

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 70-7002/97015(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: December 15, 1997, through January 25, 1998

Inspectors: D. J. Hartland, Senior Resident Inspector
C. A. Blanchard, Fuel Cycle 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 70-7002/97015(DNMS)

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

Plant Operations

- The inspectors noted that the certificatee's corrective actions were inadequate in preventing continued violations of nuclear criticality safety approval (NCSA) requirements. Several examples of one violation were identified by plant staff and the NRC. (Section O1.1)

Maintenance and Surveillance

- The certificatee failed to isolate extended range product (ERP) withdrawal manifold, as required by the Technical Safety Requirements (TSR), prior to commencing testing of the smoke detection system. The inspectors concluded the certificatee continued to have problems with TSR implementation due to poor procedural guidance. One violation was identified. (Section M1.1)

Engineering

- The inspectors determined that selected piping system drawings accurately represented the piping installation in a facility. (Section E1.1)
- The inspectors determined that the certificatee had taken appropriate action to repair the heating, ventilation, and cooling (HVAC) system in the X-100 Building. (Section E2.1)

Plant Support

- The inspectors determined that the addition of appropriate emergency procedures to the controlled procedures manuals at the switch houses will assist the staff's ability in correctly responding to emergency conditions. (Section P3.1)

Report Details

I. Operations

01 Conduct of Operations¹

1.1 NCSA Implementation

a. Inspection Scope (88020)

The inspectors toured the plant facilities to verify implementation of NCSA requirements.

b. Observations and Findings

On January 15, 1998, during a routine tour of the X-344 Building, the inspectors observed that several orange dry active waste (DAW) bags were located less than two feet from uranium bearing 1S sample cylinders. The inspectors discovered the condition in a storage area where cylinders were unloaded from drums used to transport the cylinders. The area was controlled as a radioactive contamination control zone (CCZ) and the DAW bags were used to hold the packing material removed from the drums. Technical Safety Requirement 3.11.2 requires, in part, that all operations involving uranium enriched to 1.0 weight-percent (wt%) or higher U-235 and 15 grams (g) or more of U-235 shall be performed in accordance with a documented nuclear criticality safety approval (NCSA). NCSA-PLANT018.A01, "Dry Active Waste (DAW) in Waste Generation Areas and in Interim Storage," requires that DAW containers with a capacity of 55 gallons or less be spaced at least two feet edge-to-edge from uranium bearing material. Contrary to the above on January 15, 1998, the NRC inspectors identified that DAW bags located in X-344 Building storage area were spaced less than two feet from 1S sample cylinders containing uranium bearing material, a violation (VIO 70-7002/97015-01).

The building manager initiated problem report number PTS-98-00346 upon notification of the condition by the inspectors. During followup, the inspectors identified several issues with regards to this observation.

The Plant Shift Superintendent (PSS), with concurrence from Nuclear Criticality Safety (NCS), initially determined that the event was not reportable. This determination was apparently based on surveys taken afterwards that concluded that the contents of the DAW bags were not radioactive. The inspectors determined that this logic was flawed, as the certificatee was required to control the material in the bags as potentially contaminated and comply with the NCSA requirements when working in the CCZ. The certificatee could not take credit, after the fact, for the negative survey results for reportability purposes. After discussions with the inspectors and upon further evaluation, the certificatee made a 24-hour notification based on a loss of a single NCS control.

¹Topical headings such as 01, 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.

In response to previous events, from November 25 to December 8, 1997, the General Manager conducted all-hands briefings to communicate management's expectations regarding implementation of NCS controls. This action appeared to be ineffective in preventing this, and other similar reportable events that were identified by the certificatee during the inspection period. These events included the following:

- a. NCSA-PLANT057.001, "Use of Gas Sampling Cart," requires that a minimum two foot edge to edge spacing be maintained between the sampling cart and other uranium bearing material. On January 23, 1998, plant staff discovered that two gas sampling carts containing uranium bearing material were spaced less than two feet from each other in the X-333 Building.
- b. NCSA-PLANT48.A00, "Contaminated Metal," requires a two foot edge to edge spacing horizontal and vertical to other contaminated items (uranium bearing material). On December 31, 1997, plant staff discovered two buckets containing contaminated valve internals were spaced less than two feet from each other. In addition, on January 15, 1998, plant staff discovered that bagged valve subassemblies were spaced less than two feet from AG-17 valve in the X-326 Building.
- c. NCSA-PLANT66.A02, "Mop Buckets," requires passing design feature, i.e., slots and holes, in the sides of the bucket for volume control. On January 15, 1998, plant staff discovered an upright, empty mop bucket in a posted contamination area (uranium bearing material area) in the X-344 Building without the required passive design features.

The aforementioned observations are additional examples of Violation (VIO) 70-7002/97015-01 where the certificatee failed to implement nuclear criticality safety requirements.

c. Conclusions

The inspectors noted that the certificatee's immediate corrective actions appeared to be inadequate in preventing continued violations of NCSA requirements. One violation was identified with several examples.

O8 Miscellaneous Operations Issues

O8.1 (Closed) IFI 70-7002/96007-01: Evaluation of Liquid-filled Cylinder Handling Activities

In response to the subject event involving the movement of a tails cylinder by a straddle carrier before its cooldown period was completed, the certificatee implemented corrective actions as discussed in Observation Report 70-7002/97001 for handling liquid cylinders. The inspectors have monitored activities to ensure proper implementation of the new requirements and have no further concerns regarding this issue. This item is closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Surveillance Testing

a. Inspection Scope (88102)

The inspectors reviewed surveillance activities to verify compliance with TSR requirements.

b. Observations and Findings

On December 15, the PSS declared the Extended Range Product (ERP) Station No. 1 inoperable for surveillance testing, but the system was not isolated as required by Technical Safety Requirement (TSR) 2.5.3.4. At the start of test activities, the X-326 Building operations supervision contacted the PSS for an operability call and gave electrical maintenance permission to start pyrotronics system testing. Upon further review, the PSS determined that the station needed to be isolated to perform the testing; however, maintenance had already commenced testing.

During followup, the inspectors reviewed the work package, including surveillance Procedure XP4-OM-EM6307, "TSR Maintenance: Surveillance Of Pyrotronics Smoke Detectors System For ERP Station In X-326 Building," and noted that the system conditions, as well as the TSR limiting condition for operation (LCO) actions, required for the testing were not provided. The inspectors noted previous examples of a lack of procedural guidance which contributed to poor implementation of TSRs, as discussed in previous inspection reports:

- In Inspection Report 70-7002/97002, the inspectors identified a TSR violation when the certificatee did not enter an LCO action statement for cascade DC control power when surveillance requirements for battery specific gravity were not met. As followup to this event, the certificatee identified a similar concern with fire protection supervisory alarm testing. The procedures for these surveillances did not address the LCO actions required to perform the testing, as well as actions required when the surveillances failed.
- In Inspection Report 70-7002/97003, the inspectors noted that the work package used to remove an x-joint containing a uranium deposit did not address the TSR LCO requirement for returning buffer air to an adjacent deposit, which contributed to a violation of that requirement.

Technical Safety Requirement 2.5.3.4 requires, in part, that the affected cylinder and withdrawal manifold be isolated within 15-minutes after declaring both smoke detectors for a withdrawal position inoperable. Contrary to the above, on December 15, the certificatee did not isolate the withdrawal manifold at ERP Station No. 1 within 15-minutes after declaring the ERP station inoperable for surveillance testing of the smoke detection system, a violation (VIO 70-7002/97015-02).

c. Conclusion

The inspectors concluded the certificatee continued to have problems with TSR implementation due to poor procedural guidance.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Effectiveness of the X-100 Building HVAC System

a. Inspection Scope (88100)

The inspectors reviewed with a facility engineer and an engineering supervisor the corrective action to repair the X-100 Building HVAC system.

b. Observation and Findings

The inspectors discussed with the X-100 Building facility engineer and an engineering supervisor the condition of the building HVAC system. The engineer and the supervisor explained that the HVAC unit operated adequately based on the condition of the building. The engineer and the supervisor explained that the building was not insulated and had single pane windows.

The inspectors noted that the HVAC system components were manufactured in 1935 and installed in the 1950's. The engineer explained that, each summer, the HVAC unit would not operate for periods of time because either the unit broke down or was shut down for environmental concerns. The engineer explained that the unit was shut down when the chiller's warm discharge water environmentally affected the cooling pond. In addition, the engineer stated that when the unit failed, the manufacturer was contacted immediately to fix the unit.

The inspectors learned that the manufacturer recommended replacement of the chiller in the spring of 1997. At that time, the chiller bearing catastrophically failed which resulted in the inoperability of the system. The engineer explained that a temporary chiller was installed and the system was operating within four days of the bearing failure. In addition, the engineer and the supervisor reported that a contract was issued to install a new chiller unit. The new chiller unit was scheduled to operate by the spring of 1998.

c. Conclusion

The inspectors determined that the certificatee had taken appropriate action to repair the HVAC system for the X-100 Building.

E3 Engineering Procedures and Documentation

E3.1 Accuracy of Mechanical Piping System Drawings

a. Inspection Scope (88101)

The inspectors compared piping layouts on drawings with the piping installations in the facility.

b. Observation and Findings

The inspectors reviewed selected UF6 mechanical piping drawings. The inspectors verified that the UF6 mechanical piping drawings were appropriately classified per the General Plant Q, AQ-NCS, and AQ System Boundary Definition Manual, POEF-CM-009. The selected UF6 drawings were classified as AQ-NCS. Drawings classified as Q, AQ-NCS, and AQ were required to accurately illustrate the actual system installation. The inspectors verified that the selected drawings accurately illustrated the configuration of the piping system installation. In addition, the drawings specified accurately the type, size, and material for pipes, pipe fittings, valves, and test connections used in the system.

The inspectors also reviewed the accuracy of six drawings associated with Building X-700 cleaning tanks. In discussions with the inspector, a system engineer explained that the six cleaning tank drawings did not accurately represent the actual system configuration. The system engineer explained that the systems illustrated in the six cleaning tank drawings were not Q, AQ-NCS, or AQ; therefore, detailed accuracy of the six drawings was not required. The inspectors reviewed POEF-CM-009 and verified that the six cleaning tank drawings were not classified Q, AQ-NCS, or AQ.

c. Conclusion

The inspectors determined that selected AQ-NCS piping system drawings accurately represented the piping installation in the facility.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) CER 70-7002/97-23: High Condensate Level System autoclave actuation at the X-343 Building.

The certificatee determined that the cause of the actuation was the accumulation of fine particles in the condensate strainer. As corrective action, the certificatee increased the screen mesh size and decreased the strainer cleaning interval for Buildings X-342 and X-343 autoclaves. These actions had been previously taken at the X-344 Building, as previous actuations had been isolated to those autoclaves. The inspectors will continue to track the effectiveness of the certificatee's corrective actions under Violation 70-7002/97003-02.

IV. Plant Support

P3 Emergency Procedures and Documentation

P3.1 Severe Weather Response

a. Inspection Scope (88050)

The inspector reviewed the additions of emergency procedures to the controlled procedure manual for electrical switch houses.

b. Observations and Findings

The inspectors documented in Inspection Report 70-7002/97011(DNMS) that applicable emergency procedures were not available in electrical switch houses X-530 and X-533. In response, the certificatee added the following emergency procedures to POEF-275, "Power Operations Procedure Manual":

- Procedure XP2-EP-EP1030, "Accountability"
- Procedure XP2-EP-EP1031, "Evacuation"
- Procedure XP2-EP-EP1042, "Earthquake Response"
- Procedure XP2-EP-EP5030, "Bomb Threat"
- Procedure XP2-EP-EP5032, "Severe Weather Response"

The inspectors verified that the above emergency procedures were included in buildings' controlled procedure manuals. In addition, the inspectors noted that the operators were aware of the recently added emergency procedures to the manual.

c. Conclusions

The inspectors determined that the addition of appropriate emergency procedures to the controlled procedures manuals at the switch houses will assist the staff's ability in correctly responding to emergency conditions.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of the facility management on January 28, 1998. The facility staff acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Lockheed Martin Utility Services (LMUS)

- *J. B. Morgan, Acting General Manager
- M. Hasty, Engineering Manager
- *R. W. Gaston, Nuclear Regulatory Affairs Manager
- *C. W. Sheward, Maintenance Manager
- *R. D. McDermott, 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. C. Orrison, Site Safety Representative

*Denotes those present at the exit meeting on January 28, 1998.

INSPECTION PROCEDURES USED

- | | |
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| IP 88020 | Regional Criticality Safety |
| IP 88050 | Emergency Preparedness |
| IP 88101 | Configuration Control |
| IP 88102 | Surveillance Observations |
| IP 97012 | Inoffice Reviews of Written Reports on Nonroutine Events |

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

70-7002/97015-01	VIO	DA W Bags Within Two Feet Of 1S Cylinders
70-7002/97015-02	VIO	Failure To Isolate ERP For Surveillance Testing

Closed

70-7002/96007-01	IFI	Evaluation Of Liquid-Filled Cylinder Handling Activities
70-7002/97-23	CER	High Condensate Level System Autoclave Actuation At The X-343 Building

Discussed

None

Certification Issues - Closed

None

LIST OF ACRONYMS USED

CER	Certificate Event Report
CFR	Code of Federal Regulations
CCZ	Contamination Control Zone
DAW	Dry Active Waste
ERP	Extended Range Product
g	Gram
HVAC	Heating, Ventilation, and Cooling
IFI	Inspection Followup Item
IP	Inspection Procedure
LCO	Limiting Condition for Operation
NCS	Nuclear Criticality Safety
NCSA	Nuclear Criticality Safety Approval
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
PSS	Plant Shift Superintendent
TSR	Technical Safety Requirement
UF ₆	Uranium Hexafluoride
VIO	Violation
wt%	weight-percent