News Savannah River Nuclear Solutions

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# Savannah River Site's H-Canyon Used as Test Bed for New Technologies

AIKEN, S.C. Sept. 8, 2015 – In recent years, there has been a rise in the number of missions for the H-Canyon facility at the Savannah River Site (SRS), as its capabilities are being recognized as an increasingly important asset for the Department of Energy. H-Canyon is primarily used as the only operating large production-scale, radiologically shielded chemical separations facility in the U.S., but it is also being used as a test bed for new technologies in the spent nuclear material field.

Initially started for safeguards and nonproliferation purposes, the purpose of the test bed has expanded to include special nuclear material accountability, environmental monitoring and compliance and improved process control.

In March of 2013, Argonne National Laboratory (ANL), located outside of Chicago, became the first outside party to use H-Canyon to test analytical equipment. ANL developed an ultraviolet-visible spectroscopy system, which uses the adsorption or transmission of light for measuring plutonium concentration in reprocessing facilities. The device was developed for use in safeguards, such as detecting diversion or misuse of material in a nuclear facility. The week-long demonstration of the spectroscopy system in H-Canyon allowed ANL to evaluate its operation in an actual nuclear environment, monitoring H-Canyon plutonium solutions. The testing benefitted both ANL and H-Canyon: for ANL it provided proof-of concept

*The H-Canyon test bed team included: (from left) Senior Scientist Lindsay Sexton; Lead Mechanical Engineer Jackie Cooper; H-Canyon Mechanical Engineer Corey Campbell; Senior Engineer Jason Wilson; H-Canyon Deputy Operations Manager Neil McIntosh; and Operations Support Lead Daniel Beauchamp.*

as the spectroscopy system plutonium concentration readings were confirmed by analytical lab results and for H-Canyon it was used as a real-time on line instrument for process monitoring.

"Allowing outside parties to use H-Canyon as a test bed is a win-win for both parties. ANL and other outside parties get to test their technologies that cannot be tested anywhere else, and the H-Canyon gets a first-hand look at what could become available for use at SRS facilities," said Mike Swain, Director, Environmental Management Programs. "Although H-Canyon was built over 60 years ago, this national asset has continued to show its flexibility and importance to the safety of our nation."

Swain also pointed out that H-Canyon is the only production-scale operating facility in the nation that is allowing for demonstrations on the back end of the fuel cycle. This helps advance emerging technologies by allowing for a demonstration in the intended environment.

Another demonstration with ANL is being conducted this summer. Los Alamos National Laboratory is currently testing an instrument in F/H Labs with solutions from H-Canyon, and H-Canyon personnel are in discussions with Pacific Northwest National Laboratory for a production-scale demonstration of a detection system.

H-Canyon was originally constructed to produce nuclear materials in support of our nation's defense weapons systems. Today, it continues to play an important role in the efforts to eliminate or minimize nuclear materials through safe stabilization and/or disposition of DOE's nuclear materials.

*Savannah River Nuclear Solutions is a Fluor-led company whose members are Fluor Federal Services, Newport News Nuclear and Honeywell, responsible for the management and operations of the Department of Energy's Savannah River Site, including the Savannah River National Laboratory, located near Aiken, South Carolina.*

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