# American Centrifuge Research, Development, and Demonstration Program

Update - February 2014







The 120-machine Commercial Demonstration Cascade has achieved more than 20-machine years of operations.

# Current Status: Program continues within budget and on schedule

- In 2013, USEC completed removal of legacy cascade support equipment, installed new infrastructure
  equipment and the 120-machine demonstration cascade to commercial plant specifications, completed
  the integrated systems testing program for the cascade, conditioned the machines and piping with uranium
  hexafluoride gas, and successfully completed a series of tests, including a "station blackout" test.
- USEC began operating the commercial demonstration cascade in October 2013, and in December, the cascade achieved 20-machine years of operations at commercial plant specifications. During that performance run, USEC successfully completed three important milestones demonstrating centrifuge manufacturing quality, centrifuge operational reliability and sustained production of greater than 340 SWU at commercial conditions for 20-machine years.
- Following completion of the initial scope, the program was amended in January 2014 to add a 10th milestone and extend the period of performance to April 15, 2014.
- DOE has certified completion of seven of the ten program technical milestones and all five Performance Indicators. DOE is reviewing documentation of three milestones for certification of completion.
- Centrifuge operations, testing and manufacturing are also continuing at USEC's facilities in Oak Ridge, TN.
- The program has utilized 169 companies from 28 states to support RD&D construction, manufacturing and operations activities.
- During construction of the demonstration cascade systems in early 2013, the program added more than 300 workers in Ohio, Tennessee and other states, raising the total project workforce to more than 1,100 workers at that time.
- The cooperative agreement provides for 80% DOE and 20% USEC cost sharing for work performed during the period June 1, 2012 through April 15, 2014. DOE's contribution continues to be incrementally funded. The most recent amendment provides additional government obligated funds of approximately \$16.7 million, bringing total government obligated funding to approximately \$279.55 million. The balance of the government's original \$280 million cost-share is anticipated to be provided in the near future.
- The government fiscal year 2014 omnibus appropriations bill appropriated \$62 million for the RD&D program. That amount includes \$29.3 million that had been previously provided under the cooperative agreement pursuant to the continuing resolutions that funded government operations in GFY2014 prior to the enactment of the omnibus and the additional \$22.6 million provided under the agreement by DOE since its passage. The omnibus also provides DOE with authority to transfer up to an additional \$56.65 million of funding within DOE's National Nuclear Security Administration appropriations to fund the program subject to further approval of the House and Senate Appropriations Committees. To obtain such approvals, the Secretary of Energy must notify Congress and submit to the committees a cost-benefit analysis of available and prospective domestic enrichment technologies for national security needs and the scope, schedule and cost of the Secretary's preferred option.
- The pre-arranged Chapter 11 restructuring of USEC Inc.'s balance sheet is intended to position USEC as a stronger sponsor of the American Centrifuge. It will have no impact on daily operations of the centrifuge RD&D program and no U.S. taxpayer funds will be put at risk.

# **Program Scope:**

- Build a 120-machine commercial scale cascade of AC100 centrifuges and operate it under a range of parameters expected to be used during enrichment operations
- Accomplish key technical milestones to retire project technical risk
- Sustain domestic U.S. centrifuge industrial base for national security purposes and potential commercialization of technology
- Establish American Centrifuge Demonstration, LLC with industry leaders to oversee program

Centrifuge Runtime	Machine Years
AC100 Machines	130.5
All Machines (Since 2007)	202.7

Current Direct Jobs: 663	
Ohio	286
Tennessee	304
Other	73

# PROGRAM TECHNICAL MILESTONES

# **Completion Certified by DOE**

- 1. Develop test plan for program with specifics for remaining milestones
- 2. Confirm reliability of lower suspension drive assembly
- 3. DOE & USEC jointly agree to revise and further define the test plan
- 4. Successfully complete "Extended Feed Rate Range Survey, Machine" test
- 5. Successfully complete "Machine Performance Parameter Test" test
- 6. Successfully complete "Power Outage Testing, Machine Response" test

10. USEC and DOE agreement upon parameters and success criteria to test a range of cascade operational parameters and configurations expected to be utilized during enrichment operations.

# **Completed & Awaiting DOE Certification**

- 7. Demonstrate centrifuge manufacturing quality
- 8. Demonstrate centrifuge machine reliability at design conditions
- 9. Demonstrate commercial configuration cascade reliability and performance

#### Overview:

In June 2012, the Department of Energy (DOE) and USEC signed a cooperative agreement for a research, development, and demonstration (RD&D) program to confirm the technical readiness of the American Centrifuge, the next generation U.S. uranium enrichment technology.

Investment for the program is provided by DOE (80%) and USEC (20%). USEC and its subsidiary, American Centrifuge Demonstration, LLC, are carrying out the RD&D program.

### **Program Goals:**

- Demonstrate capability to meet future national security needs
- Successfully operate cascade systems and machines that will be incorporated in the commercial plant
- Confirm technical readiness for commercial deployment

# **Program Governance:**

American Centrifuge Demonstration, LLC has implemented the governance requirements of the cooperative agreement. The ACD Board of Managers includes:

- Chairman Luis Reyes, executive director for operations (retired), U.S. Nuclear Regulatory Commission,
- Kenneth R. Camplin, vice president, operations, Babcock & Wilcox Technical Services Group, Inc.,
- M. Roger Eshelman, executive vice president and chief operating officer (retired), Savannah River Nuclear Solutions, LLC,
- Bruce Rash, vice president, engineering, Exelon Generation Company, LLC,
- Philip G. Sewell, senior vice president & chief development officer, USEC Inc.,
- Robert Van Namen, senior vice president
   & chief operating officer, USEC Inc. and
- Hitoshi Yabuta, vice president, project management, Toshiba America Nuclear Energy Corporation.

# **About American Centrifuge:**

Since 2002, USEC has been developing and demonstrating a highly efficient uranium enrichment gas centrifuge technology called the American Centrifuge. USEC is working to deploy this technology in its American Centrifuge Plant, an advanced uranium enrichment facility in Piketon, Ohio, which will produce low enriched uranium, a key component for the fabrication of commercial nuclear fuel.

The American Centrifuge Plant's capacity will be equal to about 25% of current fuel requirements for U.S. power reactors. In addition to providing economic advantages through energy production and job creation, the American Centrifuge Plant will also provide significant environmental, energy security, nonproliferation and national security benefits.

The American Centrifuge Plant will utilize USEC's AC100 centrifuge machine, which has been developed, engineered and manufactured in the United States. The AC100 design is a disciplined evolution of classified U.S. centrifuge technology.

If the American Centrifuge Plant is not built, the United States will be without an indigenous enrichment technology for the first time and will be dependent on foreign fuel sources for its nuclear power plants, which provide 20% of the country's electricity.



Cautionary Note: This document contains forward-looking statements (within the meaning of Section 21E of the Securities Exchange Act of 1934) that involve risks and uncertainty. Important factors which could cause our actual future results to differ materially from those expressed in our forward-looking statements are discussed in our filings with the SEC, including our Form 10-K, which is available at www.usec.com. We do not undertake to update our forward-looking statements except as required by law.