



U.S. Department of Energy  
Office of Inspector General  
Office of Audits and Inspections

# Audit Report

The 12 GeV CEBAF Upgrade  
Project at Thomas Jefferson  
National Accelerator Facility





**Department of Energy**  
Washington, DC 20585

September 30, 2011

MEMORANDUM FOR THE DEPUTY DIRECTOR FOR SCIENCE PROGRAMS, OFFICE  
OF SCIENCE  
DIRECTOR, OFFICE OF RISK MANAGEMENT AND FINANCIAL  
POLICY, OFFICE OF THE CHIEF FINANCIAL OFFICER

A handwritten signature in black ink, appearing to read "David Sedillo".

FROM: David Sedillo, Director  
NNSA & Science Audits Division  
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "The 12 GeV CEBAF Upgrade  
Project at Thomas Jefferson National Accelerator Facility"  
Audit Report Number: OAS-RA-L-11-13

BACKGROUND

In September 2008, the Department of Energy's (Department) Office of Science approved a construction project to double the electron beam energy of the Continuous Electron Beam Accelerator Facility (CEBAF) at the Thomas Jefferson National Accelerator Facility (Jefferson Laboratory) from 6 to 12 billion electron volts (GeV). The 12 GeV Upgrade Project (Upgrade Project) includes the construction of a new experiment hall, as well as upgrades to the beamline and the three existing experiment halls. Upgrades will also be made to the CEBAF accelerator. Construction is scheduled to be completed in June 2015. Under a prime contract with the Department, Jefferson Science Associates (JSA) is responsible for managing the project as well as the management and operation of the Jefferson Laboratory. The Office of Science's Thomas Jefferson Site Office (Site Office) represents the Department in conducting business at Jefferson Laboratory with support from the Department's Oak Ridge Office.

The total project cost (TPC) for the Upgrade Project is \$310 million which includes \$65 million in American Recovery and Reinvestment Act of 2009 (Recovery Act) funding. According to the Recovery Act Project Operating Plan, the Recovery Act funding was intended to reduce cost and scheduling risks, immediately create jobs, and reduce out-year funding requirements. The Commonwealth of Virginia (Virginia) also provided \$9.0 million to JSA as part of its higher education program to leverage the Department's investment in the Upgrade Project.

Due to the significant level of Recovery Act funding, we initiated this audit to determine whether the Office of Science was adequately managing the Upgrade Project and effectively deploying the associated Recovery Act funding.

CONCLUSIONS AND OBSERVATIONS

We found that the Upgrade Project generally complied with the Recovery Act requirements we tested and was, for the most part, on schedule. However, we identified several opportunities to strengthen project monitoring and control. Specifically, we found that:

- JSA used funds from Virginia to pay for Upgrade Project tasks even though the funds had not been formally obligated to its contract. We noted that the Department's *Accounting Handbook* did not include specific procedures for handling funds, such as those provided by Virginia, which may have contributed to the breakdown in the process. In addition, we noted that the Site Office did not consult with the Oak Ridge Office before allowing JSA to use the funding on the project. Such consultation may have resulted in the placement of the funds on the Jefferson Laboratory contract before they were used to pay for project tasks.
- Jefferson Laboratory did not include all of the costs for the Upgrade Project in the TPC. In particular, project tasks funded with the Virginia monies were removed from the calculation of TPC and accounted for separately. We noted that the Office of Science did not enforce Department Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, which states that the project baseline is to capture the TPC. While JSA tracked and monitored the use of funds provided by Virginia in separate accounts, we noted that the Department plans to evaluate the contractor's cost performance and determine the contractor fee based on the project's TPC which, as previously stated, does not include all project costs.
- Jefferson Laboratory was not timely in addressing the Office of Science's Office of Projects Assessment (OPA) concerns regarding risks posed by a solenoid magnet to be used in the GlueX spectrometer, which is the centerpiece of the Upgrade Project. In particular, OPA raised concerns in 2009 and 2010 that the solenoid magnet represented a substantial risk to the project even after refurbishment. This risk led to the decision in late 2010 to purchase a replacement. The replacement, according to OPA, will take about five years to design, build, and install, which will be after construction is completed. In its June 2011 review, OPA noted that Jefferson Laboratory had made progress but expressed concerns regarding the lack of expediency of the Upgrade Project in procuring the replacement solenoid. The OPA reviewers suggested that further commitment was required to ensure completion of the procurement work in a timely manner.

Subsequent to our inquiries on the issue, the Site Office in consultation with the Oak Ridge Office placed the Virginia funding on JSA's contract using a Work for Others (WFO) agreement. According to the Oak Ridge Office and the Site Office, this method was considered appropriate and easier to accomplish than a gift. While using a WFO may have been an easier method to place the Virginia funds on the contract, the Department's WFO directives were not clear on how this particular type of transaction constituted being a WFO because the agreement was for Upgrade Project tasks that were already included in the Department's planned funding profile.

### SUGGESTED ACTIONS

To address the concerns noted in this report, we suggest that the Deputy Director for Science Programs, Office of Science, in coordination with the Thomas Jefferson Site Office, ensure that:

1. Upgrade Project tasks paid with funds received from Virginia and other sources are included in the calculation of TPC; and,
2. JSA fully addresses the OPA's concerns in a timely manner.

Additionally, we suggest that the Director, Office of Risk Management and Financial Policy, Office of the Chief Financial Officer clarify policies and procedures for handling funds received from non-Department sources, such as those received from Virginia.

Management reviewed a draft of this report and expressed their appreciation for constructive suggestions as the Office of Science moves forward with the Upgrade Project.

cc: Deputy Secretary  
Associate Deputy Secretary  
Under Secretary for Science  
Director, Office of Science  
Chief Financial Officer  
Chief of Staff

## **OBJECTIVE, SCOPE AND METHODOLOGY**

### **OBJECTIVE**

The objective of this audit was to determine whether the Office of Science (Science) was adequately managing the 12 billion electron volts Upgrade Project (Upgrade Project) and efficiently deploying the associated American Recovery and Reinvestment Act of 2009 (Recovery Act) funding.

### **SCOPE**

The audit was performed between September 2010 and September 2011, at the Thomas Jefferson National Accelerator Facility (Jefferson Laboratory) in Newport News, Virginia.

### **OBJECTIVE**

To accomplish the audit objective, we:

- Assessed compliance with applicable laws and regulations, as well as Department of Energy (Department) policies and procedures related to project management;
- Interviewed Departmental personnel from Science, the Oak Ridge Office, and the Thomas Jefferson Site Office, as well as the Office of General Counsel and Office of the Chief Financial Officer;
- Held discussions with key contractor personnel, such as management on the Upgrade Project as well as accounting and procurement personnel from Jefferson Laboratory;
- Evaluated project documentation, such as monthly project management reports and project execution plans;
- Judgmentally selected Recovery Act transactions and subcontracts awarded for the Upgrade Project and reviewed them for compliance with Recovery Act requirements; and,
- Reviewed the accuracy of data Jefferson Laboratory reported to [FederalReporting.Gov](http://FederalReporting.Gov).

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 conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our conclusions based on our audit objective. The audit included tests of controls and compliance with laws and regulations necessary to satisfy the audit objective. 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. During the audit, we assessed the Department's compliance with

the *Government Performance and Results Act of 1993* and found that no specific performance measures on the Upgrade Project had been established. There was, however, a performance measure on providing for the efficient and effective construction of facilities, which would capture the Upgrade Project among other projects at Jefferson Laboratory. We utilized computer-processed data to identify the populations of costs paid with Recovery Act funding in order to accomplish our audit objective. Based on our comparisons of computer-processed data to supporting documentation, we determined that the data were sufficiently reliable for the purposes of our report.

Management waived an exit conference.

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