



September 6, 2006
AET 06-0101

Mr. Jack R. Strosnider
Director, Office of Nuclear Material Safety and Safeguards
Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

**American Centrifuge Plant
Docket Number 70-7004
Submission of Changed Pages for the License Application for the American Centrifuge Plant
(TAC Nos. L32306, L32307, and L32308)**

Dear Mr. Strosnider:

Pursuant to a discussion held with the U.S. Nuclear Regulatory Commission (NRC) staff on September 6, 2006, USEC Inc. hereby submits changed pages for the License Application (Revision 18) as Enclosure 1 of this letter. Revision bars in the right hand margin depict changes from the previous revision submitted to the NRC.

If you have any questions regarding this matter, please contact Peter J. Miner at (301) 564-3470.

Sincerely,



Steven A. Toelle
Director, Regulatory Affairs

cc: S. Echols, NRC HQ (Controlled Copies – NRC-01 through NRC-06)
B. Smith, NRC HQ

Enclosure: As Stated

Enclosure 1 of AET 06-0101

Changed Pages for the License Application for the American Centrifuge Plant

Remove and Insert Instructions
Enclosure 1 of AET 06-0101

Remove and Properly Destroy	Insert
LA-3605-0001, License Application for the American Centrifuge Plant	
Cover Page – Revision 17	Cover Page – Revision 18
Inside Cover Page – Revision 17	Inside Cover Page – Revision 18
ULOEP-1 through ULOEP-6	ULOEP-1 through ULOEP-6
Chapter 7.0 – pages 7-11 through 7-14	Chapter 7.0 – pages 7-11 through 7-14

License Application

for the American Centrifuge Plant

in Piketon, Ohio



Revision 18

Docket No. 70-7004

September 2006

Information contained within
does not contain
Export Controlled Information

Reviewer: R. Coriell
Date: 09/06/06

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LA-3605-0001

LICENSE APPLICATION
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UPDATED LIST OF EFFECTIVE PAGES

Revision 0 – 10 CFR 1045 review completed by L. Sparks on 07/29/04 and the Export Controlled Information review completed by R. Coriell on 07/30/04.

Revision 1 – 10 CFR 1045 review completed by L. Sparks on 03/04/05 and the Export Controlled Information review completed by R. Coriell on 03/10/05.

Revision 2 – 10 CFR 1045 review completed by J. Weidner on 04/29/05 and the Export Controlled Information review completed by R. Coriell on 04/29/05.

Revision 3 – 10 CFR 1045 review completed by J. Weidner on 05/23/05 and the Export Controlled Information review completed by R. Coriell on 05/23/05.

Revision 4 – 10 CFR 1045 review completed by R. Coriell on 06/16/05 and the Export Controlled Information review completed by D. Hupp on 06/16/05.

Revision 5 – 10 CFR 1045 review completed by J. Weidner on 06/21/05 and the Export Controlled Information review completed by D. Hupp on 06/21/05.

Revision 6 – 10 CFR 1045 review completed by J. Weidner on 08/30/05 and the Export Controlled Information review completed by D. Hupp on 08/30/05.

Revision 7 – 10 CFR 1045 review completed by J. Weidner on 09/02/05 and the Export Controlled Information review completed by R. Coriell on 09/02/05.

Revision 8 – 10 CFR 1045 review completed by J. Weidner on 09/27/05 and the Export Controlled Information review completed by D. Hupp on 09/13/05.

Revision 9 – 10 CFR 1045 review completed by J. Weidner on 10/05/05 and the Export Controlled Information review completed by D. Hupp on 10/05/05.

Revision 10 – 10 CFR 1045 review completed by J. Weidner on 11/04/05 and the Export Controlled Information review completed by D. Hupp on 11/04/05.

Revision 11 – 10 CFR 1045 review completed by J. Weidner on 11/17/05 and the Export Controlled Information review completed by D. Hupp on 11/14/05.

Revision 12 – 10 CFR 1045 review completed by J. Weidner on 11/28/05 and the Export Controlled Information review completed by D. Hupp on 11/22/05.

Revision 13 – 10 CFR 1045 review completed by J. Weidner on 12/02/05 and the Export Controlled Information review completed by D. Hupp on 12/02/05.

Revision 14 – 10 CFR 1045 review completed by J. Weidner on 03/17/06 and the Export Controlled Information review completed by D. Hupp on 03/17/06.

Revision 15 – 10 CFR 1045 review completed by R. Coriell on 06/01/06 and the Export Controlled Information review completed by G. Peed on 06/01/06.

Revision 16 – 10 CFR 1045 and the Export Controlled Information reviews were completed by R. Coriell on 08/11/06.

Revision 17 – 10 CFR 1045 and the Export Controlled Information reviews were completed by G. Peed on 08/30/06.

Revision 18 – 10 CFR 1045 and the Export Controlled Information reviews were completed by R. Coriell on 09/06/06.

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UF₆ is the primary hazardous material in the ACP and the ISA provides an evaluation of accidents that involve the release of UF₆, including both radiological and toxicological hazards. The HF, which evolves from a UF₆ release, is considered as one of the toxicological hazards from a UF₆ release and is also addressed in the ISA.

7.2.3 Building Surveys

The building surveys are conducted, in accordance with written procedures on a periodic basis, to ensure the buildings/facilities, systems, and operations continue to meet the codes and standards to which they were built and operated, and do not violate any safety bases that were established in the ISA for the credible accident scenarios. The building surveys also ensure no new credible fire scenarios have been created.

7.3 Building/Facility Design

There are fire hazards related to the enrichment process. Fire hazards are typical industrial hazards, including maintenance; incidental use of chemicals and flammable liquids; and energized electrical equipment in the buildings. Accident potentials are discussed in the FHAs and ISA.

The ACP buildings/facilities are large and spread across the DOE reservation, which minimizes the effects that a fire or explosion could have on adjacent buildings and operations. Ventilation supply and exhaust locations are considered with regard to contamination potential and smoke control. Floor surfaces are finished to support contamination control.

The primary ACP buildings/facilities are X-3001, X-3002, X-3012, X-3346, X-3346A, X-3356, X-7725, X-7726 buildings/facilities, and X-7727H corridor. The X-3001, X-3002, X-3012, X-3346, X-3346A, X-3356, X-7725, X-7726 buildings/facilities, and X-7727H corridor are constructed of heavy unprotected steel frame, concrete floors, insulated metal panel exterior walls, and a built up roofing material on a metal deck. Each building is considered a single fire area with exception of the X-3346, X-7725, X-7726 buildings/facilities, and X-7727H corridor. Sprinkler coverage is provided in each building/facility. The sprinkler and water systems are described below. There are no water-exclusion areas in the ACP. Combustible loading is typically low and the fire hazards are limited to normal industrial activities. Exceptions are identified in the building survey report or by the building/facility manager. These include such things as electrical switchgear and transformers, and maintenance activities.

Use of firewater and potential firewater accumulation has been reviewed in each of the buildings/facilities to assure no unsafe accumulations can occur with regard to criticality, equipment loss, or spontaneous combustion. Criticality concerns were identified in the X-3346 Customer Service Area such that floors are required to have no diking or areas where ponding can occur.

Firewater runoff to the environment is controlled by the presence of holding ponds that can reduce or terminate releases as necessary to minimize environmental impact. There are no credible accident scenarios that could result in a criticality event in the holding ponds.

As indicated previously, the X-3001, X-3002, X-3012, X-3346A, X-3356, X-745G-2, X-7746N, X-7746S, X-7746E, X-7746W, and X-7756S are each considered single fire areas, but the X-7725 and X-7726 facilities, and X-7727H corridor are considered as a single fire area and the X-3346 building is considered as two fire areas (Feed Area and Sampling and Transfer Area). Fire areas are considered to be any location bounded by fire rated construction with a minimum rating of two hours and equivalently fire rated doors, dampers, or penetration seals. Building and area separation is used as a method of limiting fire spread. The X-7725 facility and X-3001 building are, connected by the X-7727H corridor, of the same construction. Each are protected by automatic sprinkler system, and have acceptable amounts of combustibles.

Review of the emergency egress paths for the existing buildings/facilities is accomplished using NFPA 101-2003, *Life Safety Code*, as guidance. Some buildings do not comply with the travel distances due to their size. Exit arrangements are adequate because of the low occupancy levels, low combustible loading, large number of exits, and fixed fire suppression systems in the buildings.

Combustible storage in the buildings is considered as part of the hazard evaluation described in Section 7.2 of this chapter. There are no significant quantities of flammable liquids used in the enrichment process; however, centrifuge component manufacturing may be performed in the X-7725 and involve significant quantities of flammable liquids. The use of these liquids is controlled in accordance with NFPA 30-2003, *Flammable and Combustible Liquids Code*.

Electrical systems are installed in accordance with NFPA 70-2005, *National Electric Code*.

ACP building/facility design elements include fire protection lighting and fire barriers to ensure personnel safety in accordance with the applicable NFPA identified in Table 7.1-1.

Security provisions to maintain control of classified material during fire events are addressed in the Security Program for the American Centrifuge Plant.

New buildings/facilities are designed, constructed, and operated to meet the codes and standards applicable at the time of design development.

The Cylinder Storage Yards (X-745G-2, X-745H, X-7746N, X-7746S, X-7746E, X-7746W, and X-7756S) have fire hydrants equipped with monitor nozzles. Workers are trained to initiate the nozzles should a fire occur within the yards.

Cylinder handling equipment for handling 2.5-ton cylinders or larger are equipped with fire suppresser systems for the engine compartments.

7.3.1 Fire Suppression Systems

Fire suppression for the X-3001, X-3002, X-3012, X-3346, X-3346A, X-3356, X-7725, X-7726 buildings/facilities, and X-7727H corridor is provided by sprinkler systems. The systems are hydraulically designed and installed to meet or exceed the NFPA recommended

sprinkler densities for Ordinary Hazard Group 1 occupancies. The systems consist of sprinklers located at the ceilings/roof level and in other areas where needed. The sprinkler heads are supplied by piping fed from a riser connected to the firewater distribution system. This design is sufficient to ensure that credible fire related accident scenarios can be controlled given the building designs, equipment layout, and anticipated combustible loadings.

Existing suppression systems are maintained in accordance with the applicable codes and standards enforced at the time of construction and installation. New suppression systems will meet NFPA 13-2002, *Standard for the Installation of Sprinkler Systems* and NFPA 15-2001, *Standard for Water Spray Fixed Systems for Fire Protection*. When modifying existing buildings/facilities, the safety benefit from applying current codes and standards will be evaluated to determine if the change is justified. The evaluation and decision made will be documented.

7.3.2 Fire Alarms

The sprinkler systems are connected to the Fire Alarm system. This system meets the requirements of NFPA 72-2002, *National Fire Alarm Code*. The system alarms include sprinkler water flow alarms from the sprinkler systems and manual pull stations located in the X-3001, X-3002, X-3012, X-3346, X-3346A, X-3356, X-7725, X-7726 buildings/facilities, and X-7727H corridor. Alarms are received in the X-1020 Emergency Operations Center and the X-1007 Fire Station. Alarm announcement is not local, but a building evacuation system can be manually initiated from the X-1020 Emergency Operations Center, from the X-3012 building, or locally in some areas.

7.4 Process Fire Safety

The ACP has addressed process fire safety through the design of the buildings and operations such that consideration is taken for fire hazards that may be present in order to protect the workforce and public. Hazardous areas are identified to ensure the workforce is cognizant of hazardous material and operations. The ISA has been performed to identify the credible accident scenarios and establish the necessary IROFS to ensure the health and safety of the workforce and public.

The ACP buildings/facilities are designed in accordance with the codes and standards as identified in Section 7.1 above. The ACP hazardous areas are identified as part of the pre-fire plans required in Section 7.1.4 above. The ACP ISA is discussed in Section 7.2.2 of this chapter and Chapter 3.0 of this license application.

The ISA determines the likelihood of occurrence for the explosion and fire scenarios and resulting consequences associated with the release of UF_6 and its airborne release reaction product, HF assuming the accident is unmitigated. The ISA identifies IROFS and related management measures necessary to prevent the accident and/or mitigate the consequences in accordance with the performance criteria in 10 CFR 70.61. The IROFS identified by the ISA to prevent or mitigate explosion and fire related scenarios are grouped in the following three categories.

- Combustible Material Control
- Fire Suppression and Response
- Fire/Explosion Prevention

UF_6 is the primary hazardous material in the ACP. In the presence of moist air, UF_6 reacts to form HF gas and UO_2F_2 . The ISA considers U for radiological and toxicological hazards and HF for toxicological hazards. Other chemicals evaluated are activated alumina pellets used in the alumina traps to filter UF_6 gas, compressed gases (e.g., nitrogen, acetylene), perfluorocarbon fluid used in the equipment brine heating/cooling system, other refrigerants used in the various process refrigeration systems, janitorial supplies, fire extinguishing agents, and non-flammable oils used within the centrifuge upper and lower support assemblies. These other chemicals are not considered to have a significant hazardous interaction capability.

If centrifuge component manufacturing is performed within the ACP, additional materials are required for the process that will present fire safety and health concerns. These additional materials include carbon fibers, resin systems (resins, hardeners, and modifiers), prepregs (fibers/resin system) and for cleaning chemicals such as acetone, alcohols, carbon dioxide, ethanol, and Freon 134.

7.5 Fire Protection and Emergency Response

The design and operation of the buildings/facilities are evaluated on a periodic basis to ensure fire hazards are controlled. Fire protection systems are present to further reduce the risk of fires that could result in a release of hazardous material. Emergency response is provided to add defense-in-depth to the fire protection systems and respond to areas where fire protection systems do not exist.

7.5.1 Fire Protection Engineering

Fire protection engineering support is available to evaluate fire hazards; review changes to maintenance and process systems; and provide in-house consultation under the direction of the Fire Safety Manager. They also perform the building surveys as described in Section 7.2.3 of this chapter.