



OFFICE OF INSPECTOR GENERAL

U.S. Department of Energy

# AUDIT REPORT

OAI-L-16-14

September 2016

**H-CANYON PROCESSING AT THE  
SAVANNAH RIVER SITE**



**Department of Energy**  
Washington, DC 20585

September 26, 2016

MEMORANDUM FOR THE ACTING DEPUTY ASSISTANT SECRETARY FOR WASTE  
AND MATERIALS MANAGEMENT

FROM:

  
April Stephenson  
Assistant Inspector General  
for Audits and Inspections  
Office of Inspector General

SUBJECT:

INFORMATION: Audit Report on "H-Canyon Processing at the  
Savannah River Site"

BACKGROUND

The Department of Energy's Office of Environmental Management (Environmental Management) has management responsibility for the safe operations of the H-Canyon plant at the Savannah River Site in Aiken, South Carolina. H-Canyon, built in the 1950s to support the nuclear weapons program, is currently used to process nuclear materials, including aluminum-clad domestic and foreign research reactor spent nuclear fuel. The recovered enriched uranium is then down blended into low enriched uranium for eventual use in commercial power reactors. The HB-Line facility, built atop the canyon in the 1980s to produce plutonium as a power source for deep space exploration, is now used to convert excess plutonium into an oxide for the Mixed Oxide Fuel Fabrication Facility or for final disposition. H-Canyon is the nation's only hardened nuclear chemical separations plant still in operation, and HB-Line is the only processing facility of its kind within the Department. To ensure that H-Canyon remains available for fissile materials disposition, in the *National Defense Authorization Act for Fiscal Year 2001*, and reiterated in the *National Defense Authorization Act for Fiscal Year 2004*, Congress required that the Department continue H-Canyon operations, maintain a high state of readiness, and provide the associated necessary technical staff.

Because H-Canyon's mission is essential to the Department and the nation, we initiated this audit to determine whether the Department has a long-term strategy for H-Canyon operations.

RESULTS OF AUDIT

We found that the Department had not developed a long-term strategy to use H-Canyon to support multiple programmatic missions. While Environmental Management manages the operation of the H-Canyon complex, the facilities are considered resources for other program offices such as the National Nuclear Security Administration (NNSA), the Office of Science, and the Office of Nuclear Energy (Nuclear Energy). However, we were informed by Environmental

Management officials at the Headquarters and site level that there was no overall Department strategy for H-Canyon operations. A Headquarters Environmental Management official stated that this was because the program offices that drive their respective missions continually evaluate where H-Canyon can support their missions. However, we noted that the Department had not fully integrated potential candidate materials from all programs into planning future H-Canyon operations. For example, the Department had not updated prior studies performed to identify potential candidate materials at other sites or program offices, as documented in a 2001 Department-wide study and a 2005 NNSA limited review. These studies identified materials across Department programs where H-Canyon processing was a primary or alternative disposition pathway. While some of these previously identified materials have been dispositioned, the status of others is still to be determined. Environmental Management and contractor officials told us that they would consider any additional materials that were requested by other program offices for processing.

The Savannah River Site has developed a Nuclear Materials Management Plan that integrates and documents the site-level activities required to disposition the enriched uranium and plutonium nuclear materials already stored or proposed for storage at the Savannah River Site. The plan is updated annually and establishes a planning basis for processing operations at the Savannah River Site. The 2015 Nuclear Materials Management Plan specifically notes that certain materials do not have a defined disposition path and that decisions are needed to plan for the future.

Also, the current list of materials approved for processing does not include all known material owned by Environmental Management that could be sent through H-Canyon. To illustrate, the spent nuclear fuel approved for processing is only a portion of the aluminum-clad spent nuclear fuel in storage at the Savannah River Site. The amount selected for processing reflects the minimum amount of material that needs to be removed from the existing storage facility in order to avoid the cost of new storage space. A 2013 cost analysis, requested by the Office of Management and Budget to investigate competing alternatives for the long-term disposition of spent nuclear fuel at the Savannah River Site, determined that processing the material at H-Canyon was the most cost effective alternative.

Furthermore, while the Department is working on infrastructure and maintenance to support the near-term missions of H-Canyon, the Department did not know how long it could continue to operate the 60-year-old H-Canyon complex. According to an Environmental Management analysis, H-Canyon has been minimally funded with only marginal investment in maintenance due to budget challenges. Some funding support for infrastructure has been provided by NNSA in addition to Environmental Management funding. Also, although Environmental Management's analysis showed that deteriorating infrastructure needed to be upgraded to ensure the facilities remained available for operations, Environmental Management estimated that funding targets for FYs 2017-2021 would not fully support the needed infrastructure maintenance and upgrades.

## **Mitigating Actions**

During the course of the audit, we learned that the Department had initiated actions to evaluate future H-Canyon operations at both the Headquarters and site levels. For example, in January 2015, the Secretary of Energy's Nuclear Policy Council (Council) was formed to serve as a forum for cross-cutting issues and advise the Secretary on nuclear topics that transcend individual program offices. As a follow-on action from discussions in the Council, a working group was formed with representatives from Environmental Management, NNSA, and Nuclear Energy to collaborate on analysis related to potential future missions for H-Canyon. We verified that a working group was established and learned that it is in the process of documenting the scenarios to be analyzed. Furthermore, in October 2015, the Savannah River Site's Mission Development Council, consisting of site level Department, NNSA, and prime contractor management, initiated a study to evaluate the remaining useful life of the H-Canyon complex. A draft analysis prepared for that group discusses efforts to manage aging equipment and infrastructure, planned improvements and investments, and the additional evaluations needed based on the potential operation of H-Canyon beyond 2034.

## **PATH FORWARD**

Due to the actions initiated by the Department, we are not making any recommendations. However, we will continue to monitor H-Canyon operations and may revisit this area at a future date.

Attachment

cc: Deputy Secretary  
Assistant Secretary for Environmental Management  
Chief of Staff

## OBJECTIVE, SCOPE, AND METHODOLOGY

### OBJECTIVE

We conducted this audit to determine whether the Department of Energy has a long-term strategy for H-Canyon operations.

### SCOPE

This audit was performed between July 2015 and September 2016, at the Savannah River Site in Aiken, South Carolina, with input from Department Headquarters management in Washington, DC. The scope of the audit included a review of current and planned H-Canyon operations. The audit was conducted under Office of Inspector General project number A15SR048.

### METHODOLOGY

To accomplish the audit objective we:

- Identified applicable laws and regulations and Department directives;
- Reviewed contract requirements related to operating H-Canyon;
- Analyzed the processing capacity of the H-Canyon complex;
- Reviewed historical use, as well as current and projected plans for processing materials;
- Obtained and reviewed draft work plans for recently initiated Department studies related to H-Canyon operations;
- Reviewed relevant Government Accountability Office and Office of Inspector General prior reports; and
- Interviewed key Department and contractor personnel.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, the audit included tests of controls and compliance with laws and regulations necessary to satisfy the audit objective. In particular, we assessed compliance with the *GPRA Modernization Act of 2010* and found that the Department had established performance measures related to H-Canyon processing at the Savannah River Site. We relied on computer-processed data to achieve our audit objective. We assessed controls over the data and determined that it was sufficiently reliable for the purpose of the audit. Because our

review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We held an exit conference with Department management on September 15, 2016.

## **FEEDBACK**

The Office of Inspector General has a continuing interest in improving the usefulness of its products. We aim to make our reports as responsive as possible and ask you to consider sharing your thoughts with us.

Please send your comments, suggestions, and feedback to [OIG.Reports@hq.doe.gov](mailto:OIG.Reports@hq.doe.gov) and include your name, contact information, and the report number. You may also mail comments to:

Office of Inspector General (IG-12)  
Department of Energy  
Washington, DC 20585

If you want to discuss this report or your comments with a member of the Office of Inspector General staff, please contact our office at (202) 253-2162.