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U. S. DEPARTMENT OF ENERGY  
OFFICE OF INSPECTOR GENERAL

REPORT ON AUDIT OF ACQUISITION OF SCIENTIFIC RESEARCH  
AT AMES LABORATORY

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**MASTER**

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U.S. DEPARTMENT OF ENERGY  
OFFICE OF INSPECTOR GENERAL  
OFFICE OF AUDIT SERVICES

REPORT ON AUDIT OF ACQUISITION OF SCIENTIFIC RESEARCH  
AT AMES LABORATORY

Audit Report Number: ER-B-95-05

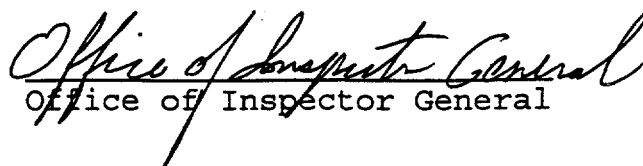
July 14, 1995

SUMMARY

The Department awards grants and cooperative agreements (cooperative agreements) and contracts to sponsor scientific research at colleges and universities. Compared to cooperative agreements, contracts, particularly management and operating contracts, often impose duplicative and/or unnecessary administrative and compliance burdens on a college or university. Since the Department bears the cost of those additional burdens, we audited the cost effectiveness of the Department's sponsorship of research at Ames Laboratory under a management and operating contract with Iowa State University.

The research conducted at Ames is of the type that Congress intended to be sponsored by assistance agreements, rather than contracts. Moreover, we found the contract for managing and operating Ames Laboratory caused micromanagement and unnecessary costs, most of which could have been avoided with a cooperative agreement. However, after completion of our field work, the Department announced initiatives to reduce or eliminate some compliance and oversight burdens associated with management and operating contracts, but did not opt to sponsor research under cooperative agreements. We are unable to determine the monetary impact because the initiatives have not been implemented. Nevertheless, we continue to believe that cooperative agreements, having fewer unique bureaucratic requirements, offer the potential for reducing administrative overhead.

Management concurred with the intent of our recommendation to find lower cost contractual alternatives for the operation of Ames Laboratory. The Chicago Operations has begun to determine the impact of alternative contractual vehicles. Part III of this report discusses management's comments.

  
Office of Inspector General

## PART I

### APPROACH AND OVERVIEW

#### INTRODUCTION

The Department of Energy has sponsored scientific research at Ames Laboratory since 1947 under a series of contracts. The most recent contract was awarded in 1989. The audit objective was to determine whether the sponsorship of research at Ames Laboratory under a management and operating contract with Iowa State University (Iowa State) was cost effective when compared to cooperative agreements.

#### SCOPE AND METHODOLOGY

The audit was performed in December 1994 at Ames Laboratory, which is located on the Iowa State campus in Ames, Iowa. Ames Laboratory is operated by Iowa State under a management and operating contract awarded by the Chicago Operations Office. The following specific methodologies were used:

- o Examined applicable Departmental orders and directives;
- o Reviewed pertinent provisions in the Department's management and operating contract with Iowa State for the operation of Ames Laboratory;
- o Interviewed Departmental, Iowa State and Ames Laboratory managers and scientists to gain an understanding of organizational relationships, staffing, administrative requirements, oversight responsibilities and the approach to the conduct of scientific research under contracts, grants, and cooperative agreements; and
- o Discussed the nature of the sponsored research at Ames Laboratory with Chicago Operations Office, as well as Headquarters Energy Research and Waste Management officials to the extent necessary to facilitate comparison of contract and financial assistance requirements.

The audit was made according to generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent 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.

Management waived the official exit conference on this audit.

#### BACKGROUND

Ames Laboratory is a Government-owned research facility collocated with Iowa State. Established in 1947 as a result of the Manhattan Project, Ames Laboratory performs basic research in materials and chemical sciences and related research in materials reliability and nondestructive evaluation. Ames Laboratory employs 342 people, and has an annual operating budget of about \$40 million. Ames Laboratory maintains a separate administrative support organization which includes accounting, budgeting, and purchasing departments. The current management and operating contract between Iowa State and the Chicago Operations Office expires in December 1996.

Although legally distinct entities, Ames Laboratory and Iowa State closely collaborate in research activities through faculty appointments, graduate student training, faculty sharing programs, and undergraduate and faculty summer research programs, etc. Ames Laboratory maintains capabilities for preparing high purity metals, alloys, compounds and single crystals. It also sustains additional capabilities in high energy physics, nuclear physics, applied mathematics and engineering, and environmental and coal preparation sciences.

#### OBSERVATIONS AND CONCLUSIONS

We believe Congress intended that the type research being performed at Ames Laboratory be sponsored under a financial assistance instrument rather than under a management and operating contract. Moreover, the present contract for the management and operation of Ames Laboratory caused unnecessary and/or duplicative administrative support and oversight activities. For example, under the management and operating contract, Ames Laboratory maintained an administrative organization (accounting, budgeting, personnel, etc.) duplicative of Iowa State's. Further, contract terms required

Ames Laboratory to implement several Department management systems (such as a specialized accounting system) and caused Ames Laboratory employees to annually spend about 3,000 hours preparing recurring compliance reports for the Department. Also, by using the management and operating contract, the Department increased Federal administrative involvement by: (1) 140 staff days annually to review and appraise Ames Laboratory's operating systems, and (2) two Chicago Operations Office employees who were assigned to contract administration.

Recent changes in the Department's procurement philosophy for laboratories are expected to reduce the number of compliance requirements and limit Federal administrative involvement. However, implementing these changes would probably not significantly change the contractor's organizational structure. Using a cooperative agreement in lieu of the existing management and operating contract would eliminate administrative duplication with Iowa State, reduce DOE mandated systems at Ames Laboratory, and minimize Federal employee administrative involvement.

## PART II

### FINDING AND RECOMMENDATION

#### Sponsorship of Scientific Research at Ames Laboratory

##### FINDING

The Federal Grant and Cooperative Agreement Act requires that public purpose research be acquired by grants or cooperative agreements. Cooperative agreements, as opposed to management and operating contracts, offer significant cost advantages because such agreements generally avoid duplicating support functions and impose fewer administrative requirements at both the laboratory and the Federal level. However, the Department has sponsored research at Ames Laboratory under a management and operating contract which resulted in:

- o Duplicative administrative support, such as a separate purchasing department;
- o Unnecessary activities, such as a Department-mandated accounting system; and
- o Substantial Federal employee administrative involvement.

The Department has sponsored research at Ames Laboratory since 1947, but has not fully considered the advantages of acquiring research under one or more cooperative agreements. Consequently, the Department has spent substantial funds for administrative support and oversight that otherwise could have been directed to actual research, or avoided altogether.

##### RECOMMENDATION

We recommend that the Manager, Chicago Operations Office, sponsor scientific research under cooperative agreements with Iowa State instead of a management and operating contract.

##### MANAGEMENT REACTION

The Chicago Operations Office expressed agreement with the intent of our recommendation and has initiated a study of contractual alternatives, including a cooperative agreement and a reformed management and operating contract.

## DETAILS OF FINDING

### MORE DOLLARS FOR RESEARCH USING COOPERATIVE AGREEMENTS

The Federal Grant and Cooperative Agreement Act of 1977 provides that an agency must use a procurement contract if its principal purpose is to acquire property or services for the direct benefit or use of the Federal Government. Conversely, an agency must use an assistance agreement (e.g., cooperative agreement) to transfer money, property, services or anything of value to a recipient to accomplish a public purpose. Cooperative agreements also offer several cost advantages to the Department because such agreements cause less duplication of administrative functions, have significantly fewer specialized requirements, and lessen Federal administrative oversight. Thus, compared to management and operating contracts, cooperative agreements consume fewer dollars in administrative overhead thereby making more funds available for actual research.

#### Public Purpose Research

Notwithstanding the intent of the Federal Grant and Cooperative Agreement Act, the Department has sponsored "public purpose" research at Ames Laboratory under a management and operating contract rather than a cooperative agreement. Moreover, the Department's historical use of a management and operating contract caused diseconomies, including duplication of administrative functions and unnecessary compliance activities.

The public purpose of research performed at Ames Laboratory is expressed in their Institutional Plan. While mentioning Departmental goals, the plan also specifies the achievement of "other national goals and to increase the general levels of knowledge and technical capabilities." The plan states that Ames Laboratory "will make the results of its research programs and the consequent technological developments available to the broadest possible spectrum of domestic industrial and private sector recipients through a variety of technology transfer mechanisms and external interactions." Technology is transferred through technical publications, presentations, consulting activities of staff members, and cooperative projects with industry and government.

The public purpose of Ames Laboratory's research is also evident by the Laboratory's collaborative relationship with industry. Laboratory-industry research is being conducted in the areas of new ceramic materials synthesis, development of

ductile height temperature superconducting fibers, theoretical and modeling studies of automotive exhaust conversion devices, and the development of advanced thermoelectric material. Ames Laboratory's industrial "partners" include such notables as General Motors Corporation and Dow-Corning Corporation.

Duplication of Functions

Many of the functions required by the management and operating contract are duplicative of existing Iowa State functions. There are 53 employees in Ames Laboratory's administrative and oversight functions who are performing duties comparable to those performed by Iowa State, as shown below.

<u>Function</u>	<u>Staffing</u>
Purchasing	17
Accounting	11
Budgeting	8
Data Processing	8
Personnel	5
Auditing	2
Travel	<u>2</u>
Total	<u>53</u>

Cooperative agreements, such as those awarded by other Federal agencies to Iowa State, do not necessitate a separate administrative support structure but rely instead on the existing administrative network. Thus, we believe that much of Ames Laboratory's administrative support is duplicative and could be avoided if the Department sponsored research under cooperative agreements instead of a management and operating contract.

Compliance Activities

Several activities required by the management and operating contract could be reduced or avoided altogether under a cooperative agreement. At the time of our field work, management and operating contractors were subject to over 180

Department of Energy orders, as well as the Department of Energy Acquisition Regulation. Although the Department has initiatives to reduce or eliminate orders, many continue to dictate specialized systems for accounting, procurement, property, internal audit, etc. At Ames Laboratory, compliance with the contract and current Departmental orders annually required over 3,000 staff hours, conservatively valued at about \$65,000, for preparing recurring reports, as shown below.

Table 2

Annual Staff Hours Estimated for Recurring Reports

<u>Activity</u>	<u>Estimated Staff Hours</u>
Budgeting	1,130
Data Processing	380
Facilities	358
Environment, Safety & Health	343
Computer Security	321
Accounting	198
Personnel	144
Purchasing & Property Management	83
Auditing	<u>80</u>
Total	<u><u>3,037</u></u>

In contrast to the 180 orders required by contracts, cooperative agreements contain significantly fewer requirements, less compliance effort, and minimal oversight. The Department's 20 financial assistance agreements with Iowa State are subject to approximately 40 orders and also are not subject to the Department of Energy Acquisition Regulation. Two examples illustrate the reduced level of compliance:

- o The Department's management and operating contract requires a separate accounting system which is unique to the Department's contractors. Under cooperative agreements, however, the accounting requirements would be identical to those employed for similar instruments of other agencies -- one set of books at Iowa State for all Federally sponsored research.

- o Ames Laboratory maintains its own internal audit group to satisfy contractual requirements for auditing. However, all research sponsored by cooperative agreements would be subject to a single audit wherein all cooperative agreements are audited annually by a public accounting firm or State agency.

#### Additional Departmental Oversight

Departmental management of contractor performance was more extensive than for financial assistance recipients. The Department spent about 140 days annually appraising Ames Laboratory's accounting, budgeting, property and other systems. Also, there were two individuals in the Chicago Operations Office who spent most of their time monitoring Ames Laboratory. We estimate the annual cost of this oversight effort at approximately \$195,000. Comparatively, the Department's oversight of cooperative agreements is typically limited to one or two meetings each year to discuss work progress.

#### CONSIDERATION OF COOPERATIVE AGREEMENT OPTION

The Department has not fully explored the advantages of sponsoring research at Ames Laboratory under a cooperative agreement. Ames Laboratory has traditionally been operated under a contract since its establishment in 1947 without adequate consideration of alternatives. The Department is currently implementing management and operating contract reforms nationwide. However, the option of acquiring scientific research at Ames Laboratory under cooperative agreements has not been fully considered.

#### COSTS COULD BE AVOIDED

The Department has acknowledged that certain costs associated with a management and operating contract pertaining to complying with directives have been incurred. Currently, the Department is eliminating, consolidating and streamlining directives for management and operating contractors and the outcome is projected to produce savings or cost avoidances in contractor and Federal compliance and oversight activities. At present, the effort is underway with no accurate measurement of these savings. While these initiatives are laudable, they do not appear to address a fundamental issue of using the most appropriate and cost-effective method of acquiring research at laboratories.

We are unable to precisely quantify the overall cost savings or avoidance by acquiring scientific research at Ames Laboratory with cooperative agreements versus a management and operating contract. However, we do believe realization of substantial cost benefits is achievable. One such example would be the elimination of Federal oversight estimated at approximately \$195,000 annually. The savings could better be used to conduct additional research at Ames Laboratory, other research institutions, or could be avoided altogether.

### PART III

#### Management and Auditor Comments

The Manager, Chicago Operations Office, commented on the revised initial draft version of this report and concurred, in principle, with the recommendation for acquiring scientific research at Ames Laboratory at a lower cost. Management and auditor comments follow.

Management Comments. We agree with the principle of finding lower cost contractual alternatives for our Ames operation. We are committed to achieving cost effective operations while maintaining the scientific excellence of the Ames Laboratory. Consequently, we have initiated a study to determine the cost impact of alternative contractual vehicles, including both a cooperative agreement and a reformed M&O contract.

As part of our study, several of our staff members met with both Ames Laboratory and Iowa State University (ISU) representatives in order to obtain financial data. Although we received some of the data we requested, both Ames Laboratory and ISU need additional time to analyze and submit the requested data. Upon receipt and analysis of this data, we will discuss our conclusions with our Energy Research and Environmental Management customers. Subsequent to this we will prepare a report that contains our final conclusions. We expect to complete this study and to prepare a coordinated cost reduction plan based on the findings by September 1, 1995. We will send you a copy of this report.

Auditor Comments. The corrective actions taken and planned are responsive to the intent of the recommendation. We will, however, continue to monitor the study's progress and plan to review management's report on their final conclusions.

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