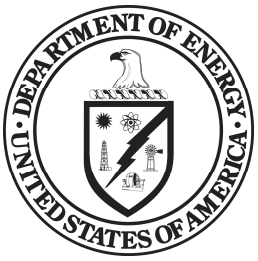

U.S. Department of Energy
Office of Inspector General
Office of Audits and Inspections

Audit Report

The Department's Management of Scientific User Facilities

OAS-L-14-02

February 2014

Department of Energy
Washington, DC 20585

February 5, 2014

MEMORANDUM FOR THE ACTING DIRECTOR, OFFICE OF SCIENCE

FROM: Daniel M. Weeber
Assistant Inspector General
for Audits and Administration
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "The Department's Management of Scientific User Facilities"

BACKGROUND

The Department of Energy's (Department) Office of Science operates 31 Scientific User Facilities (user facilities). The user facilities are spread across the Office of Science's 6 Program Offices and 14 locales, including 11 of the Department's national laboratories. These facilities provide scientific researchers with the most advanced tools of modern science and include accelerators, colliders, supercomputers, light sources and neutron sources, as well as facilities for studying the nanoworld, the environment and the atmosphere. In Fiscal Year (FY) 2012, over 29,000 researchers from academia, industry and Government laboratories, as well as international researchers, utilized these unique research facilities to advance scientific knowledge. The Department's FY 2013 budget request included nearly $1.8 billion for user facilities, an increase of $68.5 million over FY 2012.

The Department's Strategic Plan recognizes that the discoveries produced at these unique facilities support the Department's mission and states that the success of these facilities should be measured when scientific and technical results are disseminated. Furthermore, the Department acknowledges that negative research results can be as valuable as positive results, and users are encouraged to document and archive negative research results. The results of all research, except that funded by proprietary interests, should be published upon completion. Recognizing the importance of user facilities in achieving the Department's mission, we initiated this audit to determine whether the Department was effectively managing its Scientific User Facilities.

RESULTS OF AUDIT

Nothing came to our attention to indicate that the Office of Science had not effectively maximized the utilization of its user facilities and monitored user facility performance. Our review of 2 Department laboratories that contained 8 of the Department's 31 user facilities found that 2 neutron science facilities at the Oak Ridge National Laboratory (ORNL) exceeded 2011 goals for operating hours, while the Oak Ridge Leadership Computing Facility achieved a

utilization rate of over 95 percent of optimal hours. At Brookhaven National Laboratory (Brookhaven) the National Synchrotron Light Source exceeded its planned operating hours and the Relativistic Heavy Ion Collider achieved over 97 percent of its planned operating hours.

Further, we noted that the Office of Science conducted various periodic reviews of user facility performance. These reviews included bimonthly teleconferences with facility managers and program office assessments of facility responses to annual questionnaires. In addition, the Office of Science held detailed triennial user facility reviews involving panels of external experts.

Although our review did not identify any major concerns, we did identify two areas in which performance improvement may be possible. Specifically:

- ORNL and Brookhaven had not always publicly disseminated research results, whether positive or negative, for all completed or terminated nonproprietary research projects.

- Brookhaven had not always classified research correctly at its National Synchrotron Light Source. In two instances, proprietary research had been misclassified as nonproprietary. This issue, which was not identified and corrected until the user notified the Laboratory, could have led to under recovery of proprietary user research fees.

Public Dissemination of Research Results

ORNL and Brookhaven had not always publicly disseminated research results for nonproprietary research projects. Both organizations had agreements in place that required all nonproprietary research projects to report results, regardless of the outcome. However, neither site enforced such user agreements. Furthermore, ORNL amended its new user agreements to require reports only if requested by the site. In addition, negative research results were neither collected nor archived and none of the facilities had a comprehensive process for tracking the results of completed or terminated research projects to ultimate public dissemination.

As a result, the public and the scientific community may be deprived of valuable scientific information derived from fundamental research performed at Department user facilities. Failure to ensure public dissemination of all results could lead to duplicative or unproductive research projects that ultimately prevent these valuable resources from being used for more productive research. During a subsequent discussion with Brookhaven management officials, we learned that they plan to implement additional procedures to monitor completed projects and ensure the collection of nonproprietary project reports. These procedures include indentifying expiring projects, reminding principal investigators of the report submission requirement, tracking report submission status and maintaining reports at each user facility's administrative office.

Misclassification of Proprietary Usage

We found two instances in which Brookhaven had not properly classified proprietary research at its National Synchrotron Light Source. Department Order 522.1, *Pricing of Departmental Materials and Services*, states that proprietary users of a facility are to be charged a full cost recovery fee. In addition, Chapter 13 of the Department's *Financial Management Handbook* indicates that full funding is required prior to beginning work on any reimbursable agreement

with an estimated cost of $25,000 or less, or that will be completed in 60 days or less. The controls in place at Brookhaven's National Synchrotron Light Source did not ensure adequate identification and classification of all proprietary research. As a result, approximately 25 hours of proprietary facility usage were misclassified, and remained so until brought to management's attention by the facility user. Had the user not self reported these misclassifications, the Department may not have collected required usage fees, about $1,700, from the proprietary user.

Brookhaven officials told us that they had taken corrective action to strengthen controls relating to the classification of research at the National Synchrotron Light Source. These actions include a review of the research facility's monthly usage for each industrial user and certification by that user that the usage was either nonproprietary or proprietary.

PATH FORWARD

To ensure that all research is adequately documented and archived, we suggest that the Office of Science reiterate the importance of enforcing user agreements, to include the reporting of research results for all nonproprietary projects, including those with negative results.

Additionally, to ensure the correct classification of research at the Brookhaven National Synchrotron Light Source, we suggest the Manager, Brookhaven National Laboratory, strengthen controls over research to appropriately classify it as proprietary or nonproprietary.

Attachment

cc: Deputy Secretary
Chief of Staff

OBJECTIVE, SCOPE AND METHODOLOGY

OBJECTIVE

The objective of the audit was to determine whether the Department of Energy (Department) was effectively managing its Scientific User Facilities (user facilities).

SCOPE

We performed the audit between February 2013 and February 2014. Work was conducted at user facilities at Brookhaven National Laboratory in Upton, New York and Oak Ridge National Laboratory in Oak Ridge, Tennessee. Additional information was obtained from the Office of Science in Germantown, Maryland. The audit was conducted under Office of Inspector General Project Number A13GT018.

METHODOLOGY

To accomplish the objective of this audit, we:

- Researched applicable Federal and Department regulations and guidance;
- Reviewed prior Office of Inspector General and U.S. Government Accountability Office reports related to the audit objective;
- Reviewed current Department reports related to user facilities;
- Interviewed Department and contractor/facility management personnel with responsibility over user facilities;
- Judgmentally selected a sample of 2 Department sites with 8 user facilities from a universe of 14 Department sites with a total of 31 user facilities. This selection was based on the locations constituting a significant portion of the Department's budget and total facility users. Because a judgmental sample of sites and facilities was used, results are limited to the sites and facilities selected; and
- Selected statistical attribute samples from seven of the eight user facilities. One user facility was excluded due to the nature of its experimental design. Each of the 7 samples consisted of 66 research projects from each user facility's population of nonproprietary research projects to determine whether adequate support existed for the determination that projects were correctly classified as nonproprietary. A confidence level of 90 percent, a precision level of plus or minus 3.5 percent, and an expected error rate of 0 percent were used to determine the sample size. A statistical sample was selected to enable projection of the sample results across the entire population of nonproprietary projects at each user facility.

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. We believe that the evidence obtained provides a reasonable basis for our 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 Scientific User Facilities. 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 did not rely on computer-processed data to satisfy our audit objective.

An exit conference was waived by Office of Science management on January 22, 2014.

IG Report No. OAS-L-14-02

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