



U.S. Department of Energy  
Office of Inspector General  
Office of Audit Services

# Audit Report

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Cooperative Research and  
Development Agreements at the  
Department of Energy's Office of  
Science Laboratories



**Department of Energy**  
Washington, DC 20585

September 30, 2009

MEMORANDUM FOR THE SECRETARY

FROM:   
Gregory H. Friedman  
Inspector General

SUBJECT: INFORMATION: Audit Report on "Cooperative Research and Development Agreements at the Department of Energy's Office of Science Laboratories:

BACKGROUND

Technology transfer, disseminating technology developed by the Department of Energy's laboratories to the general science community and the public, including non-Federal technology partners, and private firms, is one of the Department's top priorities. One of the ways in which this transfer is accomplished is through the use of Cooperative Research and Development Agreements (CRADA), a method established under the 1986 Federal Technology Transfer Act. In 1989, the National Competitiveness Technology Transfer Act established the technology transfer concept as a Federal mission and authorized government-owned, contractor-operated laboratories to use CRADAs to facilitate the development of technology and transfer that technology to the private sector.

The Office of Science is responsible for managing CRADAs at ten national laboratories. The Department's CRADA Directive (DOE O 483.1) and Manual (DOE M 483.1-1) delegates the responsibility for evaluating the CRADA processes and measuring CRADA performance to Federal site offices located at each laboratory. The site offices are responsible for ensuring that the laboratories obtain a final report documenting the results of research and any new inventions or technology, and forward a copy of the report to the Department's Office of Scientific and Technical Information (OSTI). Ultimately, OSTI is responsible not only for preserving the scientific and technical information generated through a CRADA but also making this information readily available to the scientific community and to the public.

In Fiscal Year (FY) 2007, the Department had a total of 697 CRADAs. Of this number, 276 CRADAs were at the 10 national laboratories managed by the Office of Science, and of these, 196 or 71 percent, were at generated by Argonne National Laboratory (Argonne) in Argonne, Illinois; Brookhaven National Laboratory (Brookhaven) in Upton, New York; and Oak Ridge National Laboratory (Oak Ridge) in Oak Ridge, Tennessee.

Given the priority which has been placed on transferring technology to the private sector, we initiated this audit to determine whether the Office of Science managed the Cooperative Research Agreement process in accordance with Department requirements.

## RESULTS OF AUDIT

The Office of Science generally managed the use of CRADA activities in accordance with Department requirements. However, Science had not always taken the steps necessary to ensure that the laboratories obtained final reports and forwarded the reports to OSTI. Since Argonne, Brookhaven, and Oak Ridge administered the majority of CRADAs managed by the Office of Science, we focused our evaluation on these three laboratories.

The Department required the laboratories and their industry partners to produce a final report as a deliverable for each completed CRADA project. These activities are also required to send a copy of all final reports to OSTI for dissemination to the scientific community and to the general public. These reports are not mere symbols of the work product. Instead, they serve to memorialize the technical approach and accomplishments under the CRADA, which is a vital element in the effort to transfer the technology as effectively and expeditiously as possible.

The three laboratories we visited had procedures to request final reports from researchers and included a requirement for a final report in agreements with industry partners. Yet, only one of the three laboratories had procedures to transmit final reports to OSTI. Procedural requirements notwithstanding, our analysis showed that a disturbing proportion of the final reports were never received and, even when they were received, they were not provided to OSTI. The results of our analysis are displayed in the following table.

FINAL CRADA REPORTS FYs 2004 - 2008			
	CRADAs Completed	Final CRADA Reports Obtained	Reports Sent to OSTI
Argonne	50	11	2
Brookhaven	17	8	0
Oak Ridge	71	64	63
Totals	138	83	65

On its face, this analysis would suggest that Oak Ridge National Laboratory routinely submitted final reports to OSTI. However, only seven of the final reports had actually been transmitted to OSTI prior to the start of our audit. The average number of days from publication of the final report to receipt by OSTI was 820 days for the 63 reports forwarded by Oak Ridge.

## PERFORMANCE MONITORING

The Federal site offices were not consistently overseeing CRADA activities at the three national laboratories we reviewed. For example, none of the site offices had established

goals and measures to evaluate how effectively their respective laboratories obtained final reports and sent the reports to OSTI. Also, the Argonne and Brookhaven Site Offices had not performed detailed reviews of the CRADA process at their laboratories; an activity which could have disclosed the lack of final reports obtained and sent to OSTI. Accordingly, neither site office knew that their laboratories' procedures for obtaining final reports were not effectively implemented. Further, neither site office knew that their laboratories lacked policies on forwarding reports to OSTI. In fact, the Brookhaven Site Office was unaware of the requirement to forward final CRADA reports to OSTI.

To its credit, in June 2007, the Oak Ridge Site Office identified both of these issues during its biennial review of Technology Transfer. As a result of these findings, the Oak Ridge Site Office required the Laboratory to submit a corrective action plan, which included holding back some funding until the final CRADA reports were obtained. While the corrective actions taken may account for the relatively better performance of Oak Ridge in receiving final reports from researchers, it did not improve the Laboratory's performance in forwarding the final CRADA reports to OSTI in a timely manner.

#### RESEARCH REPORT DISTRIBUTION IMPACTS

The Department has stated that accelerating the dissemination of research and development information serves to accelerate the pace of scientific progress itself. By not ensuring that its laboratories obtained and disseminated final CRADA reports, the Office of Science has not ensured that the scientific and technical information generated by laboratory research was available throughout the Department, as well as the scientific community and the public. This process serves, as well, to document new inventions and breakthrough technologies resulting from CRADA efforts and reduce redundant research by ensuring that historical information is widely disseminated.

#### RECOMMENDATIONS

We recommend that the Deputy Director for Field Operations, Office of Science, direct the site offices to:

1. Establish performance measures to assess the laboratories' performance in obtaining final CRADA reports and transmitting the reports to OSTI;
2. Verify that the laboratories establish policies to require researchers to transmit final CRADA reports for all completed or terminated CRADAs; and,
3. Periodically review whether the laboratories are receiving and promptly transmitting final CRADA reports to OSTI.

## MANAGEMENT COMMENTS AND AUDITOR RESPONSE

Management agreed with our findings and generally concurred with our recommendations. However, management did not agree that performance measures should be implemented at this time. Instead, management stated that by following our other two recommendations, the laboratories would be in compliance with Departmental requirements, without necessitating the creation of additional performance reporting requirements. While we agree that additional attention paid to this issue by the site offices would be beneficial, we continue to believe that performance measures would better focus the laboratories on the importance of receiving the reports from researchers and sending the reports to OSTI.

An exit conference was held with Office of Science Management on September 29, 2009.

### Attachments

cc: Deputy Secretary  
Under Secretary of Energy  
Chief of Staff  
Manager, Argonne National Laboratory Site Office  
Manager, Brookhaven National Laboratory Site Office  
Manager, Oak Ridge National Laboratory Site Office

## SCOPE AND METHODOLOGY

The audit was performed between October 2008 and July 2009 at Argonne National Laboratory in Argonne, Illinois; Oak Ridge National Laboratory in Oak Ridge, Tennessee; and Brookhaven National Laboratory in Upton, New York. We also requested information from the Office of Scientific and Technical Information in Oak Ridge, Tennessee. To accomplish our audit object, we:

- Reviewed laws, regulations, and Departmental Directives related to Cooperative Research and Development Agreements (CRADA);
- Selected and reviewed sample Cooperative Research and Development Agreements active during Fiscal Years 2004 through 2008 at the Argonne, Brookhaven, and Oak Ridge National Laboratories;
- Confirmed the Laboratory submissions with the Office of Scientific and Technical Information (OSTI); and,
- Held discussions with responsible Departmental and Laboratory 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 objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Accordingly, the audit included reviews of Departmental policies, procedures, and performance measures related to the Department of Energy's (Department) management of CRADA. We assessed performance measures in accordance with the Government Performance and Results Act of 1993 and concluded that the Department had not established performance measures related to the receipt of final CRADA reports and transmission of final CRADA reports to OSTI. 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 used computer-processed data and performed reliability tests of such data as necessary to achieve our audit objective.

RELATED REPORTS

- Dissemination of Research from the Environmental Molecular Sciences Laboratory, (DOE/IG-0526, September 2001). The Environmental Molecular Sciences Laboratory (EMSL) did not always collect and forward the results of nonproprietary research to Office of Scientific and Technical Information (OSTI). The report found that the EMSL had not received research results or deliverables for 94 of 153 completed research projects, and had not forwarded to OSTI 640 of 700 deliverables that EMSL did receive. This occurred because the management system did not identify deliverables that were due and performance measures were not used to judge progress made in collecting and forwarding deliverables to OSTI. Further, contractor and Department of Energy (Department) officials claimed that they did not fully understand the requirements for sending research results to OSTI. The report concluded that research results from nonproprietary research must be promptly collected and disseminated to ensure that taxpayers benefit from their investment in the EMSL.
- Peer-Reviewed Scientific Literature Generated at the Department's Light Sources, (DOE/IG-0520, August 2001). The audit found that peer-reviewed literature generated from work conducted at the Department's light sources was not available for public dissemination at the OSTI. Specifically, the laboratories had failed to notify OSTI of available journal articles and OSTI did not have a systematic methodology to reconcile the journal articles in its database with those actually published in journals. Based on the Department's objectives for the OSTI program, it was clear that researchers may not have had full and ready access to valuable government-sponsored research information and that scientific advancement was not fully promoted.
- Allegations of Conflict of Interest Regarding Licensing of PROTECT by Argonne National Laboratory, (DOE/IG-0819, August 2009). This special report reviewed allegations that an exclusive technology licensing agreement by Argonne National Laboratory (Argonne) was tainted by inadequate competition, conflicts of interest, and other improprieties. Our review found that despite a contractual requirement that it provide "fairness of opportunity" in its licensing activities, Argonne did not list the licensing opportunity on its web site relying instead on personal knowledge of Laboratory employees when deciding what firms would be provided the opportunity to compete for the exclusive PROTECT license; and that Argonne's actions to avoid or ameliorate conflicts of interest prior to awarding the license were less than satisfactory.



**Department of Energy**  
Washington, DC 20585

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MEMORANDUM FOR GEORGE W. COLLARD  
ASSISTANT INSPECTOR GENERAL  
FOR PERFORMANCE AUDITS  
OFFICE OF INSPECTOR GENERAL

FROM: GEORGE J. MALOSH *George J. Malosh for*  
DEPUTY DIRECTOR FOR FIELD OPERATIONS  
OFFICE OF SCIENCE

SUBJECT: Response to Inspector General's Draft Report,  
"Management Controls over Cooperative Research and  
Development Agreements at Office of Science Laboratories"

The Office of Science (SC) appreciates the opportunity to review and comment on the subject report in which you made the following three recommendations:

1. Establish performance measures to assess the laboratories performance in obtaining final CRADA reports and transmitting the reports to OSTI;
2. Verify that the laboratories establish policies to require researchers to transmit final CRADA reports for all completed or terminated CRADAs; and
3. Periodically review whether the laboratories are receiving and promptly transmitting final CRADA reports to OSTI.

The Office of Science shares the IG's concern that final reports are either not being prepared in closing out CRADAs or are not being transmitted to OSTI. The IG's audit revealed that this process is not performed uniformly across the SC laboratory system, for varying reasons. For example, since your audit, we have discovered that at one national laboratory, the person responsible for transmitting the final reports to OSTI had retired, and their responsibilities were never transferred to another party.

Your audit has brought to light significant shortcomings in dealing with the reporting requirements associated with CRADAs, and we appreciate your recommendations. We concur fully with two of them, but we do not completely agree with the first recommendation regarding the establishment of performance measures. We believe that by following the other two recommendations, the SC laboratories will be in full compliance without necessitating the creation of this additional performance reporting requirement. The SC Performance Evaluation and Measurement Plan (PEMP) is used by SC to assess the performance of our Management and Operations (M&O) contractors each year. One objective defined in the PEMP is, "Transfer of Technology and Commercialization of Intellectual Assets," and this can be used, as required, to assess the performance of the contractor on issues including the CRADA reporting requirement.



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**Management Response:**

Specific actions to be taken in response to each audit recommendation are provided in the attachment

If you have any questions related to this response, please contact David Koegel at 202-586-8831 or [David.Koegel@science.doe.gov](mailto:David.Koegel@science.doe.gov).

RECOMMENDATION: Attached copy

Attachment

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