March 4, 2009

Mr. Peter J. Miner, Director
Regulatory Affairs and Quality Assurance
USEC Inc.
6903 Rockledge Dr.
Bethesda, MD 20817-1818

SUBJECT: USEC INC., AMERICAN CENTRIFUGE PLANT LICENSE AMENDMENT FOR FEED AND WITHDRAWAL SYSTEM DESIGN CHANGES – REQUEST FOR ADDITIONAL INFORMATION (TAC L32476)

Dear Mr. Miner:

I am responding to your letters dated November 17, 2008 (AET 08-0082, AET 08-0083, AET 08-0084, and AET 08-0085), in which you submitted a license amendment request regarding feed and withdrawal system design changes associated with the American Centrifuge Plant in Piketon, Ohio.

Our review of your application has identified additional information that is needed before final action can be taken on your license amendment request. The additional information specified in the Enclosure should be provided to us within 30 days from the date of this letter. Please reference TAC number L32476 for this action in your response.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR), Section 2.390 of the U.S. Nuclear Regulatory Commission's (NRC) Rules of Practice, a copy of this letter will be available electronically from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions regarding this letter, please contact me at (301) 492-3232, or by email at james.downs@nrc.gov.

Sincerely,

/RA/

James R. Downs
Uranium Enrichment Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

Docket No.: 70-7004
License No.: SNM-2011

cc: Terry Sensue

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American Centrifuge Plant
Feed and Withdrawal Amendment –
Request for Additional Information

Nuclear Criticality Safety (NCS)

NCS-1:

The licensee states that the determination to eliminate Event CE5-AC-07-5 was based on the evaluation in Revision 3 of NCS-RPT-AC-07, "NCS Analysis American Centrifuge Uranium Enrichment Facility Operations for: Feed, Product Withdrawal and Interim Withdrawal Operations," however the specifics of this evaluation were not provided. The licensee also states that this evaluation was discussed in EE-3601-0014, Rev. 2, "NCS Reports 'What if…' Hazard Analysis Review." Provide the applicable portions of both documents which discuss in further detail why this event is no longer credible.

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 70.65(b)(4) states that the integrated safety analysis(ISA) summary must contain information that demonstrates the licensee's compliance with the performance requirements of 10 CFR 70.61.

Chemical Process Safety (CPS)

CPS-1:

Evaluate and assign a reliability value to initial condition mitigative Items Relied On for Safety (IROFS) 7.3.4.17 "Feed Header Isolation" and 7.3.4.18 "Product/Tails Header Isolation." For accident sequences where these IROFS are credited as initial conditions, evaluate accident sequence likelihood and consequences where initial condition IROFS 7.3.4.17 and/or, 7.3.4.18 also fails.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee's compliance with the performance requirements of 10 CFR 70.61.

CPS-2:

Clarify what actions from AET 08-0082, Enclosure 1 - Section 5.B, are required to isolate breaches in process building from heated sources of uranium hexafluoride (UF_6), that are necessary for the assumption of slow release to be valid and therefore, for consequences to be low. Clarify if these actions are part of, or in addition to, IROFS 7.3.4.17 and 7.3.4.18.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee's compliance with the performance requirements of 10 CFR 70.61.

CPS-3:

Evaluate whether the failure frequency (1E-4 per demand) and mitigative value (reduction factor of 100 for WRA/WCA and 10 for off-site public) of the Emergency Response Actions, which is predicated on a slow release of UF_6, remains valid given the increase in assumed release rate.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee's compliance with the performance requirements of 10 CFR 70.61.

CPS-4:

For events FB3-10 and WS3-17, describe the “multiple temperature indicators and controls” which justify an overheating failure rate of 1E-5/year as opposed to the previously described 2.5E-4 based on human error. Explain why these controls are not required to be designated and maintained as IROFS.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee’s compliance with the performance requirements of 10 CFR 70.61.

CPS-5:

For events FB3-10 and WS3-17, describe the assumptions used to estimate the 1.0E-4 per year likelihood of the freezer/sublimer being overfilled to a point where a fracture could occur (required level of overfill, etc). Describe the “multiple controls” which would need to fail for the freezer/sublimer to be heated with the discharge valve closed. Explain why these controls are not required to be designated and maintained as IROFS.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee’s compliance with the performance requirements of 10 CFR 70.61.

CPS-6

For events FB3-10 and WS3-17, describe any controls necessary to justify changing the frequency of impact while using a crane from considering the 750 movements (one-fourth of all crane movements) per year originally expected to be close enough to damage the freezer sublimer, to only the 12 movements per year directly associated with maintenance activities on the freezer/sublimers. Explain why these controls are not required to be designated and maintained as IROFS.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee’s compliance with the performance requirements of 10 CFR 70.61.

CPS-7:

The material at risk due to a freezer sublimer failure (WS3-17) is increased in Appendix C of the proposed ISA Summary, as compared to the cold trap failure in the original ISA Summary however, the IROFS are the same. Describe how the mitigative IROFS credited reduce the consequences for all receptors (including environmental) to an acceptable level.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee’s compliance with the performance requirements of 10 CFR 70.61.

CPS-8:

Provide line diagram(s) showing typical locations of confinement control strategy IROFS (including feed isolation header valves, product/tails isolation header valves, etc).

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee’s compliance with the performance requirements of 10 CFR 70.61.

<u>Fire Safety (FS)</u>

FS-1:

In order for the staff to verify all hazards have been adequately addressed, provide revised Fire Hazard Analyses and Pre-Fire Plans for the following areas:

(1) X-3344 Customer Services Building and
(2) X-3346 Feed and Withdrawal Building

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee's compliance with the performance requirements of 10 CFR 70.61. In addition, NUREG-1520 cites pre-fire plans as part of the fire safety management measures. The NUREG also describes fire hazards analyses as supporting the development of accident sequences.

FS-2:

Provide details of the withdrawal compressors lubricating oil system including:
- The number of oil reservoirs and the capacity of each reservoir in the system;
- The location of the reservoirs on a floor plan;
- The maximum working pressure of the system;
- The type and fire properties of the oil, if it is combustible, such as flash point, fire point, and heat of Combustion;
- Existing and/or proposed fire suppression measures; and
- Modifications to the existing fire suppression system (if any) to provide added coverage to the lubricating oil system.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee's compliance with the performance requirements of 10 CFR 70.61. In addition, 10 CFR 70.22(a)(7) requires the license application to contain a description of equipment and facilities, which will be used by the applicant to protect health and minimize danger to life or property.

FS-3:

In Appendix C of the proposed ISA Summary, various accident sequences (PB1-2, PB1-6, FP6-1, etc) had the Machine Isolation IROFS removed with no additional IROFS being added. Quantitatively explain how the remaining IROFS provide adequate protection.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee's compliance with the performance requirements of 10 CFR 70.61.

FS-4:

A large fire in the withdrawal area of the feed and withdrawal area of X-3346 (WS1-1 and WS1-4) has an increased initiation frequency based on ignition of the lubrication oil system of the withdrawal compressors. The total probability of prevention of the sequence (given an initiator) is increased by adding the Fire Department Response as an IROFS. In that fire suppression, combustible material control, and fire department response are now required as IROFS to satisfy the 10 CFR 70.61 performance requirements, what controls serve as defense-in-depth specifically for breach and ignition of the lubricating oil system?

10 CFR 70.64(b) states that the facility and system design and facility layout must be based on

defense-in-depth practices.

FS-5:

In accident sequences involving a fire in the withdrawal area, the frequency of propagation is reduced by a factor of 10 (instead of 100) due to the presence of lubricating oil system for the tails compressors. Provide the justification for any reduction in fire propagation potential given the potential fuel source. In that the lubricating oil system may provide another ignition source as well as its own source of fuel, explain why the frequency of a propagating fire should not be increased. Relevant gaseous diffusion plant experience may be cited.

10 CFR 70.65(b)(4) states that the ISA summary must contain information that demonstrates the licensee's compliance with the performance requirements of 10 CFR 70.61.

Fundamental Nuclear Materials Control Plan (FNMCP)

FNMCP-1:

The fourth paragraph of Section 2.3.4 describes the use of cold boxes in the de-sublimation of depleted and enriched UF_6 materials. Further define the weighing sensors installed in the cold boxes to permit monitoring of cylinder weights.

10 CFR 70.22(b) states that the application must contain a full description of the applicant's program for control and accounting of Special Nuclear Material (SNM), or enrichment equipment that will be in the applicant's possession under the license to show compliance with the requirements of 10 CFR 74.31, 74.33, 74.41, or 74.51 as applicable.

FNMCP-2:

The first sentence of Section 8.4 2.3 partly addresses the dynamic bi-monthly inventory of the enrichment process equipment. Clarify whether the inventory of the blending/transfer systems applies to UF_6 cylinders during only normal production operations or during all production operations.

10 CFR 70.22(b) states that the application must contain a full description of the applicant's program for control and accounting of SNM or enrichment equipment that will be in applicant's possession under the license to show compliance with the requirements of 10 CFR 74.31, 74.33, 74.41, or 74.51 as applicable.

FNMCP-3:

The second paragraph of Section 8.4 2.3 discusses the inventory of blending/transfer systems. For inventory purposes, clarify why the uranium purity of material in each withdrawal cylinder is estimated and is not calculated using process data, or is not based on previously established accountability data. In addition, this inventory practice is not consistent with the statement in the last paragraph of Section 2.3.4 – Material Balance Area C4 – Feed and Withdraw Building with respect to a commitment to measure the blend/transfer cylinders during the dynamic bi-monthly inventory.

10 CFR 70.22(b) states that the application must contain a full description of the applicant's program for control and accounting of SNM, or enrichment equipment that will be in applicant's possession under the license to show compliance with the requirements of 10 CFR 74.31, 74.33, 74.41, or 74.51 as applicable.