August 3, 2007

Mr. Russell B. Starkey, Jr.
Vice President, Production
United States Enrichment Corporation
Two Democracy Center
6903 Rockledge Drive
Bethesda, MD 20817

SUBJECT: INSPECTION REPORT NO. 70-7002/2007-202

Dear Mr. Starkey:

The U.S. Nuclear Regulatory Commission (NRC) conducted a routine, scheduled, and announced nuclear criticality safety (NCS) inspection from July 23-25, 2007, at the Portsmouth facility in Piketon, Ohio. The purpose of this inspection was to determine whether activities authorized by your certificate involving special nuclear material were conducted safely and in accordance with regulatory requirements. Throughout the inspection, observations were discussed with your staff. An exit meeting was held on July 25, 2007, during which time inspection observations and findings were formally discussed with your management and staff.

The inspection, which is described in the enclosure, focused on NCS analysis; risk-significant NCS controls; and principal management measures for ensuring that NCS controls are capable, available, and reliable. The inspection consisted of reviews of new, changed, and other risk-significant NCS analyses; selective examinations of relevant procedures and records; examinations of safety-related equipment; interviews with plant personnel; and facility walkdowns and observations of in-plant conditions and activities. Based on the inspection, your activities involving nuclear criticality hazards were found to be conducted safely and in accordance with regulatory requirements.

In accordance with 10 CFR 2.390 of NRC's "Rules of Practice," a copy of this letter and the enclosure will be available in the public electronic reading room of the NRC's Agency-Wide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC web site at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions concerning this report, please contact Tamara Powell, of my staff, at (301) 492-3211.

Sincerely,

/RA/

Deborah A. Jackson, Chief
Technical Support Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

Docket No.: 70-7002

Enclosure: Inspection Report No. 70-7002/2007-202

cc: W. Jordan, Portsmouth General Manager
R. DeVault, Regulatory Oversight Manager, DOE
G. Workman, Nuclear Regulatory Affairs Manager, Portsmouth
S. A. Toelle, Manager, Regulatory Affairs, USEC
C. O'Claire, State Liaison Officer, Ohio

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NAME	TPowell		RWray		DJackson	
DATE	8/ 3 /07		8/ 3 /07		8/ 3 /07	

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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Docket No.:	70-7002
Certificate No.:	GDP-02
Report No.:	70-7002/2007-202
Certificatee:	United States Enrichment Corporation
Location:	Piketon, Ohio
Inspection Dates:	July 23-25, 2007
Inspector:	Tamara Powell, Criticality Safety Inspector
Approved by:	Deborah A. Jackson, Chief Technical Support Branch Division of Fuel Cycle Safety and Safeguards, NMSS

Enclosure

United States Enrichment Corporation
Portsmouth Gaseous Diffusion Plant

NRC Inspection Report
70-7002/2007-202

EXECUTIVE SUMMARY

Introduction

Staff of the U. S. Nuclear Regulatory Commission (NRC) performed a routine, scheduled, and announced criticality safety inspection of the Portsmouth Gaseous Diffusion Plant facility in Piketon, Ohio, from July 23 through 25, 2007. The inspection included an on-site review of the certificatee programs dealing with the nuclear criticality safety (NCS) program; NCS-related inspections, audits, and investigations; NCS-related training; and plant operations. The certificatee programs were acceptably directed toward the protection of public health and safety and in compliance with NRC regulatory requirements. The inspection focused on risk-significant fissile material processing activities including Buildings X-326, X-330, X-344, X-705, X-710 and XT-847.

Results

- The NCS program as observed was adequate for maintaining acceptable levels of safety.
- The certificatee maintains adequate programs to perform inspections, audits, and investigations to assure criticality safety at the facility.
- No safety concerns were identified regarding the certificatee NCS training and qualification program.
- Plant operations were conducted safely and in accordance with written procedures.

REPORT DETAILS

1.0 Summary of Plant Status

The United States Enrichment Corporation (USEC) operates the Portsmouth Gaseous Diffusion Plant near Piketon, Ohio, in cold shutdown. During the inspection, the certificatee was conducting technicium clean-up, deposit remediation, equipment decontamination, and routine waste handling and processing operations.

2.0 Nuclear Criticality Safety Program (88015, 88016)

a. Inspection Scope

The inspector reviewed nuclear criticality safety (NCS) evaluations, approvals, and supporting calculations for new, changed, and other selected operations. This was done to determine that criticality safety of risk-significant operations was assured through engineered and administrative controls with adequate safety margin and to ensure that preparation and review were performed by qualified staff. The inspector accompanied NCS and operations staff on walkdowns of NCS controls in selected process and storage areas. The inspector reviewed selected aspects of the following documents:

- XP2-EG-NS1031, “Nuclear Criticality Safety,” Revision 8, dated November 5, 2004
- XP4-EG-NS1001, “Nuclear Criticality Safety Evaluation and Approval,” Revision 7, dated February 28, 2001
- XP4-EG-NS1100, “Nuclear Criticality Safety Calculations,” Revision 1, dated November 30, 1999
- XP2-CU-CH2120, “Nuclear Criticality Safety Requirements for Container Handling and Storage,” Revision 19, dated January 24, 2007
- NCSA-0326_027.A03, “Nuclear Criticality Safety Approval [NCSA] for Operation of the X-326 NDA Laboratory,” Revision 3, dated May 9, 2007
- NCSE-0326_027.E02, “Nuclear Criticality Safety Evaluation [NCSE] for Operation of the X-326 NDA Laboratory,” Revision 2, dated April 5, 2007
- NCSA-0333_015.A08, “NCSA for Cascade Operations in the X-333 Building,” Revision 8, dated May 18, 2007
- NCSE-0333_015.E08, “NCSE for Cascade Operations in the X-333 Building,” Revision 8, dated April 20, 2007
- NCSA-0705_035.A11, “NCSA for Tunnel Storage,” Revision 11, dated March 29, 2007
- NCSE-0705_035.E11, “NCSE for Tunnel Storage,” Revision 11, dated March 26, 2007
- NCSA-0710_008.A05, “NCSA for UF6 Isotopic Standards Preparation Laboratory, “ Revision 5, dated March 8, 2007
- NCSE-0710_008.E05, “NCSE for UF6 Isotopic Standards Preparation Laboratory, “ Revision 5, dated January 6, 2006
- NCSA-0847_001.A08, “NCSA for Operation of the XT-847 Facility,” Revision 8, dated May 30, 2007

- NCSE-0847_001.E08, “NCSA for Operation of the XT-847 Facility,” Revision 8, dated April 25, 2007

b. Observations and Findings

Based on the selected activities and documents reviewed, the inspector determined that the analyses were performed by qualified NCS engineers, that independent reviews of evaluations were completed by qualified NCS engineers, that subcriticality of the systems and operations was assured through appropriate limits on controlled parameters, and that double contingency was assured for each credible accident sequence leading to inadvertent criticality. The inspector determined that NCS controls for equipment and processes assured the safety of the operations.

c. Conclusions

The NCS program as observed was adequate for maintaining acceptable levels of safety.

3.0 Nuclear Criticality Safety Inspections, Audits and Investigations (88015)

a. Inspection Scope

The inspector reviewed the most recent NCS walk-through reports and anomalous condition reports related to NCS controls. The inspector reviewed selected aspects of the following documents:

- XP4-EG-NS1101, “NCS Walkthrough and Review Program,” Revision 3, dated July 20, 2005
- XP4-EG-NS1025, “NCS Response to Anomalous Conditions,” Revision 1, dated February 28, 2001
- WTR-CS-2007-004, “NCS Walkthrough Report: X-333 Facility,” dated February 28, 2007
- WTR-CS-2007-005, “NCS Walkthrough Report: X-710 Facility,” dated March 21, 2007
- WTR-CS-2007-006, “NCS Walkthrough Report: X-744L Facility,” dated March 30, 2007
- WTR-CS-2007-007, “NCS Walkthrough Report: X-744H Facility,” dated April 27, 2007
- WTR-CS-2007-008, “NCS Walkthrough Report: X-705 Facility,” dated July 13, 2007
- Anomalous Condition Report NSI-07-00737, dated March 13, 2007
- Anomalous Condition Report NSI-07-00752, dated March 14, 2007
- Anomalous Condition Report NSI-07-00838, dated March 23, 2007

b. Observations and Findings

The inspector determined that certificatee programs to identify, evaluate, and correct NCS deficiencies were being adequately applied to facility processes. The inspector

observed that the certificatee NCS walkthroughs and assessments were conducted within the required time limit and performed in accordance with written procedures. The inspector determined that the certificatee maintained adequate numbers of suitably qualified staff to conduct inspections and audits, review identified findings, develop corrective actions and evaluate completion of corrective actions.

c. Conclusions

The certificatee maintains adequate programs to perform inspections, audits, and investigations to assure criticality safety at the facility.

4.0 NCS Training and Qualification (88015)

a. Inspection Scope

The inspector reviewed qualifications of NCS engineers performing analysis and independent review to assure that staff responsible for carrying out the NCS function (e.g., the development of safety limits and controls) met minimum qualification standards outlined in the safety analysis report. The inspector reviewed the content of NCS training for general workers and for fissile material handlers. The inspectors also interviewed the certificatee training management. The inspectors reviewed selected aspects of the following documents:

- POEF-LMUS-109, “Training Development Administrative Guide (TDAG) for the Portsmouth Nuclear Criticality Safety Engineer Training Program,” Revision 4, dated January 15, 2001
- UE0002, GP700SS, “General Employee Refresher Training Self-Study Guide,” dated August 30, 2006
- MAN 50.99.99, X04445, “Basic NCS Refresher Self Study Guide,” dated April 6, 2004
- MAN 01.50.03, X05285, “NCS Training for Managers Refresher,” dated February 2007

b. Observations and Findings

The inspector determined that employees and managers complete a general NCS training course that is required to be taken every two years. Incoming NCS engineers have a series of requirements and tasks that must be completed before being considered a qualified NCS engineer, which are outlined in the “Training Development Administrative Guide for the Portsmouth Nuclear Criticality Safety Engineer Training Program.” The inspector verified that the training and qualification guide for the most recently qualified NCS Engineer met the minimum educational requirements as specified in the Safety Analysis Report and the NCS engineer was qualified in accordance with certificatee procedures. The inspector determined that the certificatee NCS training program adequately addressed NCS aspects of facility hazards affecting fissile material operations. The inspector also determined that only qualified staff perform safety functions for the establishment of new safety analyses and reviews of new operating procedures.

c. Conclusions

No safety concerns were identified regarding the certificatee NCS training and qualification program.

5.0 Plant Operations (88015)

a. Inspection Scope

The inspector performed plant walkdowns to review activities in progress and to determine whether risk-significant fissile material operations were being conducted safely and in accordance with regulatory requirements. The inspector interviewed operators, NCS engineers, and process engineers both before and during walkdowns.

b. Observations and Findings

The inspector verified the adequacy of management measures for assuring the continued availability, reliability, and capability of safety-significant controls relied upon by the certificatee for controlling criticality risks to acceptable levels. The inspector performed walkdowns of Buildings X-326, X-330, X-344, X-705, X-710, and XT-847. The inspector observed ongoing operations and active storage areas including technicium cleanup, equipment decontamination, and waste operations. The inspector reviewed selected NCS analyses and verified that controls identified in those analyses were installed or implemented and were adequate to assure safety. The cognizant NCS engineers were knowledgeable of processes and able to explain the basis for applying applicable controls and any changes in operations.

c. Conclusions

Plant operations were conducted safely and in accordance with written procedures.

6.0 Exit Meeting

The inspector communicated the inspection scope and results to members of Portsmouth Gaseous Diffusion Plant management and staff throughout the inspection and during an exit meeting on July 25, 2007. Facility management and staff acknowledged and understood the findings as presented.

SUPPLEMENTARY INFORMATION

1.0 List of Items Opened, Closed, and Discussed

Items Opened

None

Items Closed

None

Items Discussed

None

2.0 Inspection Procedures Used

IP 88015	Nuclear Criticality Safety Program
IP 88016	Nuclear Criticality Safety Evaluations and Analyses

3.0 Partial List of Persons Contacted

United States Enrichment Corporation

E. Wagner	Manager, Nuclear Criticality Safety
T. Brooks	Director, Infrastructure Operations
D. Fogel	Engineer, Nuclear Regulatory Affairs
L. Cutlip	Director, PM&SP
D. D'Aquila	Lead, Nuclear Criticality Safety
R. Lemminc	Engineer, Nuclear Criticality Safety
P. Potter	Manager, Waste Management
M. Tanner	Section Manager, Field Decommissioning
L. Wilber	Operations PM&SP
K. Ragland	Manager, Training
P. Sprouse	Manager, Laboratory
J. Albright	Manager, Cold Shutdown Maintenance
B. Jones	Manager, Feed Cleanup Operations
D. Detillion	Manager, Feed Cleanup Maintenance
D. Fosson	Manager, Chemical Utilities
J. Anzelmo	Director, Technical Services
C. Rausch	Engineer, Nuclear Regulatory Affairs

NRC

T. Powell	Criticality Safety Inspector, Headquarters

All were in attendance at the exit meeting on July 25, 2007.

Attachment

4.0 Acronym List

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
IP	inspection procedure
NCS	nuclear criticality safety
NCSA	nuclear criticality safety analysis
NCSE	nuclear criticality safety evaluation
PM&SP	Project Management & Strategic Planning
UF_6	uranium hexafluoride
USEC	U.S. Enrichment Corporation (certificatee)