March 5, 2007

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
USEC Inc.	)	Docket No. 70-7004
	)	
(American Centrifuge Plant)	)	ASLBP No. 05-838-01-ML

NRC STAFF TESTIMONY RELATED TO HTS-5: USEC'S COMMITMENTS

Q1: Please state your name, occupation, by whom you are employed, and your professional qualifications.

A1: (SE) My name is Stan Echols. I am employed as a Senior Project Manager in the NRC's Office of Nuclear Materials Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards. A statement of my professional qualifications is attached.

A1: (JH) My name is Jay Henson. I am a Branch Chief in the NRC's Region II office, Division of Fuel Facility Inspection. A statement of my professional qualifications is attached.

A1: (TJ) My name is Timothy Johnson. I am employed as a Senior Project Manager in the NRC's Office of Nuclear Materials Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards. A statement of my professional qualifications is attached.

A1: (ML) My name is Michael Lamastra. I am employed as a Senior Project Manager (Health Physics) in the NRC's Office of Nuclear Materials Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards. A statement of my professional qualifications is attached.

A1: (CT) My name is Christopher Tripp. I am employed as a Senior Nuclear Process Engineer (Criticality) in the NRC's Office of Nuclear Materials Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards. A statement of my professional qualifications is attached.

A1: (NG) My name is Norma Garcia Santos. During the Staff's review of the Application for the ACP, I was employed as a Chemical Engineer in the NRC's Office of Nuclear

Materials Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards. I am currently employed as a Project Manager in the NRC's Office of Nuclear Materials Safety and Safeguards, Division of Spent Fuel Storage and Transportation. A statement of my professional qualifications is attached.

A1: (WT) My name is William Troskoski. I am employed as a Senior Chemical Safety Technical Reviewer in the NRC's Office of Nuclear Materials Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards. A statement of my professional qualifications is attached.

A1: (RW) My name is Rex Wescott. I am employed as a Senior Fire Protection Engineer in the NRC's Office of Nuclear Materials Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards. A statement of my professional qualifications is attached.

A1: (JE) My name is J. Keith Everly. I am employed as a Senior Program Manager (Licensee Security), Information Security Branch, Division of Security Operations, Office of Nuclear Security and Incident Response. A statement of my professional qualifications is attached.

A1: (FB) My name is Fred Burrows. I am employed as an Electrical Engineer in the NRC's Office of Nuclear Materials Safety and Safeguards, Division of Division of Fuel Cycle Safety and Safeguards. A statement of my professional qualifications is attached.

A1: (JB) My name is James Bongarra. I am employed as a Senior Engineering Psychologist in the NRC's Office of New Reactors, Division of Construction Inspection & Operational Programs. A statement of my professional qualifications is attached.

A1: (HG) My name is Herman Graves. I am employed as a Senior Structural Engineer in the NRC's Office of Nuclear Regulatory Research. I previously was a Senior Physical Protection Specialist in the NRC's Office of Nuclear Security and Incident Response, Division of Security Policy. A statement of my professional qualifications is attached.

A1: (AF) My name is Allen Frazier. I am employed as an Operating Reactor Security Team Lead in the NRC's Office of Nuclear Security and Incident Response, Division of Security Policy. A statement of my professional qualifications is attached.

A1: (OB) My name is Oleg Bukharin. I am employed as a Security Specialist in the NRC's Fuel Cycle Safeguards and Security Branch, Division of Security Policy, Office of Nuclear Security and Incident Response.

A1: (TP) My name is Thomas Pham. I am a Senior Safeguards Technical Analyst for Material Control and Accounting in the NRC's Office of Nuclear Material Safety and Safeguards and the Office of Nuclear Security and Incident Response. A statement of my professional qualifications is attached.

A1: (MK) My name is Michael Kelly. I am employed as a Material Control and Accounting Physical Scientist in the NRC's Office of Office of Nuclear Security and Incident Response. A statement of my professional qualifications is attached.

A1: (YF) My name is Yawar Faraz. I am employed as a Project Manager in the NRC's Office of Nuclear Materials Safety and Safeguards, Division of Fuel Cycle Safety and Safeguards. A statement of my professional qualifications is attached.

Q2: Please describe your professional responsibilities with regard to the NRC staff's ("Staff") review of the USEC Inc.'s ("the Applicant") license application ("Application") for the proposed American Centrifuge Plant (ACP) in Piketon, Ohio.

A2: (SE) I was the Project Manager (PM) for the Staff's review of the USEC Application from late 2005 until November 2006 and from January 2007 until the present. During the time that I was the PM, I led the effort to complete the Safety Evaluation Report (SER) for the ACP. NUREG-1851, "Safety Evaluation Report for the American Centrifuge Plant in Piketon, Ohio" (2006), Staff Exhibit 1. A2: (JH) If the Applicant is granted a license, I will supervise the Operational Readiness Review (ORR) inspection that must be completed before the

Applicant can begin operations and will also supervise regular facility inspections during operation of the ACP.

A2: (TJ) I reviewed the information provided by the Applicant in connection with their decommissioning funding plan and prepared Chapter 10.3.2 NUREG-1851, "Safety Evaluation Report for the American Centrifuge Plant in Piketon, Ohio" (2006) (SER), attached as Staff Exhibit 1.

A2: (ML) I reviewed the portions of the Application related to radiation protection and prepared Chapter 4 of the SER. My review included the Applicant's requests for exemptions from 10 C.F.R. § 20.1904.

A2: (CT) I was the nuclear criticality safety reviewer for the Staff's review of the Application for the ACP from its receipt until the present. My review included the Applicant's request for an exemption from 10 C.F.R. § 70.24.

A2: (NG) I participated in the Staff's review of the Applicant's chemical safety and accident analyses.

A2: (WT) I was the Staff reviewer of the portions of the Application related to Management Measures.

A2: (RW) I was the Fire Safety and Integrated Safety Analysis Reviewer for the Staff's review of the USEC Application.

A2: (JE) I participated in the Staff's review on the issue of the protection of classified information.

A2: (FB) I participated in the Staff's review on the issue of electrical engineering and instrumentation and controls.

A2: (JB) I participated in the Staff's review of on the issue of human factors engineering.

A2: (HG) I participated in the review of the Applicant's assessments of seismic, tornado, and high-wind hazards and of the structural design of the American Centrifuge Lead Cascade Facility.

A2: (AF) I participated in the Staff's review on the issue of physical protection.

A2: (OB) I participated in the Staff's review on the issue of transportation security.

A2: (TP) I participated in the Staff's review on the issue of material control and accountability.

A2: (MK) I participated in the Staff's review on the issue of material control and accountability.

A2: (YF) I participated in the Staff's review on the issue of general design, organization, and administration.

Q3: What is the purpose of your testimony?

A3: The purpose of our testimony is to provide information with regard to commitments made by the Application in the Application.

Q4: Please provide a list of all commitments made by USEC that the Staff considers important to safety.

A4: (SE) The Applicant's safety commitments, as well as where those commitments have been analyzed in the SER are included in the table below. Additional commitments are also included in Appendix A, which includes Staff testimony designated OUO-DOE NOFORN, and Appendix B, which includes Staff testimony designated OUO-SRI.

LICENSE APPLICATION SECTION	COMMITMENT	STAFF EVALUATION
1.1.5.5.2	The feed system sublimes UF6 from cylinders placed in electronically heated feed ovens.	These are not IROFS and so were not addressed specifically in the SER. Sublimation avoids the hazards that would be introduced if the feed UF6 was liquefied. Use of electronically heated feed ovens avoids the criticality hazards that would be introduced if steam heated autoclaves were used. This design feature need not be a license condition as any design changes made to the feed ovens would adequately be addressed by 10 CFR 70.72.
1.1.5.5.2	Each feed oven is equipped with a UF6 leak detector. A conductivity cell is provided for UF6 leak detection inside the oven.	These are not IROFS and so were not addressed specifically in the SER. These items provide defense in depth.

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1.1.5.5.4	Product withdrawal occurs in the X-3356 building via desublimation into cold traps.	Desublimation avoids the hazards that would be introduced if the product UF6 was liquefied.
1.1.5.5.4	The cold traps are heated and the UF6 is desublimed into source cylinders located in cold boxes.	Desublimation avoids the hazards that would be introduced if the product UF6 was liquefied.
1.1.5.5.5	The autoclaves are pressure vessels and are designed to contain a UF6 release.	Autoclaves provide a secondary boundary for providing containment of a potential liquid UF6 release
1.1.5.7.1	No process gas (UF6) testing of the machines will take place in the assembly areas.	Areas where centrifuges will be assembled will be free of UF6.
1.1.5.7.3	Crane designs are in accordance with recognized national standards such as the American Society of Mechanical Engineering (ASME)/American National Standards Institute (ANSI) B30 series, the National Electric Code, and the Crane Manufacturing Association of America.	Cranes, which will be used widely at the ACP, are not needed to be IROFS. Nevertheless, they will be used to lift cylinders and centrifuges containing varying amounts of UF6 in solid and gaseous form.

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1.1.6	Large quantities of highly hazardous material, defined as a Threshold Quantity (TQ) in the Occupational Safety and Health Administration (OSHA) Process Safety Management Standard (29 CFR 1910.119) and the EPA Risk Management Program Standard (40 CFR Part 68), are not present in the ACP	Other than UF6, which is not defined as a Threshold Quantity in the OSHA Process Safety Management Standard and the EPA Risk Management Program Standard, will not be present in the ACP.
1.1.9	Commitments to utilize appropriate materials of construction as described in section 1.1.9, including to do not exceed corrosion or erosion rate of 0.0025 millimeter per year depending upon material of construction, equipment configurations and flow rates.	6.3.1.3
1.1.10	Commitments on the use of lubricating oils, such the ACP is designed and constructed to use oilless pumps and compressors as much as possible in the process of UF_6, minimizing the use of hydrocarbon-based lubricants, and the use of lubricants compatible with hydrofluoric acid (HF) and uranium hexafluoride (UF_6).	6.3.1.3

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1.1.10	The ACP facilities are designed and built in a manner to ensure an operating life of at least 30 years. Materials of construction are chosen in accordance with the guidance provided in GAT-901 and GAT-T-3000 (References 10 and 11) to ensure piping and other equipment can maintain a minimum wall thickness during the operating life of the ACP. Corrosion and erosion rates are not anticipated to exceed 0.0025 millimeter per year depending upon material of construction, equipment configurations and flow rates.	USEC has committed to finalize the ACP design within the constraints of the general commitments concerning the materials of construction. These commitments, along with the NRC's construction inspections and Operational Readiness Review (ORR), would adequately ensure adequate compatibility of the materials of construction with the operational process environments.
1.2.2	"Prior to initiating each phase [of construction], USEC will make available for inspection on a confidential basis, its budget estimate for such phase and documentation of the source of funds available or committed to fund that increment."	1.2.3.3.2. License conditions spell out the commitments in more detail.
1.2.3	USEC's possession limits comprising the type, quantity, and form of NRC-regulated special nuclear, source, and by-product material are shown in Table 1.2-1.	Possession and use of radioactive materials will be within the constraints of Table 1.2-1. See SER 1.2.3.4.

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1.2.5	The UF_6 cylinders stored in storage yards are not covered by a criticality monitoring system unless those cylinders contain licensed material greater than 5.0 weight percent 235U.	5.3.6
1.2.5	Moderation control of UF_6 filled cylinders is maintained by ensuring cylinder integrity through periodic cylinder inspections. If a UF6 filled cylinder is found to be breached, the cylinder is covered within 24-hours after discovery to reduce the potential accumulation of moderating material (i.e., rainwater).	5.3.6
1.4	USEC will obtain prior NRC review and approval before deleting or modifying the commitment to any code or standard contained in Section 1.4 of the License Application.	This is a license condition.
1.4	The current design of the American Centrifuge Plant does not include any items relied on for safety (IROFS) that use software, firmware, microcode, Programmable Logic Controllers, and/or any digital device, including hardware devices that implement data communication protocols. Should this design change, USEC will obtain prior NRC approval for the applicable guidance and standards.	This is a license condition.
1.4	The following sub-sections list the various industry codes, standards, and regulatory guidance documents that have been referenced in this license application. The extent to which USEC satisfies each code, standard, and guidance document is identified individually in the sub-sections.	Section 1.4.1 through 1.4.9 describes USEC's commitments to industry codes, standards and regulatory guidance documents.

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1.4.1	The Applicant commits to the following ANSI/ANS-8 Series standards, with some exceptions: ANSI/ANS-8.1-1998, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactor" (exception/clarification to Section 4.1.6 of this standard) ANSI/ANS-8.3-1997, "Criticality Accident Alarm System" (exception/clarification to Section 4.1.6 of this standard) ANSI/ANS-8.19-1996, "Administrative Practices for Nuclear Criticality Safety" (exception/clarification to Section 4.1.6 of this standard) ANSI/ANS-8.20-1991, "American National Standard for Nuclear Criticality Safety Training" (without exception/clarification) ANSI/ANS-8.21-1995, "American National Standard for Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors" (without exception/clarification) ANSI/ANS-8.23-1997, "Nuclear Criticality Accident Emergency Planning and Response" (without exception/clarification)	5.3.5
1.4.2	American National Standards Institute (ANSI) N14.1-2001, "Nuclear Materials -Uranium Hexafluoride - Packaging for Transport" – with some exceptions, since old cylinders, not constructed to the 2001 version of the standard, could be transferred to the ACP.	See SER 1.2.3.5.
1.4.3	ANSI/American Society of Mechanical Engineers (ASME) Nuclear Quality Assurance NQA-1-1994, "Quality Assurance Requirements for Nuclear Facility Applications" (with some clarifications)	6.3.4.2, 11.3.8.2
1.4.4	ASME Boiler and Pressure Vessel Code Section VIII, "Pressure Vessels," 2004 ASME B31.3, "Process Piping," 2004	6.3.1.1, 6.3.6

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1.4.5	American Society for Testing Materials (ASTM) C787, "Standard Specification for Uranium Hexafluoride Enrichment," 2003 ASTM C996, "Standard Specification for Uranium Hexafluoride Enriched to Less than 5 Percent U-235," 2004 ASTM C1052, "Standard Practice for Bulk Sampling of Liquid Uranium Hexafluoride," 2001	6.3.1.1, 6.3.6
ACP Security Program, Ch. 2 "Security Plan For The Protection Of Classified Matter"	The Applicant is required by 10 CFR 95.15 to request a NRC facility clearance and to provide a security plan outlining the proposed security procedures and controls for the protection of National Security Information (NSI) and Restricted Data (RD). The American Centrifuge Plant (ACP) operates under its own Facility Clearance. Individuals are not allowed access to classified information without the proper access authorization and need-to-know.	1.2.4 - The staff reviewed the applicant's "Security Plan For The Protection Of Classified Matter" and found it to satisfy the requirements of 10 CFR Part 95. Because a specific facility for use and storage of classified matter had not been identified other than as provided under DOE authority, staff is imposing the following license condition: "USEC Inc. shall not use, process, store, reproduce, transmit, handle, or allow access to classified matter except provided by applicable personnel and

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		facility clearances as required under 10 CFR Part 95."
2.0	...USEC maintains the following operations policy with respect to environmental, health, nuclear safety, safeguards, security, and quality to guide the day-to-day business activities of, and provide direction to, ACP personnel. "USEC is responsible for safe operation of the ACP and is committed to conducting operations in a manner that protects the health and safety of workers and the public; protects the environment; provides for the common defense and security; and is in compliance with applicable local, state, and federal laws and regulations."	2.3
2.0	The Operations organization is responsible for the safe operation of the ACP.	2.3
2.0	The Engineering Manager has the responsibility for construction management and coordination with the contractor(s).	2.3
2.1	The Director, American Centrifuge Plant provides overall direction and management of ACP operations, and oversees activities to ensure safe and reliable operations and refurbishment/construction.	2.3
Figure 2.1-1	License Application for the American Centrifuge Plant in Piketon, Ohio, Rev. 17, "Figure 2.1-1, American Centrifuge Plant Organization Chart," Staff Exhibit 10.	2.3.2
2.1.1 through 2.1.4.1	Sections 2.1.1 through 2.1.4.1 of the license application provide the responsibilities and authorities, and minimum educational and experience requirements for the following positions: Vice President, American Centrifuge; Director, Regulatory and Quality Assurance; Regulatory Manager; Quality Assurance Manager; Director, American Centrifuge Plant; Plant Support Manager; Fire Safety Manager; Nuclear Materials Control and Accountability Manager; Engineering Manager; Nuclear Safety Manager; Nuclear Criticality Safety Manager; Manager, Enrichment Operations; Production Support Manager; Radiation Protection	2.3.2

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	Manager; Training Manager; Operations Manager; Operations Supervisors; Maintenance Manager; Maintenance Supervisors; Corporate Security Director; and Security Manager.	
2.1.3.3.4 Shift Crew Composition	The minimum operating shift crew consists of an Operations Supervisor, a Radiation Protection/Industrial Hygiene technician, and one operations technician per process building. Other personnel, such as NCS, will be available on an as needed basis.	2.3.2
2.2	The commitment tracking and Corrective Action Programs are integrated to prioritize ACP actions consistent with their safety and safeguards significance. Any person working in the plant may report potentially unsafe conditions or activities by submitting a condition notification. Reported concerns are investigated, assessed, and resolved as described in Section 11.6 of this license application.	2.3.3
3.1.1	USEC commits to compile and maintain an up-to-date database of process-safety information.	3.3.1.1
3.1.2	USEC commits to maintain the ISA and ISA Summary so that it is accurate and up-to-date by means of a suitable configuration management system described in Section 11.1 of the LA.	3.3.1.2
3.1.2	USEC commits to a management system and design approach that require that the final designs be reviewed against the ISA to ensure that the ISA is bounding.	3.3.1.2
3.1.2	USEC commits to conduct evaluations of appropriate complexity for new processes.	3.3.1.2
3.1.2	For future revisions to the ISA, USEC commits to use personnel having qualifications similar to those of ISA team members who conducted the original ISA.	3.3.1.2
3.1.2	USEC commits to evaluate proposed changes to the ACP or its operations by means of the ISA and will designate new or additional IROFS, along with appropriate management measures as necessary.	3.3.1.2

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3.1.2	USEC commits to evaluate the adequacy of existing IROFS and associated management measures and make any required changes to the ACP and/or its processes. If a proposed change results in a new type of accident sequence or increases the consequences and/or likelihood of a previously analyzed accident sequence within the context of 10 CFR 70.61, USEC will evaluate whether changes to existing IROFS and associated management measures are required.	3.3.1.2
3.1.2	USEC commits to periodically review IROFS per the requirements of 10 CFR70.62(a)(3) to ensure their availability and reliability for use and consistency with the ISA.	3.3.1.2
3.1.2	USEC commits to use written procedures to maintain the ISA process and maintain those procedures onsite.	3.3.1.2
3.1.2	USEC commits to require that the final designs be reviewed against the ISA to ensure the ISA accurately reflects the ACP design and operations, identifies the credible accident sequences and appropriate assumptions, and credits the IROFS necessary to meet the performance requirements of 10 CFR 70.61.	3.3.1.2
4.2.1	The As Low As is Reasonably Achievable (ALARA) Committee is an independent advisory group to the Director, American Centrifuge Plant and the Plant Safety Review Committee on Radiation Protection (RP) issues.	4.3.2
4.3	The Radiation Protection Manager (RPM) will be independent from Operations.	4.3.3
4.3	The RPM is required to have the technical competence and experience to establish RP programs (RPM qualifications are stated in Section 2.1.3.3.1.1 of the Application)	2.3.2, 4.3.3
4.4.2	Radiation Work Permits (RWPs) are a basic implementing tool by which radiological controls are established.	4.3.4

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4.5.4	Health Physics technicians will be trained and qualified in accordance with an approved qualification standard based on the requirements of the American National Standards Institute (ANSI) / American Nuclear Society 3.1, *Selection, Qualification, and Training of Personnel for Nuclear Power Plants*, 1987 Edition.	4.3.1
5.1.1	The NCS Program described in this chapter is implemented by plant procedures.	5.3.3.1
5.1.1	The NCS Program meets the Baseline Design Criteria (BDC) requirements in 10 CFR 70.64(a) concerning application of the double contingency principle in determining Nuclear Criticality Safety (NCS) controls and items relied on for safety (IROFS) in he design of new facilities.	5.3.1.1
5.1.2	The objectives of the program include: Conducting NCSEs to assure that under normal and credible abnormal conditions nuclear processes remain subcritical, and maintain an approved margin of subcriticality for safety.	5.3.1.2, 5.3.4.2
5.2.1	The ACP organization managers are responsible for ensuring that operations involving uranium enriched to 1 weight percent or higher ^{235}U and 100 g or more of ^{235}U (hereafter referred to as fissile material operations) are identified and evaluated for NCS considerations prior to initiation of the operation.	5.3.4.2
5.2.1	Management is responsible, in their respective operations, for ensuring that personnel are made aware of the requirements and limitations established by approved NCSEs. Management is responsible for ensuring that only personnel who have received and passed NCS training as specified in ACP NCS procedures will handle fissile material.	5.3.3.1
5.2.1	The fissile material operators are responsible for conducting operations in a safe manner in compliance with procedures or work instructions and are required to stop operations if unsafe conditions exist.	5.3.3.1

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5.2.1 5.2.2	The NCS Manager has, as a minimum, a bachelor's degree in engineering, mathematics or related science or equivalent technical experience, and four years nuclear experience. The minimum requirements for a qualified NCS Engineer are: - Bachelor's degree in engineering, mathematics or related science; - Familiarization with NCS by having a minimum of one year experience at an enriched uranium processing facility; - Completion of NCS-related training course and KENO V.a training course or equivalent; - Performance of at least four evaluations under the direction of a Senior NCS Engineer; and - Performance of walk-through inspections under the guidance of a qualified NCS Engineer. The minimum requirements for a qualified Senior NCS Engineer are: - Completion of the minimum requirements for a qualified NCS Engineer; - Performance of the functions of a qualified NCS Engineer; - Completion of one year as a qualified NCS Engineer; and - Approval by the NCS Manager (or equivalent).	5.3.2.2
5.3.1	Operations to which NCS pertains are governed by written procedures or work packages. These procedures or work packages contain the appropriate NCS controls for processing, storing, and handling fissile material.	5.3.3.1
5.3.1	New and modified procedures or work packages are reviewed by the appropriate safety organizations, including NCS.	5.3.3.3, 5.3.4.2
5.3.2	Administrative NCS limits and controls for areas, equipment, and containers are presented through the use of postings and labels as specified in approved NCSEs and procedures.	5.3.3.2

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5.3.3	A configuration management (CM) program ensures that any change from an approved baseline configuration is managed so as to preclude inadvertent degradation of safety or safeguards.	5.3.3.3
5.3.3	NCS controls that are IROFS are controlled as QL-2 items and NCS controls that are not IROFS are controlled as QL-3 items.	Appendix C C.3.2.1
5.3.3	Changes that could establish new fissile material operations or affect established fissile material operations are reviewed by NCS.	5.3.3.3
5.3.3	NCSEs are specifically included in the index of documents that are required to be controlled.	5.3.4.2
5.3.4	Operating SNM process areas are reviewed on a regular basis through a combination of walk-throughs and reviews by work crew supervision. NCS walk-throughs of facilities that may contain fissile material operations are performed by NCS personnel to determine the adequacy of implementation of NCS requirements and to verify that conditions have not been altered to adversely affect NCS. As a minimum, specific fissile material operating areas are assessed by NCS personnel via walk-through at least annually.	5.3.3.4
5.3.4	In addition to the annual self-assessments, independent internal audits of the NCS Program are conducted or coordinated by the Quality Assurance Manager as described in Section 11.5 of the Application. The purpose of these audits is to determine the adequacy of the overall NCS Program.	5.3.3.4
5.4.1	The NCS Program has been developed to comply with ANSI/ANS-8.1-1998, ANSI/ANS-8.19-1996, and ANSI/ANS- 8.21-1995 standards (with some exceptions) as discussed in this Section 1.4 of the Application.	5.3.4.1
5.4.2	Each operation involving uranium enriched to 1 wt. percent or higher ^{235}U and 100 g or more of ^{235}U is evaluated for NCS prior to initiation.	5.3.4.2

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5.4.2	The double contingency principle as stated in ANSI/ANS-8.1-1998, Section 4.2.2 is: "Process designs should incorporate sufficient factors of safety to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible." The ACP NCS Program meets the double contingency principle by implementing at least one control on each of two different parameters or implementing at least two controls on one parameter. Application of this principle ensures that no single credible event can result in an accidental criticality or that the occurrence of events necessary to result in a criticality is not credible.	5.3.4.2, 5.3.4.3
5.4.2	Use of the natural and credible course of events or other means in lieu of specific administrative or engineered controls for double contingency protection requires prior NRC review and approval. The request for review and approval will include a justification of why administrative or engineered controls are not needed, a description of the proposed measures in sufficient detail to permit an understanding of their safety function, and a justification of their inherent unlikeliness.	5.3.4.2
5.4.2	Once the NCSE is completed, a technical review of the evaluation is performed and documented.	5.3.4.2, 11.3.1.4
5.4.2.1	The determination of an operation being non-fissile must include normal and credible abnormal upset conditions to ensure the enrichment and/or inventory are maintained below 1 weight percent ^{235}U or below 100 g ^{235}U.	5.3.4.2.1
5.4.3	Where practical, the use of engineered controls on mass, geometry, moderation, volume, concentration, interaction, or neutron absorption will be used as the preferred approach over the use of administrative controls. Deviations from the preferred design approach are justified in supporting documentation to the NCSEs.	5.3.4.3

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5.4.4	A criticality accident alarm system (CAAS) that complies with 10 CFR 70.24 and ANS/ANSI-8.3-1997 is provided to alert personnel if a criticality accident occurs.	5.3.4.4
5.4.4	Coverage is provided for fissile material operations, except the UF_6 cylinder storage yards as specified in Section 1.2.5 of the Application. Other exceptions to CAAS coverage are documented in NCSEs, and are based on a conclusion in the NCSE that a criticality accident is non-credible in the area where the fissile material operation is ongoing. Conclusions of non-credibility require at a minimum that the inventory of ^{235}U in the area is less than 700 g.	5.3.4.4
5.4.4	For each area requiring CAAS coverage, a monitoring system is installed that provides coverage of the area by at least two independent detection units, each with the ability to actuate the alarm.	5.3.4.4
5.4.4	In the event CAAS coverage is lost for an operation, plant procedures provide for compensatory actions, which may include shutdown of equipment, limiting access, halting movement of uranium-bearing material, or other actions.	5.3.4.4
5.4.5.1	All the technical practices in Section 5.4.5.1 are important for safety, but because the applicant has choices as to which parameters to control, these are not specifically mentioned. The only one mentioned below is the universal assumption about bounding enrichment. The maximum ^{235}U enrichment of UF_6 in the ACP is 10 wt. percent. Due to the difficulty in obtaining reliable, real-time enrichment measurements that are both accurate and precise enough to use as a NCS control, enrichment is assumed to be the maximum credible for each operation.	5.3.4.5.1, Enrichment

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5.4.5.2	Experimental data are used for validation of the computer code (e.g., KENO V.a) used to perform the calculations needed to support the development of NCSEs. Computer codes are validated using experimental data from benchmark experiments that, ideally, have geometries and material compositions similar to the systems being modeled.	5.3.4.5.2
5.4.5.2	A minimum margin of subcriticality of 0.02 in k_{eff} is used to establish the acceptance criteria (i.e., upper safety limit) for criticality calculations for abnormal conditions at 5 weight percent ^{235}U enrichment and below. Above 5 weight percent ^{235}U enrichment, a minimum margin of subcriticality of 0.05 in k_{eff} is used. Also, for normal case calculations supporting processes that are not under moderation control, a minimum margin of subcriticality of 0.05 in k_{eff} is used.	Appendix C C.3.1.1
5.4.5.2	Computer models representing the geometrical configuration and material compositions of the system are developed for use within the code. The development of appropriate models must account for or conservatively bound both normal and credible abnormal process conditions.	5.3.4.5.2
5.4.5.2	Prior to implementing changes to processes based on calculations requiring extension to the validated area of applicability as determined in the validation report, NRC review and approval shall be obtained. The request for NRC review and approval shall include a description of the change, the reason that such a change is needed, and the method used to extend the area of applicability.	5.3.4.5.2, 5.3.7
5.4.5.2	The computer codes and cross sections used in performing k_{eff} calculations are maintained in accordance with a configuration control plan.	5.3.4.5.2

LICENSE APPLICATION SECTION	COMMITMENT	STAFF EVALUATION
6.1	Chemical inventories at the ACP are maintained below the threshold quantities set forth in the Occupational Safety and Health Administration (OSHA) Process Safety Management (PSM) Standard, 29 CFR 1910.119, and the U.S. Environmental Protection Agency (EPA) Risk Management Program (RMP) Standard, 40 CFR Part 68; therefore, these regulations do not apply to the ACP.	6.3.1.2
6.1	The American Industrial Hygiene Association (AIHA) Emergency Response Planning Guidelines (ERPGs) have been selected as the chemical response standard for the ACP.	6.3.3
6.2.2	Each of the management measures selected help ensure that the IROFS are available and reliable to perform their safety function when required.	6.3.4.2
6.2.2.10	Chemicals with significant radiological impact, such as UF_6, HF, and UO_2F_2 that are processed in the X-3346 facility, are provided with detection and monitoring systems to identify chemical releases as described in Sections 2.2.3.5 and 7.3.4.2 of the ISA Summary.	6.3.5
6.2.2.1.1	Procedures are prepared in accordance with the requirements of a formal procedure system.	6.3.4.2.2
6.2.2.2	Personnel who operate, maintain, manage, handle, and have emergency response duties for chemicals are adequately trained for the particular chemical system or related activity. ACP operators, maintenance personnel, management, and emergency response personnel have prerequisite and periodic training requirements that are necessary for initial and continued job qualification.	6.3.4.2.3
6.2.2.2	Contractor (typically construction, maintenance, and service) personnel will receive access training and plant-specific safety training prior to starting work. The contractor or the contractor-designated Safety and Health Officer has the contractual responsibility for internal contractor employee training. The Applicant also approves the contractor's Safety and Health Plan.	6.3.4.2.3

LICENSE APPLICATION SECTION	COMMITMENT	STAFF EVALUATION
	The Site Technical Representative is the liaison between the contractor and the Applicant. If construction activities interface with chemical systems, ACP representatives ensure appropriate job review, training, and guidance is provided.	
6.2.2.1.2	The ACP will use some Industrial Hygiene Safety (HIS) programs for chemical safety and will implement these through safety and health program procedures.	6.3.4.2.2
6.2.2.3	Maintenance and inspection requirements and criteria for chemical systems are developed considering specific plant maintenance organization, manufacturer's recommendations, and the ISA Summary.	6.3.4.2.4
6.2.2.4	The CM Program includes an organizational structure and administrative processes and controls to ensure that accurate, current design documentation is maintained that matches the building physical configuration	6.3.4.2.1
6.2.2.5	Operators are not expected to participate in emergency response activities for chemical releases. The "See and Flee" policy specifies that personnel promptly move to a safe location, away from the immediate release area.	6.3.4.2.3 and 6.3.5
6.2.2.11.1	Material Safety Data Sheets (MSDSs) are maintained in a central location within the ACP and are available at all times to plant employees, including emergency response and fire department personnel from on- and off-site. Hard copies of the MSDSs are maintained by the contractor at the job site, by Industrial Hygiene in a central location, and by appropriate Facility Custodians.	6.3.5
6.2.2.1.2, 6.2.2.12	The ACP and the DOE have their own chemical safety programs and share information regarding hazardous chemicals used by each entity. The DOE provides information regarding any hazardous chemicals used these "third-parties" (i.e., contractors and sub- contractors) that could impact ACP operations.	6.3.4.2.2

LICENSE APPLICATION SECTION	COMMITMENT	STAFF EVALUATION
6.3	Records of chemical releases and documentation relating to chemical process safety are retained in accordance with Records Management and Document Control (RMDC) requirements described in Section 11.7.1.5 of the Application.	6.3.4.2.5
7.1	"The applicant commits to implement configuration management, maintenance, training, procedures, audits and assessments, incident reporting and investigations, and record management as described in Chapter 11 of the LA (USEC, 2006b)."	7.3.1
7.1-1	"IEEE 484, 2002 - IEEE Recommended Practice for Installation Design and Implementation of Vented Lead-Acid Batteries for Stationary Applications"	7.3
7.1-1	"NFPA 10, 2002 - Standard for Portable Fire Extinguishers"	7.3
7.1-1	"NFPA 13, 2002 - Standard for Installation of Sprinkler Systems"	7.3
7.1-1	"NFPA 15, 2001 - Standard for Water Spray Fixed Systems for Fire Protection"	7.3
7.1-1	"NFPA 25, 2004 - Standard for the Inspection, Testing, and Maintenance of Water Based Protection"	7.3
7.1-1	"NFPA 30, 2003 - Flammable and Combustible Liquids Code"	7.3
7.1-1	"NFPA 51B, 2003 - Standards for Fire Prevention During Welding, Cutting, and Other Hotwork"	7.3
7.1-1	"NFPA 70, 2005 - National Electric Code"	7.3
7.1-1	"NFPA 72, 2002 - National Fire Alarm Code"	7.3
7.1-1	"NFPA 75, 2003 - Standard for Protection of Electronic Computer/Data Processing Equipment"	7.3

LICENSE APPLICATION SECTION	COMMITMENT	STAFF EVALUATION
7.1-1	"NFPA 80, 1999 - Standard for Fire Doors and Fire Windows"	7.3
7.1-1	"NFPA 101, 2003 - Life Safety Code"	7.3
7.1-1	"NFPA 220, 1999 - Standard on Types of Building Construction"	7.3
7.1-1	"NFPA 232, 2000 - Standard for the Protection of Records"	7.3
7.1-1	"NFPA 241, 2000 - Standard for Safeguarding Construction, Alteration, and Demolition Operations"	7.3
7.1-1	"NFPA 801, 2003 - Standard for Fire Protection for Facilities Handling Radioactive Materials"	7.3
7.1.1	"Fire prevention is defined in Section 7.1.1 of the LA (USEC, 2006b) as a program across the ACP to minimize the potential for an incipient fire."	7.3.1.1
7.1.2	"Fire protection equipment, such as sprinkler systems, fire alarms, and detection systems, is inspected and tested upon installation in accordance with NFPA 25 (NFPA, 2004)."	7.3.1.2
7.1.3	"According to Section 7.1.3 of the LA (USEC, 2006b), employees receive initial and biennial fire safety training as part of the General Employee Training on emergency preparedness."	7.3.1.3
7.1.3	"Manual fire suppression capability will be provided by a fire service department which is manned continuously that is adjacent to the DOE reservation."	7.3.5
7.1.4	"Pre-fire plans are or will be developed for the following areas: (a) X-3001 Process Building;..."	7.3.1.4
7.2	"Fire Hazards Analysis (FHAs) ensure that the fire prevention and fire protection requirements of buildings and fire areas have been evaluated and incorporated. The applicant has performed or will perform FHAs for the following buildings and areas: (a) X-3001 Process Building;..."	7.3.2

LICENSE APPLICATION SECTION	COMMITMENT	STAFF EVALUATION
7.2.1	"A description of ventilation characteristics as they relate to fire protection and fire hazards will be provided in the FHAs."	7.3.3.4
7.3	"The applicant will limit the amount of fixed combustibles that could increase the severity of or may help to propagate a fire."	7.3.3.1
7.3.1	"The applicant will provide sprinkler protection throughout the ACP to minimize the risk of fire."	7.3.3.2
7.3.2	"The fire alarm system will consist of water flow alarms connected to the fire alarm system and manual pull stations located in the primary facility buildings."	7.3.3.2
7.5.3	"The firewater distribution system is designed such that each ACP building can be supplied by at least two sources of water.	7.3.3.2
9.2.1.1	The air effluent ALARA goal for the ACP is 5% of the 10CFR20.1101 constraint of 10 mrem/year for the maximally exposed individual of the public, which is less than the ALARA goal recommended in Reg. Guide 8.37.	9.3.1.1
9.2.1.1	The liquid effluent ALARA goal for the ACP is 10% of the air effluent goal, or 0.05 mrem/year, and 0.05% of the 20CFR1301 limit on annual dose to the public.	9.3.1.1
9.2.2.1	Air effluent monitoring will use continuous vent sampling to monitor the Purge Vacuum and Evacuation Vacuum System vents for UF-6 and Tc-99.	9.3.2.1
9.2.2.2	To assure liquid effluents are below ALARA, liquid effluent monitoring program will calculate dose to the maximally exposed person downstream of the ACP assuming direct use of contaminated surface water for drinking water, ingestion of fish from contaminated water, and the use of contaminated water for irrigation.	9.3.2.2
10.0 and 10.2.1	USEC will decommission the ACP such that facilities can be released for unrestricted use.	10.3 and 10.3.1.2
10.0	USEC will submit a decommissioning plan prior to license termination.	10.3

LICENSE APPLICATION SECTION	COMMITMENT	STAFF EVALUATION
10.0	Prior to decommissioning, USEC will assess the radiological status of the plant.	10.3.1.1
10.0 and 10.6	Classified matter will be destroyed or disposed of in accordance with the Security Plan.	10.3.1.2 and 10.3.1.6
10.0 and 10.6	Materials control and accounting programs will be maintained during decommissioning.	10.3.1.6
10.0, 10.2.6, and 10.5	Low-level radioactive wastes will be disposed of at a licensed disposal facility.	10.3.1.2 and 10.3.1.5
10.0, 10.2.6, and 10.5	Hazardous wastes will be treated and disposed of permitted hazardous waste facilities.	10.3.1.2 and 10.3.1.5
10.0 and 10.8.1	USEC will use existing areas as a Decontamination Service Area.	10.3.1.8.1
10.1 and 10.2	USEC will begin to decontaminate and remove materials from the facilities promptly after cessation of operations.	10.3.1.2
10.1.1.1, 10.1.1.2, 10.3, and 10.4	USEC will establish radiation contamination controls to minimize waste generation and worker exposures, and apply ALARA procedures during decommissioning.	10.3.1.3 and 10.3.1.4
10.2.2	USEC will remove uranium hexafluoride to the maximum extent possible by purging after plant shutdown.	10.3.1.2
10.2.3	USEC will optimize the dismantling and removal process.	10.3.1.2
10.2.7	USEC will conduct a final status survey to verify that decommissioning has been properly conducted.	10.3.1.2
10.7	USEC will keep records important for decommissioning.	10.3.1.7
10.8	USEC will use wet and dry decontamination methods.	10.3.1.8
10.8.2	USEC will conduct decommissioning in accordance with written and approved procedures.	10.3.1.8.2
10.10.1	The Applicant will adjust the decommissioning cost estimate annually prior to operation of the facility at full capacity, and after full capacity is reached, no less frequently than every three years.	10.3.2.2

LICENSE APPLICATION SECTION	COMMITMENT	STAFF EVALUATION
10.10.1	The Applicant will consider changes in general inflation, price of goods and services, plant conditions or operations, and decommissioning procedures or regulations in making adjustments to the decommissioning funding plan cost estimate.	10.3.2.2
10.10.2	The Applicant will consider the costs of conversion and disposal of depleted uranium in its decommissioning financial assurance.	10.3.2.2
10.10.2	The Applicant will update the depleted uranium disposition costs annually.	10.3.2.2
10.10.4	The Applicant will provide financial assurance incrementally as centrifuges are built / installed and as UF_6 tails generated.	1.2.3.6 and 10.3.2.2
10.10.4	The Applicant will provide full funding for decommissioning the facility in its initial executed financial assurance instrument.	10.3.2.2
10.10.4	The Applicant will forecast and update the cost estimates and provide a revised funding instrument to NRC annually to cover the upcoming year of operation.	10.3.2.2
10.10.4	Once full capacity of the facility is achieved, the Applicant will annually adjust the cost estimate for UF_6 tails disposal and all other decommissioning costs will be adjusted periodically, and no less frequently than every three years.	10.3.2.2
10.10.4	The Applicant will provide financial assurance using a surety bond or other guarantee method as required by 10 CFR 70.25(f).	10.3.2.2
11.0	Management measures are functions that are applied to IROFS to provide reasonable assurance that the IROFS are available and reliable to perform their functions when needed.	11.0

Q5: Has USEC proposed a schedule for implementing the above commitments?

A5: (SE) The above commitments must be completed or in place prior to the commencement of operations. The Staff has not requested, and the Applicant has not provided, a detailed schedule for the implementation of each commitment.

Q6: How will the Staff monitor the Applicant's safety commitments?

A6: (SE, JH) Licensee commitments that must be completed or in place prior to commencement of operations are reviewed and assessed as a part of the construction and pre-operational inspection program. A recommendation to NRC Senior Management to authorize the Applicant to introduce uranium hexafluoride into the facility (i.e., commence operations) will not be made until the licensee has demonstrated that it can safely operate the facility. The results of the construction and pre-operational inspections are the basis of this recommendation. As noted in the response to ASLB Question S2-1.F., these inspections will include reviews of items such as IROFS and related management measures based on safety/risk significance, past performance, significant changes, and other safety-related characteristics. Once the license is issued, the NRC staff ensures compliance with license conditions and commitments through its ongoing, routine inspection program.

Q7: Has the Staff considered making these commitments into license conditions? If not, explain why these commitments should not be license conditions?

A7: (SE, JH) No, the Staff has not considered making these commitments into license conditions. The standard practice for licensing fuel cycle facilities is to directly incorporate license application documents into the license by tie-down references. In this way, all the Applicant's commitments documented in the licensing documents become enforceable. Because all license commitments are enforceable, there is no need to make license commitments into license conditions.

Q8: Does this conclude your testimony?

A8: Yes.

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 5, 2007.

Francis Stanley Echols

I declare under penalty of perjury that the foregoing is true and correct. Executed on March __, 2007.

Jay Henson

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 5, 2007.

Timothy Johnson

I declare under penalty of perjury that the foregoing is true and correct. Executed on March __, 2007.

Michael Lamastra

I declare under penalty of perjury that the foregoing is true and correct. Executed on March __, 2007.

Christopher Tripp

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 6, 2007.

Norma Garcia Santos

I declare under penalty of perjury that the foregoing is true and correct. Executed on March __, 2007.

Thomas Pham

I declare under penalty of perjury that the foregoing is true and correct. Executed on March __, 2007.

Michael Kelly

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 5, 2007.

Yawar Faraz

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 5, 2007.

Wm. Troskoski

William Troskoski

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 5, 2007.

Rex H. Wescott

Rex Wescott

I declare under penalty of perjury that the foregoing is true and correct. Executed on March __, 2007.

J. Keith Everly

I declare under penalty of perjury that the foregoing is true and correct. Executed on March __, 2007.

Fred Burrows

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 5, 2007.

James Bongarra

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 5, 2007.

Herman L. Graves, III

Herman Graves

I declare under penalty of perjury that the foregoing is true and correct. Executed on March __, 2007.

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Allen Frazier

I declare under penalty of perjury that the foregoing is true and correct. Executed on March __, 2007.

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Oleg Bukharin