February 25, 1998

EA 98-012

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

SUBJECT: PREDECISIONAL ENFORCEMENT CONFERENCE SUMMARY

Dear Mr. Miller:

On February 19, 1998, representatives of the United States Enrichment Corporation (USEC) met with NRC personnel in the Region III office located in Lisle, Illinois, to discuss the apparent violations identified in Inspection Report 070-07002/97013(DNMS). The predecisional enforcement conference was held at the request of Region III.

NRC representatives described the bases for the predecisional enforcement conference, the purpose of the meeting, and the proposed agenda. Your representatives agreed with the facts detailed in the inspection report for the twelve apparent violations. Representatives from USEC distributed a document entitled, "United States Enrichment Corporation Portsmouth Gaseous Diffusion Plant Pre-Decisional Enforcement Conference," dated February 19, 1998, which is provided as Enclosure 2 of this letter. USEC representatives then presented root cause analyses, corrective actions, and mitigating factors for the apparent violations described in Inspection Report 070-07002/97013(DNMS).

A list of individuals that participated in the conference is provided as Enclosure 1 of this letter.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

Sincerely,

Original Signed by

020013

Cynthia D. Pederson, Director
Division of Nuclear Materials Safety

Docket No. 070-07002
Certificate No. GDP-2

IE46

Enclosures: As stated

See Attached Distribution

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cc w/encls: S. A. Polston, Paducah General Manager
J. B. Morgan, Acting Portsmouth General Manager
R. W. Gaston, Portsmouth Nuclear Regulatory Affairs Manager
S. A. Toelle, Manager, Nuclear Regulatory Assurance and Policy, USEC
Paducah Resident Inspector Office
Portsmouth Resident Inspector Office
E. W. Gillespie, Portsmouth Site Manager, DOE

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CONFERENCE PARTICIPANT ATTENDANCE LIST

United States Enrichment Corporation (USEC)

George Rifakes, Executive Vice President
James Miller, Vice President Production
Steve Toelle, Manager, Nuclear Regulatory Assurance and Policy
Ron Gaston, Portsmouth Nuclear Regulatory Affairs Manager
Russ Wells, Senior Regulatory Engineer

Lockheed Martin Utility Services

James Morgan, Acting Portsmouth General Manager
Mark Hasty, Engineering Organization Manager, Portsmouth
Dan Wilczynski, Nuclear Safety Manager, Portsmouth
Ed Wagner, Safety Analysis Report Upgrade Engineer, Portsmouth

U.S. Nuclear Regulatory Commission (NRC)

A. Bill Beach, Regional Administrator, Region III
Cynthia Pederson, Director, Division of Nuclear Materials Safety, Region III
Bill Brach, Deputy Director, Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards (NMSS)
Bruce Berson, Regional Counsel, Region III
Brent Clayton, Enforcement/Investigations Officer, Region III
Patrick Hiland, Chief, Fuel Cycle Branch, Region III
Kenneth O'Brien, Senior Resider.. Inspector, Paducah Gaseous Diffusion Plant, Region III
David Hartland, Senior Resident Inspector, Portsmouth Gaseous Diffusion Plant, Region III
Toye Simmons, Enforcement Coordinator, Region III
Yawar Faraz, Project Manager-Portsmouth, Fuel Cycle Safety and Safeguards, NMSS
Jack Davis, Criticality Safety Inspector, Fuel Cycle Safety and Safeguards, NMSS
Timothy Reidinger, Senior Fuel Facility Inspector, Fuel Cycle Branch, Region III
Courtney Blanchard, Fuel Facility Inspector, Fuel Cycle Branch, Region III
Susan Greene, NMSS (via teleconference)
Jay Henson, Enforcement Specialist, Office of Enforcement (via teleconference)
John Lusher, Enforcement Specialist, Office of Enforcement (via teleconference)

U.S. Department of Energy (DOE)

Randall DeVault, DOE Regulatory Oversight Manager, Office of Assistant Manager for Enrichment Facilities (via teleconference)
Wayne Yoder, DOE Safeguards and Security Specialist, Office of Assistant Manager for Enrichment Facilities (via teleconference)

UNITED STATES ENRICHMENT CORPORATION
PORTSMOUTH GASEOUS DIFFUSION PLANT
PRE-DECISIONAL ENFORCEMENT CONFERENCE

February 19, 1998

AGENDA

A. Introduction

B. Apparent Violation 97013-01
(Loss of Criticality Controls for Shutdown Cells)
1. Background
2. As-Found Condition of Cell 29-5-8
3. Conclusions
4. Root Causes and Corrective Actions
5. Mitigating Factors

C. Apparent Violations 97013-02 thru 97013-12 (NCS Program Deficiencies)
1. Introduction
2. Root Cause Analysis
3. Corrective Actions
4. Mitigating Factors

D. Closing Remarks

BACKGROUND

- On November 4, 1997, USEC reported to NRC that a loss of two Nuclear Criticality Safety (NCS) controls was discovered for a shutdown cascade cell.

- At the time this event was reported, USEC believed that the applicable contingency event in the Engineering Evaluation for the applicable Nuclear Criticality Safety Assessment (i.e., NCSA-0330-004.A01) was contingency B.6.a.1, "Introduction of RCW into the Cascade."

- The applicable NCSA controls for contingency event B.6.a.1 were:

  1. Coolant pressure greater than Recirculating Water (RCW) pressure; and
     RCW supply pressure verified quarterly; and
     Following maintenance on condenser, open RCW return valve before charging cell w/ UF_6.

  2. Cascade design providing single barrier protection during treatment or shutdown; and
     RCW supply valved off, condenser drained, drain valve left open.

AS-FOUND CONDITION OF CELL 29-5-8

- Cell buffered with plant air >14 psia.
- RCW Condenser Drained:
  - Supply and return isolation valves closed - controlled by Lockout/Tagout (LOTO) permit
  - Condenser vent valve open - controlled by LOTO permit
  - Condenser drain valve closed
  - Visible air gap at RCW control valve
- Cell had greater than a "safe mass."
- The above conditions existed when the cell was shutdown in 1995.
- The existence of a deposit greater than a safe mass was identified in March 1997, at which time USEC took actions as required by the Technical Safety Requirements (TSRs).

CONCLUSIONS

- Criticality was not possible.
- Safety Analysis Report (SAR) section 5.2, "Nuclear Criticality Safety," states that for shutdown cascade equipment with greater than a safe mass, adequate safety is achieved by the development of a TSR for moderation control.
- TSR 2.2.3.15, "Moderation Control," was applicable to cell 29-5-8. Specifically, TSR Action C addresses a "UO_2F_2 deposit > safe mass, not in a fluorinating environment, system is in a shutdown mode, and coolant pressure ≤ RCW condenser pressure."
- The required actions for this TSR are:
  - Increase coolant system pressure to > RCW pressure within 4 hours; or
  - Drain RCW from coolant condenser within 16 hours.

CONCLUSIONS (cont'd)

- Compliance with this TSR action statement for cell 29-5-8 was satisfied as follows:
  - Condenser was drained at all times;
  - Physical barriers between RCW system and Process Gas System maintained. In 1995, a cell negative was achieved verifying the integrity of the gas coolers. An R-114 negative verified the integrity of the coolant system;
  - No indication of RCW block valve leakage as evidenced by absence of leakage at the air gap for the control valve.

- The "Part C Matrix" of the NCSA was not satisfied since:
  - the cell was shutdown, the coolant pressure was not greater than the RCW pressure; and
  - the drain valve was closed.

- USEC has reevaluated the NCSA and its associated Engineering Evaluation, and has determined that the Part C matrix was flawed.

- Compliance with the controls in the NCSA Part C matrix was not possible because when a cell is shutdown with the R-114 and RCW removed it is not possible to have the coolant pressure above the RCW pressure.

ROOT CAUSES

- The NCSA Part C contingency matrix was flawed:
  - The Part C matrix did not accurately reflect the evaluation (i.e., the NCSE).
  - It was not possible to achieve verbatim compliance with contingency B.6.a.1 controls for a shutdown cell with the R-114 removed as described in the Part C matrix.

- The NCSA implementation process was inadequate. When the NCSA was initially developed in October 1996, it did not assure that cells shutdown under previous controls would be in compliance with the new controls in the NCSA.

CORRECTIVE ACTIONS

Immediate Corrective Actions

- The RCW drain valve for cell 29-5-8 was opened.
- All other condensers in a shutdown condition were inspected and , if the condenser drain valve was found closed, the drain valve was opened.

Additional Corrective Actions

- The NCS procedure was modified to include implementation requirement to review potential pre-existing conditions.
- This particular NCSA was revised under the new NCS process, outlined in the NCS CAP committed to NRC to assure that reasonable, understandable controls are in effect and properly flowed down and implemented.
- All NCSAs are undergoing an upgrade in the NCS corrective action plan to eliminate confusing controls.

MITIGATING FACTORS

- This condition was self-identified by USEC during follow-up to a previous event and reported to NRC.
- Prompt and thorough corrective actions were initiated by USEC upon discovery of this event.
- The requirements of TSR 2.2.3.15, "Moderation Control" were satisfied for cell 29-5-8.
- Nuclear criticality was not possible.
- The violation did not involve any deliberate non-compliances or careless disregard for NRC requirements.
- Based on the above, the condition of cell 29-5-8 does not meet the criteria for escalated enforcement.

INTRODUCTION

- The remaining apparent violations concern weaknesses in the PORTS NCS program which are being addressed in the NCS Corrective Action Plan (CAP) that has been developed by USEC.

- The NCS CAP was initially submitted to NRC on November 10, 1997, and docketed updates were submitted to NRC on December 29, 1997, and January 30, 1998. Additionally, USEC has committed to provide NRC with quarterly updates, on the docket, to this CAP.

- The NCS CAP includes an extensive root cause analysis and thorough, comprehensive corrective actions.

- The NCS CAP is dynamic. USEC will adjust it as new concerns are identified. For example, in the January 30, 1998, submittal USEC informed NRC that this action plan did not adequately address the discovery of various operations where an NCSA did not exist. Accordingly, USEC is adjusting the CAP to address this issue.

ROOT CAUSE ANALYSIS

- A key element of the NCS CAP is the development of a thorough and accurate root cause assessment.

- USEC embarked upon an aggressive program to analyze Problems Reports (PRs) written during the past year to address NCS deficiencies.

- Approximately 600 PRs were analyzed and grouped into the following NCS process categories:

Self-Assessments	(170)
Use	(161)
Part B (Controls) and Part C Preparation	(96)
Procedure Development	(72)
Verification Walkdown	(49)
Identification of Fissile Material Operation (FMO)	(21)

- A variety of root causes applicable to most portions of NCS Program.

ROOT CAUSE ANALYSIS (cont'd)

The Root Causes for the NCS Program Deficiencies have been grouped into the following categories:

- Communications
- Procedures
- Training
- Accountability

NCS CORRECTIVE ACTION PLAN

Task 1: Building Review of NCSAs

- Complete
- Last 2 tasks (corrective actions) being done in accordance with Task 3

Task 2: Review of those NCSAs Completed by Non-Qualified Personnel

- Completed ahead of schedule
- 6 PRs issued

Task 3: NCSA Upgrade Project

- Ongoing
- Team members assigned from the facilities
- Adding NCS Engineers
- Scheduled for completion April 30, 1999

NCS CORRECTIVE ACTION PLAN (cont'd)

Task 4: Enhance NCSA Training (Interim NCSA Process)

- Training started and scheduled
- List of people to be trained distributed to Organization Managers
- First Line Manager (FLM) and above that use, approve, or generate NCSAs
- Scheduled to be completed by February 28, 1998

Task 5: SS&Q Review of Implementation

- Assessment Plan prepared
- Assessments scheduled with NCSA Upgrades
- SS&Q reviews of existing NCSAs on-going
- Scheduled to be completed by May 31, 1999

Task 6: Complete Root Cause Analysis

- Lower level root cause complete
- All identified root causes covered by a task subject
- Scheduled to be completed by February 28, 1998

NCS CORRECTIVE ACTION PLAN (cont'd)

Task 7: Compare Applicable Industry Standards Against NCS Program

- Complete. Areas of concern noted.
- Final report prepared, Problem Report issued

Task 8: Vertical Slice

- Methodology complete and in the approval process
- Team membership being finalized
- Scheduled to be completed by March 31, 1998

Task 9: Continuous Improvement Program

- Complete
- Lessons learned procedure approved and in place
- Five (5) Lessons Learned processed

NCS CORRECTIVE ACTION PLAN (cont'd)

Task 10: Personnel Qualification Verification

- Compilation of qualification complete
- Changes: continuing training, minimum on-site requirements, disqualifications, qualifications of contractors, training records
- Scheduled to be completed by March 31, 1998

Task 11: Outside/Independent Assessments

- Reports to be included identified
- Scheduled to be completed by April 30, 1998

Task 12: Policy/Procedure Revision and Training

- Procedure changes implemented for some actions
- On-going work on other procedure changes (Murder Board)
- Scheduled to be completed by December 31, 1998

NCS CORRECTIVE ACTION PLAN (cont'd)

Task 13: Revise Training Program for Site Personnel

- Report drafted for evaluation of previous training
- Root cause evaluation completed
- Training program modified (NCSA specific, classroom & in-field drills)
- Scheduled to be completed by April 30, 1998

Task 14: Corrective Action Program Enhancements

- Root cause complete
- Scheduled to be completed by June 30, 1998

Task 15: Configuration Management Program Enhancements

- Several changes identified and being made (e.g. Engineering packages)
- Other changes being identified (e.g., Preventive Maintenance program)
- Scheduled to be completed by February 28, 1998

NCS CORRECTIVE ACTION PLAN (cont'd)

Task 16: Revise Assessment Programs
- Focusing on "doing the right thing"
- Root causes and recommendations developed
- Scheduled to be completed by March 31, 1998

Task 17: Oversight of Plan Implementation
- On-going assessments
- Scheduled to be completed by April 30, 1999

Task 18: Evaluation and Feedback
- Weekly review meetings set for Thursday each week
- Detailed review of the task products
- Ongoing

Task 19: Evaluate Continued Use of "Murder Board"
- Ongoing

NCS CORRECTIVE ACTION PLAN (cont'd)

New Task: Field Personnel

- 5 Full-time personnel assigned to facilities
- Selected from Health Physics, Operations & Engineering
- Personnel trained to NCS Supervisory Module
- NCSA specific training scheduled
- Guidance documents issued - procedure to be prepared

New Task: FMO Identification

- Short term review completed
- Systematic methodology developed and in review
- Control and communication mechanism being developed for non-fissile operations

APPARENT VIOLATIONS 97013-02 thru 12

SUMMARY OF ELEVEN VIOLATIONS IN NRC INSPECTION REPORT 97013 (EXCLUDES CELL 29-5-8)	
Description of Violation	**Applicable CAP Reference and Summary**
97013-02: Inadequate procedures for responding to the loss of a nuclear criticality safety approval control	NCS CAP section D.7 has been implemented: Directions to stop and secure activities and involve appropriate supervision and NCS experts has been implemented via standing orders and training. Procedure changes have been made.
97013-03: Failure to use material labeling and posting to communicate procedural criticality controls	Failure to use material labeling and posting identified as part of Task 7, Industry Standards Review. Problem Report Issued. Procedure changes will be made. Industry review being done to identify the best method to implement.
97013-04: Failure to implement nuclear criticality safety approval controls	Task 4, Enhance Training, is being implemented to continue to raise the awareness and importance of NCS program compliance. People on the operating floor to continue to raise the NCS awareness. Task 3, NCSA/E Upgrade Project, is revising NCSAs using a team concept. Task 13, Revise Training Program for Site Personnel, is ensuring a revised training program for NCSAs as they are developed.
97013-05: Failure to define or conduct specific training for the nuclear criticality safety manager	Training planned for NCS Manager

APPARENT VIOLATIONS 97013-02 thru 12

SUMMARY OF ELEVEN VIOLATIONS IN NRC INSPECTION REPORT 97013 (EXCLUDES CELL 29-5-8)	
Description of Violation	**Applicable CAP Reference and Summary**
97013-06: Failure to complete required training for nuclear criticality safety staff	Task 7, Compare Industry Standards Against NCS Program, was extended to cover SAR/procedure differences. Task 2 is reviewing NCSAs of "non-qualified" personnel. Task 12, Policy/procedure Revision and Training, will revise procedures based on Task 7 findings.
97013-07: Failure to complete required training for nuclear criticality safety contractors	Lesson learned submitted for qualification verification for NCS contractor staff.
97013-08: Inadequate internal nuclear criticality safety self-assessment program and implementation	Task 16, Revise Assessment Program, will initiate corrective action. Root cause complete and recommended actions being developed
97013-09: Inadequate independent nuclear criticality safety self-assessment program and implementation	Task 16, Revise Assessment Program, will initiate corrective action. Root cause complete and recommended actions being developed
97013-10: Inadequate root cause evaluation and corrective actions for recent nuclear criticality safety issues.	Task 6, Complete a Comprehensive Root Cause Analysis, will ensure that all root causes are identified and resolved as part of the CAP.
97013-11: Inadequate and improper procedure used in corrective action process for recent nuclear criticality safety issues.	Task 3, NCSA/E Upgrade Process, is being done in accordance with revised procedure.

APPARENT VIOLATIONS 97013-02 thru 12

SUMMARY OF ELEVEN VIOLATIONS IN NRC INSPECTION REPORT 97013 (EXCLUDES CELL 29-5-8)	
Description of Violation	**Applicable CAP Reference and Summary**
97013-12: Inadequate corrective actions to a previous nuclear criticality safety violation	Task 14, "Corrective Action Program Enhancements," addresses the deficiencies.

MITIGATING FACTORS

- No previous escalated enforcement action for PORTS.

- The apparent violations were not willful.
  - Violations did not individually or collectively involve deliberate noncompliances.
  - Reasons for violations vary, but none involve careless disregard of requirements.

- All events were reported to NRC in accordance with regulatory requirements.

- Broad and Comprehensive Corrective Action
  - NCS Corrective Action Plan submitted December 22, 1997, and January 30, 1998.
  - Revised to address issues raised in cited violations.
  - Corrective Actions developed from thorough analysis of root causes for identified program deficiencies.
  - Generic implications for identified violations were considered.

- USEC does not believe that a civil penalty should be assessed for these apparent violations because USEC has developed and is implementing broad and comprehensive corrective actions.

SCHEMATIC OF RCW SYSTEM