP2-GP-GP1036, "Preventive Maintenance Program," which required that deferral sheets be submitted and approved by engineering. The purpose of the deferral sheet was to document the justification for extending the completion of the PM task.

The inspectors noted that Problem Reports (PRs) 98-0988 and 98-6678 had previously identified a generic issue with regard to failure to submit deferrals for past due PMs. No immediate action was taken in response to those PRs to ensure compliance with the PM procedure. Failure to comply with Procedure XP2-GP-GP1036 is a violation. However, the certificatee took action to document deferrals on all past due PMs and no operability concerns were identified. Therefore, the issue is being treated as a violation of minor safety significance and is not subject to formal enforcement action.

c. Conclusion

The inspectors concluded that the certificatee had prior opportunity to address noncompliance with the PM program with regard to submittal of deferral sheets for past due PMs. One minor violation was identified.

III. Engineering

E1 Conduct of Engineering

E1.1 Implementation of Plant Modifications "At Risk"

a. Inspection Scope (88101)

The inspectors reviewed the certificatee's implementation of modifications to the plant "at risk."

b. Observations and Findings

On December 9, the Quality Systems Manager identified an issue regarding the intention to initiate a modification to the plant "at risk" without an approved safety evaluation for impact on existing plant equipment. The modification involved the installation of smoke detectors in the tie lines between the cascade buildings and Building X-343.

During followup discussions, the design engineering manager stated that, in response to the issue, a safety evaluation was completed and approved. However, the design manager indicated that an evaluation was necessary because the work was being performed under approved work instructions. The inspectors pointed out, however, that the work package did not require a safety evaluation. Upon further review, the design manager agreed to change applicable procedures and update training to ensure that safety evaluations for impact on existing plant equipment were performed prior to initiating plant modifications. The design manager also verified that there were no ongoing modifications that did not have documented evaluations.

c. Conclusion

The inspectors concluded that the certificatee took appropriate action to resolve an issue regarding safety evaluations to address interim plant operations and configuration during execution of a plant modification.

E7 Quality Assurance in Engineering Activities

E7.1 Administration of the Approved Suppliers List Review

a. Inspection Scope (88101)

The inspectors reviewed selected approved vendor audit reports for compliance with regulatory and procedural requirements. In addition, the inspectors reviewed the effectiveness of procedures for establishing acceptance criteria for approved suppliers and guidance to document audit findings.

b. Observations and Findings

The inspectors reviewed audit reports for vendors on the certificatee's approved suppliers list (ASL) and identified one vendor with five program elements classified as "unsatisfactory." The five unsatisfactory program elements included non-qualified employees performing calibration and repair, non-acceptance of 10 CFR Part 21 reporting, record storage conditions, and external audit plans.

The inspectors noted that the audit package placed limitations only on record storage condition and non-acceptance of 10 CFR Part 21 reporting. One limitation required the vendor to issue quality records to the certificatee for retention in approved storage files. The other limitation required the vendor to inform the certificatee of any 10 CFR Part 21 issue within 24 hours, and the certificatee would fulfill the reporting commitment to the NRC. However, the inspectors noted no limitation or documented justification that addressed the other three unsatisfactory audit elements.

In discussions with the inspectors, the Quality Systems Manager explained that the other three audit findings were administrative concerns and were not accurately articulated in the audit report. The certificatee learned that the issue regarding non-qualified employees performing calibration and repair functions was a training record problem and that the employees were verified to be adequately trained the day after the audit finding was documented. The inspectors noted the audit findings that addressed external audit plans and procurement document control concerns would not prevent the vendor from subcontracting calibration and repair functions before the corrective action was completed and closed. In addition, the inspectors identified the audit report did not document any impact of the findings or associated procurement limitations/restrictions as required by Paragraph 6.5.2.c of Procedure UE3-QA-QS1071, "Supplier Quality Assurance Audits."

In response, on January 11, the certificatee documented in the audit report the acceptance justification for the administrative audit findings and confirmed that the vendor had implemented the corrective actions to address the external audit plans and procurement document control audit findings. In addition, the inspectors learned that the certificatee had not contracted with the vendor since addition to the ASL on July 13, 1998. In discussions with the inspectors, the Quality Systems Manager explained that the certificatee verified that no other vendors on the ASL had outstanding unsatisfactory audit findings. Therefore, failure to document restrictions, as required by procedure, is being treated as a violation of minor safety significance and is not subject to formal enforcement action.

The inspectors identified a lack of clear guidance in Procedure UE4-QA-QS1100, "Administration of the Approved Supplier List." The purpose of the procedure was to describe the administrative details of maintaining the ASL. However, the inspectors noted that the procedure did not establish acceptance criteria or guidance to document audit findings. In discussions with the inspectors, the Quality Safety Manager stated that the procedure needed enhancements. On January 8, the certificatee issued PR 99-00132 which noted the procedural deficiencies and suspended placing any vendor on the ASL with an open audit finding.

c. Conclusion

The inspectors identified poor documented justification for accepting vendors on the ASL with unresolved audit findings. In addition, the inspectors identified a weakness in the ASL guidance procedure in that it did not establish acceptance criteria for approval of suppliers. One minor violation was identified.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of the facility management on January 12, 1999. The plant staff acknowledged the findings presented. 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

Lockheed Martin Utility Services

*J. Brown, General Manager
*S. Casto, Work Control Manager
*S. Fout, Operations Manager
*P. Hopkins, Acting Engineering Manager
*J. Morgan, Enrichment Plant Manager
*P. Miner, Regulatory Affairs Manager
*M. Wayland, Maintenance Manager

United States Enrichment Corporation

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

*Denotes those present at the exit meeting on January 12, 1999.

INSPECTION PROCEDURES USED

IP 88100: Plant Operations
IP 88101: Configuration Control
IP 88103: Maintenance Observations
IP 97012: In-office Reviews of Written Reports on Nonroutine Events

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

070-7002/98018-01 VIO Motor load alarms not adjusted as required by procedure.

Closed

None

Discussed

070-7002/98005-03 URI Discrepancy between safety analysis and "see and flee" policy.

LIST OF ACRONYMS USED

ACR	Area Control Room
ASL	Approved Supplier List
CER	Certificate Event Report
CFR	Code of Federal Regulations
DNMS	Division of Nuclear Material Safety
DOI	Dailey Operating Instruction
FLM	First Line Manager
IP	Inspection Procedure
NCS	Nuclear Criticality Safety
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
PM	Preventive Maintenance
PR	Problem Report
SAR	Safety Analysis Report
TSR	Technical Safety Requirement
UF ₆	Uranium Hexafluoride
URI	Unresolved Item
USEC	United States Enrichment Corporation
VIO	Violation