# FINDING OF NO SIGNIFICANT IMPACT

## ENVIRONMENTAL ASSESSMENT FOR THE LEASING OF FACILITIES AND EQUIPMENT TO USEC INC., DOE/EA-1451

**AGENCY:** U.S. DEPARTMENT OF ENERGY

**ACTION:** FINDING OF NO SIGNIFICANT IMPACT

**SUMMARY:** The U.S. Department of Energy (DOE) has completed an environmental assessment (DOE/EA-1451) for the proposed lease of facilities and equipment to USEC Inc. (USEC) which would be used in its Gas Centrifuge Research and Development (R&D) Project at the East Tennessee Technology Park (ETTP) and the Centrifuge Technology Center (CTC) Facility [hereinafter referred to as the USEC EA]. Based on the results of the impact analysis reported in the USEC EA, which is incorporated herein by this reference, DOE has determined that the proposed action is not a major Federal action that would significantly affect the quality of the human environment within the context of the *National Environmental Policy Act* of 1969 (NEPA). Therefore, preparation of an environmental impact statement is not necessary, and DOE is issuing this Finding of No Significant Impact (FONSI).

**PUBLIC AVAILABILITY OF EA AND FONSI**: The EA and FONSI may be reviewed at and copies of the document obtained at the following location:

DOE Information Center
475 Oak Ridge Turnpike
Oak Ridge, Tennessee 37830
Phone: (865) 241-4780
Toll Free: (800) 382-6938
Fax: (865) 574-3521

**FURTHER INFORMATION ON THE NEPA PROCESS**: For further information on the NEPA process, contact:

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**BACKGROUND**: DOE plans to lease facilities and equipment to USEC which would be used in the Gas Centrifuge R&D Program. The USEC EA analyzes the potential environmental impacts of DOE leasing Building K-101 and portions of Buildings K-1600, K-1220, and K-1037 at the ETTP to USEC for a minimum 3-year period, with additional option periods consistent with the Oak Ridge Accelerated Cleanup Plan (ACP) Agreement. In July 2002, USEC notified DOE that it intends to use certain leased equipment at an off-site facility at the CTC Facility on the Boeing Property. The purpose of the Gas Centrifuge R&D Project is to develop an economically attractive gas centrifuge machine and process using DOE's centrifuge technology. The USEC EA was prepared in accordance with NEPA, P.L. 91-190, 42 U.S. C. §4321 et seq.

**Proposed Action.** The Proposed Action is to lease Building K-101 and portions of K-1600, K-1200 and K-1037 at ETTP and certain equipment to USEC in order to develop an economically attractive gas centrifuge machine and process using DOE's centrifuge technology along with recent advances in materials, electronics,

and manufacturing processes. Development and demonstration of the gas centrifuge technology is key to supporting DOE's national energy security goals by providing a reliable and secure domestic source of enriched uranium. The essential R&D objectives are to:

- Demonstrate machine performance by confirming an economically attractive separative performance in a development test stand;

- Verify performance of a prototype plant machine by demonstrating that the derived machine design provides a low cost, as well as a reliable and stable machine that meets the operating requirements for a production plant;

- Verify that the design and manufacturing processes to be used in the production plant result in a reliable machine and separation process; and

- Provide follow-up support to the USEC Lead Cascade Project.

The proposed leased space in Building K-1600 and/or the leased CTC Facility would be used for modification, refurbishment, startup and/or operation of the Centrifuge Test Facility including design, engineering, fabrication, development, and demonstration of the performance capabilities of centrifuge components and machines. The proposed lease space in Buildings K-1037, K-1220, and K-101 also would be used for disassembly, evaluation, and storage or refurbishment of centrifuge components and equipment. In addition, Building K-1037 may also be used for component manufacturing/testing. Portions of Buildings K-1037 and K-101 also would be used for office space.

As an option to conducting all manufacturing and testing operations in the K-1600 Facility, USEC has leased the CTC Facility at Boeing Road, a private industrial facility that is suitable for fabricating, assembling, and testing centrifuge components.

**ALTERNATIVE**: In addition to the proposed action, impacts were also evaluated for the no action alternative. Under the No Action Alternative, DOE would not be leasing Buildings K-1600, K-1220, K-1037, and K-101 at ETTP for an approximate 3-year period, with additional options for the purpose of conducting an R&D project under a Cooperative Research and Development Agreement (CRADA) between USEC and the UT-Battelle. The Gas Centrifuge R&D Project would not develop an economically attractive gas centrifuge machine and process using DOE's centrifuge technology. No activities related to the Gas Centrifuge R&D Project would occur at the ETTP Site. Under the No Action Alternative, the proposed leased space in Buildings K-1037 and K-1220 would remain in the DOE Reindustrialization Program for future lease. Buildings K-101 and K-1600 would become part of the DOE D&D Program for ultimate disposition.

If no action is taken and the proposed lease space remains in the DOE Environmental Management Program, underutilized land and facilities at ETTP would not be leased by DOE for commercial or business uses. Ongoing and planned environmental restoration; waste management; occupational training and development; and technology demonstration, development and transfer activities would continue at ETTP until projects are completed or transferred to another site and until milestones in the Federal Facility Agreement (FFA) are met (i.e., the site meets regulatory standards).

**ENVIRONMENTAL CONSEQUENCES**: The impact analysis in the USEC EA addressed the potential effects to workers, the public, biota, water quality and air quality resulting from radiological exposures; the potential for radiological releases to surface water and groundwater and air; and socioeconomic effects. No potential effects to several resources or areas would be anticipated as a result of implementing either alternative in the assessment. Climate, topography, geology, soils, seismicity, wetlands, and cultural resources would not be affected because the alternatives do not involve excavation or construction activities or disturb previously undisturbed areas. Noise levels and transportation would not be affected because use of heavy equipment and

truck traffic are already a part of operations at the ETTP and on surrounding roadways. Similarly, area demographics and socioeconomics would not be affected as the action would occur at an existing facility. No disproportionate effects to environmental justice populations would be anticipated because no disadvantaged population aggregates have been identified in the area around the ETTP.

## ENVIRONMENTAL CONSEQUENCES RESULTING FROM THE NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not lease facilities or equipment to USEC for use in the Gas Centrifuge R&D Project. No activities related to the Gas Centrifuge R&D Project would occur at the ETTP Site and the CTC Facility. Therefore, there would be no additional environmental consequences to any environmental resource.

## ENVIRONMENTAL CONSEQUENCES RESULTING FROM THE PROPOSED ACTION

### Air Quality

Existing air quality at the ORR/ETTP is in attainment with NAAQS for all the criteria pollutants. Additional criteria pollutants generated as a result of project activities are expected to be small and would not cause NAAQS violations as almost all the construction activities are within Building K-1600. The common chemicals that may be released to the environment from different process areas and emission sources are acetone, alcohols, carbon dioxide, ethanol, Freon 134, resin products, solvent vapors, and n-methyl pyrrolidone (NMP). It is projected that none of these sources would result in a quantity of emission that would have any important impact. However, appropriate air permits or exemptions will be obtained prior to operations. It is anticipated that the activities in modification, manufacturing and operation phases would not produce any significant additional radiological emissions.

### Noise

There would be elevated noise levels within Building K-1600 created by the centrifuge machine when being operated at normal operating speed. Appropriate hearing protection measures would be incorporated to protect personnel within the elevated noise areas.

Building K-1600 is the only building with operations that have the potential to create major noise levels. However, the noise levels 200 feet (60 m) from thoroughfares such as State Route 95 have been estimated from traffic counts during rush hour to be between 55 and 60 dBA (DOE 1997b). Therefore, noise levels at relatively isolated areas within the ETTP are expected to be lower than 55 dBA. The operation of the centrifuge system is not expected to increase the noise levels within the ETTP. Noise associated during modification and manufacturing phase would also be temporary.

At the CTC Facility, minimal elevated noise levels would occur within the CTC Facility created by the operation of pneumatic tools and equipment. Appropriate hearing protection measures would be incorporated to protect personnel within any elevated noise areas.

### Process, Materials, and Waste Management

Waste generated would consist of sanitary/industrial waste from ETTP and the CTC Facility and some Low Level Waste (LLW) from the activities that affect currently contaminated areas at Building K-1600. The majority of LLW would be in the form of contaminated scrap metal. Radiological control personal protective equipment (PPE) would also be generated as LLW. A limited quantity of RCRA waste in the form of solvent cleaning residues or hydrochloric acid digestion may be generated during the project. Some excess reacted hard resin-hardener mixtures would result in a small quantity of sanitary waste. No asbestos containing

material (ACM) is projected to be generated by this project. Additionally, no TSCA PCB waste is projected for the project. The Building K-1600 Safety Analysis Report (SAR) evaluated the bounding $UF_6$ event resulting from a postulated rupture of a feed cylinder pigtail (connection line), which would release 427 g (0.96 lbs) of $UF_6$ in the first two minutes of the event. This minimal quantity released within the facility should pose no elevated risk to the plant population or the public.

**Geology and Soils**

Based on the seismic history of the area, a moderate seismic risk exists at the ETTP Site. This should not hinder project activities. All new building expansions would be designed to withstand the maximum expected earthquake-generated ground acceleration in accordance with DOE O 420.1, *Facility Safety*, and accompanying guidelines.

Soil disturbance from project activities would occur at construction laydown areas, destroying soil profile, and leading to a possible temporary increase in erosion as a result of stormwater runoff and wind action. Soil loss would depend on the frequency of storms; wind velocities; size and location of the facility (with respect to drainage and wind patterns); slopes, shape, and area of ground disturbance; and the duration of time the soil is bare. Soils would not be impacted by the construction of the Centrifuge R&D Project and would not adversely affect the safe operation of project activities.

The potential for soil contamination from project activities would be minimized by current waste management procedures. These procedures are based on current Federal, state, and local regulations that regulate the hazardous material releases that could impact soil resources. The potential for soil contamination from construction of the Gas Centrifuge R&D Project would be minimal.

**Biological Resources**

The facilities for the Proposed Action are located on grounds designated as industrial and have been previously disturbed. Therefore, no impacts to special status species, vegetation, aquatic resources, or wildlife are anticipated.

**Cultural Resources**

No cultural or archaeological impacts are expected to be associated with the Proposed Action. The planned activities associated with the proposed buildings would primarily involve minor indoor renovation and reuse of these facilities. The Proposed Project would not involve any ground disturbing activities in areas that have not been previously disturbed and/or surveyed and found to contain no cultural or archaeological resources.

**Water Resources**

Potential short-term impacts to surface water resources could result from sediment loading to surface water bodies or migration of contaminants. Best management practices, including standard erosion controls such as siltation fences and buffer zones of natural riparian vegetation during construction activities would minimize the potential impacts to surface water resources. The potential for impacts to surface water resources from the migration of contaminants in groundwater would be exceedingly low because of engineered and active controls. During construction, stormwater control and erosion control measures would be implemented to minimize soil erosion and transport to the Clinch River or Poplar Creek.

Minimal impacts to groundwater quality are expected because all discharges would be monitored to comply with the NPDES permit limits. No plans exist for routine withdrawal from groundwater resources to support either construction or operation of the Gas Centrifuge R&D Project. Because of the absence of waterbodies

or surface water in the area of the CTC Facility, no impacts to water resources would occur.

**Land Use and Visual Resources**

Under this alternative, modification would occur to the Building K-1600 and to the CTC Facility. At Building K-1600 activities would be limited to internal modifications to the building and include installation of new equipment, upgrading servicing, refurbishing, and cleaning existing equipment. Construction activities outside of the building would be limited to concrete pads for holding a small cooling tower, a refrigeration unit, a small enclosure for an oil heating unit and an emergency generator which would be left for additional uses by the facility. Visual disruption will also be limited by the use of only small and limited excavation equipment used outside of the building. Most of the construction equipment would consist of hand tools and would be used inside the building. There would be no modifications to the outside of the building. Overall, these modifications would be minor and would not impact the visual quality of the site.

The CTC Facility would be used for the project's manufacturing, assembling, and testing of centrifuge components. The CTC facility was constructed in 1983 and was intended to be used to support a DOE-funded project that was part of the Gas Centrifuge Program. Buildings K-1600, K-1220, K-1047, and K-101 were also used previously in the DOE Gas Centrifuge Program. The planned uses at all four buildings are consistent with the industrial land use classification designated for future use of the ETTP as well as the current use of the surrounding facilities at the site. Use of these buildings are bound by the DOE leasing agreement. Upon the completion of the USEC project, these four buildings would be returned by the USEC to the condition and status as described by the lease agreement between DOE and USEC. Although some facility modifications would need to be made to upgrade some of these buildings to present day operating capabilities (piping, fixtures, valves) the basic land use of these facilities remains essentially unchanged.

Visual modifications to Buildings K-1220, K-1037, and K-101 would be minor and internal, if any, and would not impact the visual quality of the ETTP Site. ETTP would continue to be consistent with the VRM Class VI classification and the surrounding VRM Class II and III areas would not be impacted.

The modifications at the CTC Facility would primarily be within the building with the exception of the new security fence and the concrete pads to be used for an exhaust/ventilation system, oil system, air compressor system, and a HVAC unit. Overall, these modifications would be minor and not impact the visual quality of the site.

**Socioeconomics**

Under the Proposed Action, there would be a gradual increase of employment on the project of up to a maximum of 100 people. Most new employees would be from the local areas while a small number would be on temporary assignment from the Portsmouth Site.

**Infrastructure**

Changes to infrastructure were assessed by comparing current utility usage at each of the four buildings at ETTP (K-1600, K-1220, K-1037, K-101) and the CTC Facility with projected utility usage under the Gas Centrifuge R&D Project. Only minor increases in utility usage [electrical, water, air, steam, natural gas] and sewage are expected. These minor increases are well within the ETTP site capacities.

**Environmental Design**

The fundamentals for Environmental Design require that all aspects of the Project be reviewed for minimizing impact to the environment from the Project. From the existing information, the amount and types of materials

that are going to be used for this Project and the wastes generated at the ETTP site are essentially inconsequential in comparison to the site as a whole. In addition, the calculated amount of air and liquid waste effluent is extremely small and would have minimal impact in relationship to effects from the entire ETTP site on the environment. The CTC Facility would also have a small amount of air and liquid waste effluent. The solid wastes are consistent with a small manufacturing facility.

**Human Health**

The Proposed Action consists of three phases: a modification phase, manufacturing phase, and test operations phase. Under the Proposed Action, chemicals may be released to the environment from different process areas and emission sources. These chemicals include acetone, alcohols, carbon dioxide, ethanol, Freon 134, resin products, solvent vapors, and NMP. Respiratory protection and administrative controls would be employed to ensure that worker exposures are controlled within applicable OSHA and DOE requirements. It is projected that none of these sources would result in a quantity of emission that would reach regulatory emission limits. Therefore, it is expected that emissions from these materials will pose no adverse health impacts to workers or the public during the modification and manufacturing phases.

Under the test operations phase, there is a potential for workers to be exposed to radiological and chemical hazards. $UF_6$ is the primary hazardous substance used for the Proposed Action and can be a hazard both from a radiological and a chemical perspective. Appropriate procedures, training, and controls would be in place to minimize any exposure and to maintain exposures below action levels, to determine and record actual exposures, and to mitigate recurrence of exposures. Only depleted $UF_6$ will be used and there would be no enrichment performed in the Building K-1600 that would exceed natural $^{235}U$ assays. This minimal level precludes the possibility of a criticality.

For the Building K-1600, the safety analysis established a bounding $UF_6$ release to occur as a result of the postulated rupture of a feed cylinder pigtail. It was calculated that a total of 427 g (0.96 lbs) of $UF_6$ would be released in the first 2 minutes of this type of accident. The resulting concentrations of HF and soluble uranium were 3.2 ppm and 8.6 $mg/m^3$, respectively. The total body dose resulting from this scenario was determined to be approximately $1.2 \times 10^{-4}$ rem, which is well below the allowable 5 rem annual whole body dose.

In the worst case accident, the dose to the Maximally Exposed Individual (MEI) was calculated. Assuming the entire facility maximum uranium inventory of 1,800 pounds is released into the environment under D stability class meteorology and actual ETTP wind conditions then the dose to the MEI is $6.2 \times 10^{-7}$ rem/hr, which is well below the allowable 5 rem annual whole body dose.

Fires and explosions were evaluated in the Auditable Safety Analysis (ASA) and the consequences were less than the bounding event. Natural phenomena including tornado, straight wind, flood, and seismic events were also evaluated as part of the final safety analysis. These phenomena were not considered to pose a meaningful risk.

**Environmental Justice**

As presented in the USEC EA, there would be no impacts to human health or the environment from the Proposed Action and there are no special circumstances that would result in disproportionately high and adverse impacts on minority or low-income populations. Therefore, there would be no environmental justice impacts.

**Transportation**

Different chemicals and materials used for the manufacture of centrifuge components would be transported to and from the Building K-1600 and the CTC Facility. The shipping of chemicals and materials would meet the U.S. Department of Transportation (DOT) Hazardous Materials Regulations (Title 49, CFR, Parts 171-180) governing packaging and shipping of hazardous materials.

Also under the Proposed Action, centrifuge components will be shipped to the site of the Lead Cascade Project. The likely location of the Lead Cascade is either the Portsmouth Gaseous Diffusion Plant (PORTS) in Ohio or the Paducah Gaseous Diffusion Plant (PGDP) in Kentucky. These shipments will conform to appropriate DOT and DOE rules and regulations. Since both PORTS and PGDP are facilities leased to USEC and regulated by the NRC, the shipments will conform to NRC rules and regulations upon arrival at either PORTS or PGDP. Transport will also be a standard size tractor-trailer for large components at a frequency of one shipment a week and by smaller vehicles for smaller components, perhaps several times a week. Risks associated with transporting centrifuge components will be minimal because no radiological materials are involved.

It is expected that initially, one 500-pound cylinder of $UF_6$ (less than 0.1 percent $^{235}U$ assay), one 50-pound cylinder of $UF_6$ (less than 0.1 percent $^{235}U$ assay), one empty 500-pound size container, and one empty 50-pound container would be transported in one shipment from PORTS or PGDP. Approximately 6 to 12 months following the initial shipment, another shipment similar to the initial shipment would be received. Immediately after receipt of the second shipment, the first of the original 500-pound cylinder (approximately 60 to 75 percent full), the previously empty 500-pound cylinder (now approximately 25 to 40 percent full), and the two original 50-pound cylinders (each being approximately 50 percent full) would be shipped to PORTS or PGDP. At the end of the project, the second shipment would also be transported back to PORTS or PGDP. The assay would not change due to the expected activities. Therefore, there would be approximately four shipments from Paducah, KY or Portsmouth, OH to Oak Ridge, TN.

The radiological risk associated with routine transportation would result from the potential exposure of people to low levels of external radiation near a radioactive shipment (along route or at stops). The vehicular risk associated with routine transportation would result from the potential exposure to increased levels of airborne particulates from vehicular exhaust emissions and from fugitive dusts raised from the roadbed by the transport vehicles. Radiological risks from transportation-related accidents could result from the potential release and dispersal of radioactive material into the environment during the accident and the subsequent exposure of people through multiple pathways. Finally, the vehicular risks are associated with the road accidents and are not related to the shipment's cargo. The total collective radiological risks (i.e., the total risk to all workers and members of the general public potentially exposed for shipments) associated with the $UF_6$ cylinder transportation from PORTS or PGDP for routine shipments and accidents are extremely low. For PORTS and PGDP, the total radiological and vehicular latent cancer fatality risk from routine shipments are $8.42 \times 10^{-5}$ and $1.40 \times 10^{-5}$, respectively. For accident shipments, the total radiological latent cancer fatality risk for PORTS and PGDP are $2.81 \times 10^{-8}$ and $4.21 \times 10^{-8}$, respectively. For accident shipments, the total vehicular fatality risk for PORTS and PGDP are $7.01 \times 10^{-5}$ and $1.40 \times 10^{-4}$, respectively.

**CUMULATIVE IMPACTS:** Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Effects are considered on a cumulative basis because significant effects are often the result of individually minor direct and indirect effects of multiple actions that occur over time. Cumulative effects should be considered over the "lifetime" of the effects rather than the duration of the action.

The DOE-ORO has developed a plan to accelerate completion of the Oak Ridge Environmental Management (EM) Program by 6 years. The ETTP facilities will undergo a streamlined demolition program, a modified reindustrialization approach focusing on the transfer of facilities per the demolition schedule, removal of uranium hexafluoride ($UF_6$) cylinders, disposition of legacy waste, soil remediation to mitigate risk, and remediation of groundwater.

The closure plan includes the demolition of Buildings K-1600, K-101, and K-1220. Building K-1037 is scheduled to be made available to the Community Reuse Organization of East Tennessee (CROET). If the title to this building is transferred prior to the scheduled demolition date, then the building will remain; however, if the title is not transferred prior to the demolition date, the building will be demolished. Title transfer will transfer responsibility of the facility, including future building demolition and utilities and waste management, to the lease and/or title holder. Under the No Action Alternative, leasing of facilities and equipment in support of the Gas Centrifuge R&D Project would not occur at ETTP. No activities would occur at the ETTP. Therefore, no cumulative impacts would result.

All of the Proposed Action activities would occur within the CTC Facility and within the four buildings at the ETTP site. The activities at the CTC Facility would not cause an appreciable increase nor damage to any of the environmental resources. The future potentially adverse cumulative impacts contributed by the actions at the four buildings at the ETTP site are also minimal.

Neither the Proposed Action Alternative nor the No Action Alternative will have any important environmental impacts.

**DETERMINATION**: Based on the findings of the USEC EA, DOE has determined that the proposed implementation of the transfer of facilities and equipment to the USEC which would be used in its Gas Centrifuge R&D Project at the ETTP in Oak Ridge, TN does not constitute a major Federal action that would significantly affect the quality of the human environment within the context of the NEPA. Therefore, preparation of an environmental impact statement is not required.

Issued at Oak Ridge, Tennessee, this 18TH day of October 2002.

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