

GAO

Report to the Committee on Government Reform, House of Representatives

March 2005

DEPARTMENT OF ENERGY

Further Actions Are Needed to Strengthen Contract Management for Major Projects



Highlights of [GAO-05-123](#), a report to the Committee on Government Reform, House of Representatives

DEPARTMENT OF ENERGY

Further Actions Are Needed to Strengthen Contract Management for Major Projects

Why GAO Did This Study

The Department of Energy (DOE) pays its contractors billions of dollars each year to implement its major projects—those costing more than \$400 million each. Many major projects have experienced substantial cost and schedule overruns, largely because of contract management problems. GAO was asked to assess, for major departmental projects, (1) DOE’s use of performance incentives to effectively control costs and maintain schedules, (2) the reliability of the data DOE uses to monitor and assess contractor performance, and (3) the reliability of the Project Assessment and Reporting System (PARS) data that senior managers use for project oversight.

What GAO Recommends

GAO recommends that DOE strengthen its contract management for major projects by, among other things, (1) developing a chapter in DOE’s Acquisition Guide that specifies a systematic contracting approach for major projects; (2) reducing DOE’s overreliance on unvalidated contractor data in awarding contract fees; and (3) developing a schedule for assessing the reliability of contractors’ project management systems, giving priority to systems that DOE believes are deficient. In commenting on the draft report, DOE generally concurred with all of the recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-05-123.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Robin Nazzaro at (202) 512-3841 or nazzaror@gao.gov.

What GAO Found

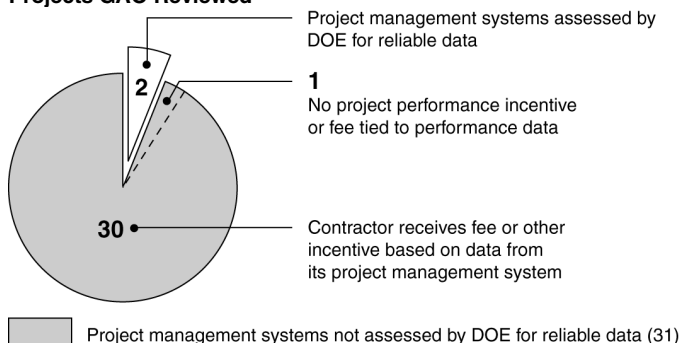
DOE could use performance incentives more effectively for controlling costs and schedules if it developed performance incentive guidance and assigned responsibility for reviewing a contract’s project management provisions prior to award. DOE has awarded contracts for 15 of 33 major projects that use a schedule or other performance incentive without an associated cost incentive or constraint; thus a contractor could receive full fees by meeting all schedule baselines while substantially overrunning costs.

DOE has relied on unvalidated contractor data to monitor contractors’ progress in executing major projects and to award fees for performance. In particular, DOE’s self-assessment of contract administration in 2002 found that field personnel overly relied on contractors’ accounting systems and contractor-collected data in assessing performance, without significant validation of those data. No subsequent self-assessment has been conducted to determine if this problem continues. Furthermore, DOE has not required that its contracting officers receive the training needed to assess the adequacy of contractors’ project management systems that generate data used to monitor progress.

Although development of PARS is a positive step, the reliability of the project performance data that PARS provides to senior DOE managers is limited by problems with accuracy, completeness, and timeliness. Regarding accuracy, DOE has not assessed the reliability of contractors’ project management systems that feed data into PARS for 31 of 33 major projects, even though DOE believes that some systems are deficient. Regarding completeness, GAO identified 3 major projects that are not in PARS. As to timeliness, cost and schedule data for 6 major projects in the June 2004 PARS report were significantly out of date because DOE has not required contractors to submit timely performance data.

These contract management problems limit DOE’s ability to effectively manage its major projects and avoid further cost and schedule slippages.

Contractors’ Performance Awards Relied on Unvalidated Data for 30 of the 33 Major Projects GAO Reviewed



Source: GAO analysis of DOE data.

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Abbreviations

DOE	Department of Energy
FAR	Federal Acquisition Regulation
NNSA	National Nuclear Security Administration
OMB	Office of Management and Budget
PARS	Project Assessment and Reporting System

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United States Government Accountability Office
Washington, D.C. 20548

March 18, 2005

The Honorable Tom Davis
Chairman
The Honorable Henry A. Waxman
Ranking Minority Member
Committee on Government Reform
House of Representatives

The Department of Energy (DOE) pays its contractors billions of dollars each year to implement projects costing more than \$400 million each, which the department designates as major projects. These major projects include environmental cleanup at its current and former nuclear weapons production facilities, refurbishment of nuclear weapons, and construction of specialized scientific facilities. Our previous reports have found that many of DOE's major projects have experienced substantial cost overruns and delays. As a result, since 1990, we have designated DOE's contract management—broadly defined to include contract administration and project management—as a high-risk area for fraud, waste, abuse, and mismanagement because of the department's history of inadequate management and oversight and failure to hold its contractors accountable. In recent years, we have continued to find problems with DOE's contract management of its major projects. (See the list of related GAO products at the end of this report.) For example, our 2002 assessment of DOE's contract reform initiatives found that 5 of the 16 major projects we examined had more than doubled in cost—for billions of dollars in total cost overruns—and experienced more than 5 years in delays.¹

In response to these problems, DOE has instituted contracting and project management reforms. To better align DOE functions with challenges to improve the planning, execution, and management of its contracts, the department established the Office of Contract Management in 2000 with responsibility for assisting the field and other DOE offices in the planning, implementation, and oversight of (1) the contract award process, which involves those front-end activities necessary to ensure that contracts are structured in a way that best fulfills DOE's needs, and (2) the contract administration process, which encompasses all dealings between DOE and its contractors from the time a contract is awarded until the work has been

¹GAO, *Contract Reform: DOE Has Made Progress, but Actions Needed to Ensure Initiatives Have Improved Results*, [GAO-02-798](#) (Washington, D.C.: Sept. 13, 2002).

completed and accepted or the contract has been terminated, payment made, and any disputes resolved. To improve the contract award process, the Office of Contract Management has, among other things, developed updates to DOE's Acquisition Guide, which amplifies upon the requirements contained in the Federal Acquisition Regulation (FAR) that governs governmentwide federal procurement activities. Each year, the Office of Contract Management reviews a limited number of pending contract actions, including any matters affecting a contract's deliverables, schedule, and cost. To improve the contract administration process, the Office of Contract Management issued, in May 2000, a *Reference Book for Contract Administrators*, a consolidated reference tool for DOE's contract administrators. The office also has performed periodic self-assessments of contract administration practices.

As part of its project management reforms, DOE established the Office of Engineering and Construction Management in 1999 to oversee the project management process by developing project management policy, improving project oversight systems, and implementing a career development program for DOE project managers. In particular, the Office of Engineering and Construction Management in 2001 implemented the Project Assessment and Reporting System (PARS), a Web-based system for collecting and analyzing current performance data for projects costing more than \$5 million. Although the department has other ways to communicate project status information, including quarterly reports for some projects, PARS monthly project status reports for the Deputy Secretary of Energy (hereafter referred to as PARS reports) are DOE's primary tool for keeping senior managers apprised of a project's performance. In August 2003, the office initiated a certification program for contractors' project management systems that assesses the accuracy of the cost and schedule performance data that contractors generate by examining, in particular, whether each contractor's system complies with private industry's standard for earned value management—a systematic approach for integrating and measuring cost, schedule, and technical (scope) accomplishments on a project.

You asked us to examine DOE's contract management actions designed to control cost growth and schedule slippage for its major projects. Specifically, you asked us to assess, for major departmental projects, (1) DOE's use of performance incentives to effectively control costs and maintain schedules, (2) the reliability of the data DOE uses to monitor and assess contractor performance, and (3) the reliability of the PARS data that senior managers use for project oversight. Our review focused primarily on

the 33 major projects that had passed, as of March 2004, DOE's Critical Decision 2 milestone—the point at which the department approves a project's cost, schedule, and scope baselines on the basis of an approved conceptual design report and acquisition strategy. (See app. I for the 33 major projects that we reviewed.) The projects we reviewed include 28 projects that cost more than \$400 million each and 5 projects that our 2002 assessment defined as major projects because their total costs exceeded \$100 million. DOE's Office of Environmental Management (Environmental Management), Office of Science, and National Nuclear Security Administration (NNSA) are funding the 33 major projects.

To determine DOE's guidance for using different performance incentives for major projects, we examined the contract provisions for the 33 major projects that have DOE-approved performance baselines, reviewed various recent contract-related documents associated with these 33 projects, and discussed the contents of these documents with key DOE contracting officials. We then compared the contract provisions with requirements in the FAR; the DOE Acquisition Regulation; and DOE's contract-award guidance, including the Performance-Based Contracting Guide and the Acquisition Guide. To assess DOE's oversight of contract administration activities, we reviewed DOE's *Reference Book for Contract Administrators*, compared the findings made in DOE's various contract administration self-assessment reports with the actions the department has taken, and interviewed contracting officials at the Department of Defense and administrators at the National Aeronautics and Space Administration because DOE officials acknowledged their leadership in implementing such project and contract management reforms as earned value management principles. To evaluate the reliability of PARS data, we assessed the data's accuracy, completeness, and timeliness by examining the underlying data and the way data are reported to senior managers. For example, we compared the information in monthly PARS reports from January through September 2004 with project-specific data obtained from various DOE program offices. When we identified discrepancies, we assessed whether the discrepancies limited the reliability of data reported in PARS. Given our review of the documentation provided by DOE and our discussions with DOE officials, we have reservations about the reliability of PARS data. These issues are discussed in this report. We conducted our work between January 2004 and January 2005 in accordance with generally accepted government auditing standards, which included an assessment of data reliability and internal controls. (See app. II for further information about the scope and methodology of our review.)

Results in Brief

DOE could use performance incentives more effectively for controlling costs and schedules if it developed performance incentive guidance and assigned responsibility for reviewing a contract's project management provisions. DOE has awarded contracts for 15 of 33 major projects that use a technical, schedule, or other performance incentive without an associated cost incentive or cost constraint, so a contractor could receive full fees by meeting all schedule baselines even though the contractor substantially overran baseline costs. For 13 additional major projects, DOE has used cost-plus-incentive-fee contracts without certifying that contractors' project management systems generate reliable cost and schedule data for measuring performance and awarding incentive fees. In addition, for 11 major projects that are components of the environmental cleanup of a DOE facility, no award fee amount is directly linked to the successful completion of the major project, generally because the project is part of the contractor's larger cleanup responsibility. As a result, the contractor may not give sufficient attention to the completion of a complex major project and focus, instead, on less critical activities that are easier to achieve. Furthermore, an Environmental Management review found that the award fee incentives in its contracts were not sufficiently focused on site cleanup activities. As a result, Environmental Management decided that, beginning in fiscal year 2003, award fee determinations would consider only contractor activities directly related to cleanup work, while excluding such indirect work-related activities as providing timely and accurate reports to DOE because they are basic expectations of any contractor. In contrast, NNSA has not conducted a review similar to Environmental Management's and, for at least 1 of its major projects, NNSA has considered a contractor's indirect work-related activities in awarding incentive fees. DOE has not issued guidance that specifies the indirect work-related activities to be included in determining incentive fee awards.

DOE has relied on unvalidated contractor data to monitor contractors' progress in executing major projects and to award fees for performance. This reliance on unvalidated data limits the department's ability to ensure it gets what it is paying for. Specifically, DOE's self-assessments of contract administration in 1997 and 2002 found that field personnel overly relied on contractor accounting systems and contractor-collected project data in awarding fees, without significant validation of those data. However, the 2002 self-assessment made no recommendation for fixing the problem, and no broad self-assessment of contract administration has been conducted since 2002. Without a specific recommendation, implementation of that recommendation, and periodic self-assessments, DOE lacks a mechanism

for ensuring that overreliance on contractor data and other contract administration problems are corrected. DOE has begun to certify the reliability of contractors' project management systems that generate the performance data used to monitor contractors' progress; however, the department has no time table for the completion of this certification program. Furthermore, with the exception of NNSA, DOE has not required its contracting officers to receive training in earned value management, even though contracting officers are required to determine whether the contractor's project management system, after contract award, meets private industry's earned value management standard. In contrast, administrators at the National Aeronautics and Space Administration told us that their contracting officers need training to adequately assess contractors' use of earned value management.

Although the development of PARS is a positive step toward improving DOE's project oversight, the reliability of the project performance data that PARS provides to senior managers is limited by problems with the data's accuracy, completeness, and timeliness.

- The accuracy of the PARS cost and schedule data is uncertain for three reasons. First, even though DOE believes that some of its contractors' project management systems are deficient, the department has assessed the reliability of systems for only 2 of the 33 major projects we reviewed. Additionally, despite the department's goal of assessing all systems by the end of fiscal year 2006, it has not developed a schedule for reviewing other contractors' project management systems. As a result, senior DOE managers cannot rely on PARS performance data for many major projects to determine whether the projects are on cost and on schedule. For example, DOE officials told us that they do not know if the \$5.7-billion Tank Waste Treatment and Immobilization Plant project at Hanford, Washington, is meeting its performance baselines, even though PARS data show that the project is on track. Second, the cost and schedule variances reported in PARS for many projects are small and do not accurately reflect the considerable cost growth and schedule slippage that have occurred in the past because DOE updates the PARS baselines when project changes are approved. DOE officials told us that departmental project management guidance does not require the reporting of life-of-project cost and schedule variances; however, PARS cannot reflect prior cost overruns and schedule slippages without such reporting. Third, most of DOE's project directors have not received earned value management training, which is needed to ensure that contractors' project management systems are providing accurate

performance data to PARS, and DOE does not expect to complete this training until May 2006.

- Regarding the completeness of these data, we identified 3 major projects, as well as 2 smaller projects, that are not included in PARS. In particular, while DOE stated in July 2003 that it intended to treat each of its nuclear weapons refurbishment programs as projects, none of these refurbishments have been added to the PARS database. Although DOE recently asked its program offices to identify and enter additional projects into PARS, implementation has been slow in part because key program office officials lack project management training, which is necessary for determining what activities are subject to PARS reporting, according to Office of Engineering and Construction Management officials. For projects that are being reported, PARS lacks forward-looking trend data, such as the projects' estimated cost at completion that, according to numerous officials, are critical for PARS to effectively report possible performance challenges. Although these data are available, they are not included in PARS reports because Office of Engineering and Construction Management officials want to minimize the amount of information that senior managers review.
- Regarding timeliness, the June 2004 PARS report's performance data for 6 major projects were significantly out of date primarily because contractors had not submitted more current performance data, according to Office of Engineering and Construction Management officials. As a result, the PARS monthly reports did not show senior DOE managers the need for corrective actions in response to cost and schedule slippages. While some minor lag is to be expected in reporting project performance, Office of Engineering and Construction Management officials noted they are open to exploring options to improve the timeliness of PARS data in those cases where data is significantly out of date.

We are making several recommendations to the Secretary of Energy to ensure the use of effective performance incentives, strengthen oversight of contract administration, and improve the reliability of the project performance data provided by PARS. DOE generally concurred with all of the recommendations. DOE also provided a number of comments to improve the report's accuracy, which we incorporated where appropriate.

Background

DOE is the largest civilian contracting agency in the federal government; about 90 percent of its annual budget is spent on contracts for carrying out its activities and operating its facilities. In fulfilling their missions, DOE's program offices are responsible for contracting for and overseeing the execution of the department's major projects, many of which are first-of-a-kind efforts and thus involve substantial risk and may also be separate line items in DOE's budget. For example:

- Environmental Management's mission is to accelerate risk reduction and cleanup of the environmental legacy of the nation's nuclear weapons program and government-sponsored nuclear energy research. Environmental Management has used a single sitewide contract that involves several major projects costing billions of dollars for cleaning up some of its former facilities. In addition, Environmental Management has undertaken many large-scale individual projects. For example, the Hanford Tank Waste Treatment and Immobilization Plant project is an important part of the cleanup effort at Hanford, Washington. The project, which was initiated in December 2000, is intended to treat and prepare for disposal 55 million gallons of high-level radioactive waste by July 2011 at an estimated cost of \$5.7 billion.
- NNSA's mission is to meet national security requirements by, among other things, maintaining and enhancing the safety, reliability, and performance of the U.S. nuclear weapons stockpile, which includes maintaining the capability to design, produce, and test nuclear weapons. To fulfill this mission, NNSA undertakes such projects as refurbishing W-80 nuclear warheads to extend their operational lives. The W-80 refurbishment project was initiated in September 1998 and is expected to be completed in fiscal year 2017 at an estimated cost of about \$2.45 billion.
- The Office of Science's mission is to deliver the remarkable discoveries and scientific tools that transform our understanding of energy and matter and advance the national, economic, and energy security of the United States. To fulfill this mission, the Office of Science has constructed specialized scientific research facilities, such as the Spallation Neutron Source at the Oak Ridge National Laboratory. This project consists of an accelerator system that delivers short (microsecond) pulses to a target/moderator system where neutrons are produced by a nuclear reactor process called spallation. This project is designed to provide the next-generation spallation neutron source for

neutron scattering and related research in broad areas of the physical, chemical, materials, biological, and medical sciences. The Spallation Neutron Source project began in October 1998 and is expected to be completed in June 2006 at an estimated cost of about \$1.4 billion.

DOE's principal official responsible for the execution of a major project is the federal project director, who is located at the project site and is supported by project managers. The project director is responsible for overseeing a project's design, execution, budgeting, and performance. For contracts with award fee provisions, senior DOE program office managers consult with contracting and project officers to assess a contractor's performance and determine the appropriate award fees.

In addition to the contract management problems our prior reports have identified, a recent series of reports by the National Research Council of the National Academies identified weaknesses in DOE's project management. The council's 2004 report cited several factors that have contributed to the slow pace of project management improvements and resulted in inconsistent project performance.² These factors include the desire of DOE site office personnel and contractors to be independent of oversight from DOE headquarters, insufficient support for training, inadequate numbers of DOE project managers to oversee contractors' performance, and the absence of a champion for project managers and process improvement who has the authority to ensure both adherence to policies and procedures and the availability of necessary funding and personnel resources.

²National Research Council of the National Academies, *Progress in Improving Project Management at the Department of Energy: 2003 Assessment* (Washington, D.C.: 2004).

During the past year, DOE has continued to implement contracting and project management reforms. In particular, in December 2003, the Secretary of Energy appointed an Associate Deputy Secretary with responsibility, among other things, for both contract and project management, addressing a key National Research Council concern. DOE also entered into an agreement with the Defense Contract Management Agency, within the Department of Defense, to support the certification of contractors' project management systems. More recently, DOE is developing an action plan in response to the Civil Engineering Research Foundation's assessment of departmental project management that recommended that DOE, among other things, develop a core group of highly qualified project directors, require peer reviews for first-of-a-kind and technically complex projects when the projects' preliminary baselines are approved, and enhance PARS by making the data more timely.³ Furthermore, to improve its contract award process, DOE revised its Acquisition Guide by adding chapter 16, which lists the various contract types available and discusses their respective advantages and constraints. To address future skill gaps in its procurement organization, DOE established an acquisition career development program and has certified 90 percent of its procurement professionals as attaining mandatory training and experience standards under this program. Within the Office of Environmental Management, a series of contract and project management improvements have occurred consisting of, but not limited to, providing additional training and managing more of the cleanup work as projects. Within the Office of Contract Management, a series of contract award and administration initiatives have been completed. These initiatives include, among other things, strengthening contract competition policies and practices, improving acquisition workforce effectiveness, increasing small business utilization throughout DOE, and strengthening DOE management and fiscal effectiveness. For fiscal year 2005, the Office of Contract Management has multiple initiatives planned, including identifying and implementing follow-on actions related to the DOE management challenge pertaining to contract competition.

³Civil Engineering Research Foundation, *Independent Research Assessment of Project Management Factors Affecting Department of Energy Project Success* (July 12, 2004).

DOE Could Use Performance Incentives More Effectively for Controlling Costs and Schedules

Because many of DOE's major projects are first-of-a-kind and thus involve substantial risk, DOE's contracting decisions can be critical to the successful completion of its major projects. However, DOE could use performance incentives more effectively for controlling costs and schedules for its major projects if the department developed criteria for using different performance incentives and assigned responsibility for reviewing a contract's project management provisions prior to award. For example, DOE has used contracts that have a technical, schedule, or other performance incentive without an associated cost incentive or cost constraint (other than the annual funding level for the contract). DOE also has used cost-plus-incentive-fee contracts without certifying that contractors' project management systems generate reliable cost and schedule data for measuring performance and awarding fees. In addition, we found that the contract incentives for most of the 25 major environmental restoration projects substantially differ from the "Gold Chart" performance metrics that Environmental Management uses to assess its performance and report its progress to the Congress. Furthermore, for 11 major projects that are components of the environmental cleanup of a DOE facility, Environmental Management has not directly linked incentive fees to the successful completion of the project, generally because the project is part of the contractor's larger cleanup responsibility. Finally, while Environmental Management has decided that incentive fee determinations would consider only contractor activities directly related to cleanup work, NNSA has, for at least 1 of its major projects, considered a contractor's indirect work-related activities in awarding incentive fees.

DOE Has Not Fully Developed Performance Incentive Guidance to Effectively Control Costs and Maintain Schedules

Despite efforts in recent years to improve contract and project management, DOE has not fully developed performance incentive guidance to effectively control costs and maintain schedules. DOE has issued the following guidance, order, and manual that are applicable to the contract award process for major projects and that supplement the FAR and the DOE Acquisition Regulation:

- In the late 1990s, DOE issued its Acquisition Guide to, among other things, supplement the FAR and the DOE Acquisition Regulation and be a repository of best practices found throughout the department. Chapter 16 of the guide discusses contract types; however, the chapter notes that it was not intended to provide a template for matching a contract type to given contracting situations. While the guide's index shows that chapter

34 is reserved for guidance to contracting officials related to major projects, DOE has never drafted the chapter, according to the DOE official responsible for maintaining revisions to the Acquisition Guide.

- In October 2000, DOE issued Order 413.3, “Program and Project Management for the Acquisition of Capital Assets,” to ensure that capital assets, including major projects, would be delivered on schedule, within budget, and fully capable of meeting mission needs. To accomplish these goals, the order states, in part, that DOE officials are to develop an acquisition plan during the acquisition process that includes such elements as contracting options and a contractor incentive process. The order, however, does not elaborate on the possible contracting and performance incentive options whatsoever.
- In March 2003, DOE issued manual 413.3-1, “Project Management for the Acquisition of Capital Assets,” to improve the implementation of DOE Order 413.3. The manual addresses various activities, including a chapter on contracting that contains no direct reference to major projects. The chapter states that the type of contract and incentives proposed should be based on an overall view of the principal risks to the project and provides a limited discussion of the types of contracts available. For example, it states that fixed-price contracts are not appropriate for research and development efforts or other complex projects where there is a high degree of uncertainty in the execution or DOE requirements. While the chapter mentions that DOE generally uses a cost-plus-award-fee contract for contractors managing and operating DOE sites, it does not address the other available types of contract.

Furthermore, DOE has not used its Acquisition Guide to identify best practices, or lessons learned, based on its major project contracting experiences. In our view, given DOE’s long history with major projects, considerable information could be added to this guide detailing those major project contracting approaches that worked and those that did not. Improved guidance could help DOE better control costs and maintain schedules for its major projects.

DOE Has Not Always Reviewed the Project Management Provisions of Its Major Contracts Prior to Award

Neither the Office of Contract Management nor the Office of Engineering and Construction Management always reviews the project management provisions of major project contracts prior to award to ensure that the performance incentives are appropriately used. At the heart of this problem is confusion over responsibility. The Director of the Office of Contract Management and the Director of the Office of Engineering and Construction Management each believe that the other office has headquarters responsibility for reviewing the project management provisions of contracts prior to approval.

The confusion exists because the chapter in DOE's Acquisition Guide on the headquarters review of contract and financial assistance actions is silent on the role of the Office of Engineering and Construction Management in the review process. This chapter indicates that packages pertaining to contract actions will be sent to nine different DOE offices for review, none of which is the Office of Engineering and Construction Management. As a consequence, if this office has a role in the contract review process, it has not been clearly defined.

According to the Director, Office of Contract Management, the Office of Engineering and Construction Management should be responsible for reviewing the project management provisions in major project contracts because of its responsibility for project management matters. The director told us that his office typically reviews from 60 to 70 pending contract actions each year, and these reviews follow a general approach looking at any matters that might affect timing, delivery, and cost—but no specific, formalized list is followed.

According to the Director of the Office of Engineering and Construction Management, his office reviews certain documentation that could affect which company is selected for a contract, but his office has no role in reviewing the actual provisions of the contract. While the Office of Contract Management sends contract proposals to the Office of Engineering and Construction Management for review, the director noted that his office has only one staff person with contracting experience. The director believes the solution to improving the review of major project contracts is for contracting officials within the Office of Contract Management to become more familiar with earned value management, a DOE contracting requirement for integrating and measuring a contractor's performance.

Problems Have Developed Because DOE Has Not Effectively Used Performance Incentives

For many of the 33 major projects we reviewed, DOE has used performance incentives that limit its ability to effectively control cost and schedule performance. For example, almost all of DOE's cost-plus-award-fee contracts for major projects have included a performance incentive without also using an associated cost incentive or cost constraint (other than the annual funding level for the contract). Also, DOE has used cost-plus-incentive-fee contracts without certifying that contractors' project management systems generate reliable cost and schedule data for measuring performance and awarding fees. We also found that (1) Environmental Management's contracts included environmental cleanup performance incentives that differed substantially from its new Gold Chart performance metrics; (2) DOE did not always link its fee awards to contractors' performance on major projects; and (3) DOE's program offices have treated indirect work-related activities, such as providing timely and accurate reports to DOE, differently in determining the contractors' incentive award fees.

DOE's Implementation of Performance Incentive Provisions Does Not Enable DOE to Effectively Control Costs

For 15 of the 17 major projects that use a cost-plus-award-fee contract, the contract contained a technical, schedule, or other performance incentive without including an associated cost incentive or cost constraint (other than the annual funding level for the contract). Under such circumstances, the potential exists that a contractor could meet all incentives and overrun baseline costs but still receive full fees. The other 2 major projects used a cost-plus-award-fee contract that included an associated cost incentive or cost constraint for each technical, schedule, or other performance incentive.

The FAR, the DOE Acquisition Regulation, and DOE guidance preclude the inclusion of a schedule or other performance incentive without also including a cost incentive or cost constraint. FAR § 16.402-1 states that no incentive contract may provide for other incentives without also providing for a cost incentive or cost constraint. Similarly, DOE Acquisition Regulation § 970.5215-3 provides that requirements incentivized by other than cost incentives must be performed within their specified cost constraint. DOE's Performance-Based Contracting Guide, dated October 2003, states that (1) cost incentives should be included if other incentives are included because a schedule or other performance incentive may result in the contractor paying little attention to the cost of achieving those incentives unless cost is also a consideration and (2) DOE contracts, in developing incentives and incentive programs, must comply with the

incentive contract provisions of the FAR and the DOE Acquisition Regulation.

The Director of the Office of Contract Management told us that to implement the FAR requirement to include a cost incentive or cost constraint whenever a noncost incentive is in the contract, each noncost incentive does not necessarily need an associated cost constraint dedicated to that noncost incentive. According to the director, a single cost constraint, which could be equivalent to the project's annual funding level, would fulfill the FAR requirement.⁴

However, DOE contracting officials at Oak Ridge, West Valley, and Savannah River believe that to implement the FAR and DOE Acquisition Regulation requirements in a way that effectively controls costs, a contract with a technical, schedule, or other noncost incentive should also have an associated cost incentive to function as a constraint on the expenditure of funds. One of these officials added that as the noncost incentives become more objective and measurable, the cost constraint should be more clearly defined in relation to each noncost incentive. Similarly, another one of these officials told us that using the annual funding level or the project's cost baseline as the constraint is too vague and unworkable, and that some funding levels and cost baselines do not track down to the performance incentive level. As a result, neither the funding level nor the cost baseline would indicate whether the performance incentive was accomplished within the cost constraint.

These views are consistent with the findings from DOE's 1997 assessment of performance-based incentives, which found that DOE's and contractors' financial systems generally are budget-based and do not segregate and track costs at the performance incentive level. The assessment added that this limits DOE's ability to establish meaningful cost baselines and to monitor the cost of performance under specific incentivized work efforts in relation to the total cost of the contract.

⁴DOE's management and operating contracts include the DOE Acquisition Regulation clause providing discretion to the fee determination official to reduce the contractor's fee by up to 75 percent when the contractor fails to meet stipulated cost performance levels. (See 48 C.F.R. § 970.5215-3.) In DOE's management and operating contracts, the cost performance level for the contract, unless otherwise stipulated, is typically the annual funding level for the contract.

DOE Has Used Cost-Plus-Incentive-Fee Contracts without Certifying the Reliability of Contractors' Performance Data

For 13 of the 33 major projects we reviewed, DOE used a cost-plus-incentive-fee contract that provides the contractor with an initially negotiated fee that is subsequently adjusted by a formula based on the relationship of total allowable costs to total target costs. The formula provides, within limits, for fee increases when total allowable costs are less than target costs. In recent years, DOE has made a major effort to move toward the use of cost-plus-incentive-fee contracts.

Because a cost-plus-incentive-fee contract provides higher fee awards to the extent that actual costs are lower than anticipated, it depends upon reliable cost estimating at the outset in the form of a target cost and reliable cost reporting later. In July 1997, the Office of Management and Budget (OMB) issued requirements regarding the acceptability of contractors' project management systems. However, DOE has not certified the reliability of contractors' project management systems that generate the target cost data for the 13 major projects.⁵ As a result, a contractor might receive a high fee payment because its project management system generated an unreliable high initial cost estimate and subsequently reported lower actual costs. A U.S. Army Corps of Engineers' report, issued in May 2004, concluded that it was not appropriate to use a cost-plus-incentive-fee contract for the Hanford Tank Waste Treatment and Immobilization Plant project, in part because reliable cost data could not be generated in advance.⁶

Furthermore, DOE site personnel may not provide adequate surveillance of the contractors' cost records for these 13 projects. According to DOE's Performance-Based Contracting Guide, it is inappropriate to use a cost-plus-incentive-fee contract if there is an overreliance on contractor accounting systems and contractor-collected data without significant validation of those data.⁷ In such situations, the guide states, any potential cost savings reported might be the result of a poor estimate of the amount of labor or material required, the approach planned, or the associated costs. The Office of Contract Management's self-assessment of contract

⁵DOE has assessed the contractor's project management system for the Spallation Neutron Source project and plans to certify the system after some minor changes are made.

⁶U.S. Army Corps of Engineers, *Independent Cost & Schedule Baseline Review Summary Report, Hanford Waste Treatment and Immobilization Plant* (Walla Walla, Washington: May 28, 2004).

⁷DOE developed the Performance-Based Contracting Guide as a reference document for agency personnel involved in all aspects of performance-based management contracting.

administration in 2002 found that most of the DOE field locations visited relied almost exclusively on the contractors' data because they did not have the staff resources capable of validating cost or technical baselines. The report, however, did not identify the DOE field locations visited, and, according to an Office of Contract Management official, no individual field location reports were prepared.

Contracts' Performance
Incentives Differed from the
Gold Chart Performance Metrics

For 16 of the 25 major environmental restoration projects that we reviewed, the contracts' performance incentives differed substantially from the Gold Chart performance metrics that Environmental Management uses to assess its performance and report its progress to the Congress.⁸ Environmental Management developed the Gold Chart performance metrics in October 2002 as a basis for clearly and objectively showing the progress being made in the environmental cleanup program. We found, however, that these Gold Chart metrics were not being used to measure contractors' performance or award fees. Instead, DOE measures performance and awards fees on the basis of information from the contractors' project management systems, which DOE has not yet certified as capable of producing reliable information.

For 4 projects at the Fernald Closure Site in Ohio, a lower performance fee might have been appropriate if the Gold Chart metric had been used. For fiscal year 2003, DOE awarded the contractor about \$7.7 million of the \$8 million in available fee, or 97 percent, on the basis of acceptable cost and schedule performance toward closure of the entire site during fiscal year 2003. However, according to the fiscal year 2003 Gold Chart metrics, the goal for the Fernald Closure Project was to accomplish four radioactive facility completions and dispose of 2,568 cubic meters of radioactive waste.⁹ According to Environmental Management information, the contractor did not fully complete one of these tasks. Because the contractor accomplished only three of the four radioactive facility completions, Environmental Management might have given a different fee amount if the two Gold Chart metrics had been used to determine award fee.

⁸The other 9 Environmental Management projects did not have associated Gold Chart metrics.

⁹Environmental Management defines a radioactive facility completion as a decommissioning, deactivation, dismantlement, demolition, or transfer of responsibility for the facility to another program or owner.

Conversely, a different fee amount might have been warranted for the Solid Waste Stabilization and Disposition project at Hanford, Washington. For fiscal year 2003, DOE awarded the contractor about \$2.2 million of about \$3 million in available fee, or 73 percent, on the basis of the contractor's disposal of radioactive waste in accordance with an approved schedule that DOE determined the contractor had met. In contrast, Environmental Management data for fiscal year 2003, using Gold Chart metrics, show that the contractor actually disposed of 3,634 cubic meters of waste as compared with a goal of disposing 2,320 cubic meters of waste, or about 157 percent of the work intended. If the Gold Chart metrics had been used to determine the award fee, the contractor might have received a different fee amount.

For the Spent Nuclear Fuels project, at Hanford, Washington, the Gold Chart metric and the contract's performance incentive were so dissimilar that it was difficult to determine how to gauge the contractor's performance. For fiscal year 2003, DOE awarded the contractor about \$2.8 million of about \$3.3 million in available fee, or 85 percent, on the basis of the contractor's removing 777 metric tons, or 87 percent, of the 890 metric tons that had been planned. However, Environmental Management data for fiscal year 2003, using the Gold Chart metrics, show the contractor removed 805 units, or 94 percent, of the goal's 855 units. Because the Gold Chart metric and the contract's performance incentive were so dissimilar, we could not reconcile the information.

Environmental Management officials told us that the performance incentives contained in environmental cleanup contracts and the Gold Chart metrics should be aligned. In commenting on the draft report, Environmental Management officials stated that the new Savannah River cleanup contract incorporates Gold Chart metrics. They added, however, that the contract renewals for the Oak Ridge, Fernald, and Rocky Flats facilities do not contain the Gold Chart metrics because each is a cost-plus-incentive-fee contract that awards fee based on the final closure costs and date for the site. It is unclear whether these cost-plus-incentive-fee contracts will more effectively track contractors' performance because they rely on contractors' project management systems that DOE has yet to certify. In contrast, the Gold Chart metrics assess the accomplishment of discrete amounts of work that is verifiable.

Incentive Fees Paid to Contractors Were Not Directly Tied to Performance for Some Major Projects

In 1996, we reported that a key factor inhibiting the successful completion of DOE's major projects was the lack of effective incentives.¹⁰ To the extent that incentives are properly applied, they can help achieve agency goals. On the other hand, if incentives are nonexistent or not effectively applied, a project may not be successfully completed.

Sixteen of the 33 major projects we reviewed had no incentive fees directly associated with the successful completion of work. Nine of these 16 projects involve closure work at the Fernald and Rocky Flats sites, where the payment of incentive fees is based on an overall average of the cost and schedule status for all site closure activities, including major projects and other site activities. Environmental Management officials told us that rather than awarding incentive fees specifically for completing any of the 9 major projects, or for other key interim milestones, the Fernald and Rocky Flats contracts award provisional incentive fees for meeting or exceeding overall targets for a fiscal year, provided the contractors successfully achieve site closure on schedule.

However, it remains to be seen whether this approach will be effective in completing major projects on time and within cost. For example, although a major project at the Fernald site that we reviewed was experiencing cost growth to the point where it was expected to exceed its cost baseline—the total cost estimate to accomplish the project—DOE considered the overall average of the cost and schedule status for all site activities at Fernald to be acceptable and paid the contractor provisional incentive fees for fiscal year 2003. Similarly, a major project at the Rocky Flats site had overrun its estimated cost by about \$42 million through fiscal year 2003. However, this overrun was offset by an underrun of about \$46 million in activities such as general counsel work and planning and integration that, according to DOE information, had historically been understaffed. The net effect was that DOE paid the contractor provisional incentive fees because the contractor's overall cost and schedule status for fiscal year 2003 was considered to be acceptable.

DOE Program Offices Have Treated Indirect Work-Related Activities Differently in Awarding Incentive Fees

In addition to these other contracting problems, we found that DOE program offices treated indirect work-related activities differently in awarding incentive fees. In late 2002, Environmental Management decided that award fee determinations will consider only contractor activities

¹⁰GAO, *Department of Energy: Opportunity to Improve Management of Major System Acquisitions*, GAO/RCED-97-17 (Washington, D.C.: Nov. 26, 1996).

directly related to cleanup work, while excluding such indirect work-related activities as providing timely and accurate reports to DOE, providing support services to the government, and complying with the contract because these activities are basic expectations of any contractor. Environmental Management made this determination after its review of contractors' authorized fee incentives identified numerous examples of incentive fee payments for indirect work-related activities. The review also found that Environmental Management was paying some contractors additional fees for performing work safely that the review concluded was a basic expectation, and not exceptional performance worthy of additional fee.

NNSA has not conducted a review similar to Environmental Management's assessing what, if any, indirect work-related activities are worthy of incentive payments. The contractor for one NNSA major project received incentive fee payments for providing timely and accurate reports to DOE and other indirect work-related activities during fiscal year 2003. Discrepancies in the treatment of various indirect work-related activities have occurred because DOE's guidance does not address the appropriateness of including a contractor's performance of indirect work-related activities in determining incentive fee awards.

In commenting on the draft report, Environmental Management expressed concern that it would be virtually impossible to develop meaningful guidance that could be applied universally to DOE's diverse programs. We disagree. We believe that all DOE programs should use incentive fees to reward contractors for achieving work-related activities, as opposed to such indirect activities as providing the DOE programs with timely reports.

DOE Has Relied on Unvalidated Contractor Data to Monitor and Assess Contractors' Performance for Major Projects

Because most of DOE's operations are carried out through contracts, contract administration is a significant part of DOE's work. DOE has relied on unvalidated contractor data to monitor contractors' progress in executing major projects and awarding fees for performance.¹¹ This reliance on unvalidated data limits the department's ability to ensure it gets what it is paying for. Specifically, DOE's self-assessments of its contract administration in 1997 and 2002 both found that field personnel overly relied on contractor accounting systems and contractor-collected project data without significant validation of these data. However, unlike the 1997 self-assessment, the one in 2002 made no recommendation to fix this problem, and no subsequent self-assessment has been initiated to determine if the problem has continued. DOE has begun to certify the reliability of contractors' project management systems that generate the performance data used to monitor contractors' progress; however, the department has no time table for the completion of this certification program. In addition, DOE has not required its contracting officers and contracting officer representatives to receive training in earned value management—a systematic approach for integrating and measuring cost, schedule, and technical (scope) accomplishments on a project or task—even though these officials are required to determine whether contractors' project management systems meet the private industry's earned value management standard.

DOE Has Not Used Self-assessments to Correct an Overreliance on Contractor Data

Self-assessment is an important tool for evaluating organizational effectiveness. By taking a comprehensive look at itself, an organization can identify weaknesses and plot a course of corrective action. DOE performed comprehensive self-assessments of its contract administration practices in 1997, 1999, and 2002.

In 1997, DOE assessed 20 contracts to ensure that financial incentives contained in those contracts were rational, linked to well-defined performance objectives and measures, and properly administered. The self-assessment reported both positive and negative findings. For example, it found that the use of performance-based objectives generally had been effective in directing contractors' management attention to desired

¹¹In addition, DOE's project directors and support field staff assess contractor performance by walking the site, evaluating work performed, and periodically meeting with the contractor.

performance outcomes. However, it also found that field personnel overly relied on contractor accounting systems and contractor-collected data without significant validation of these data, and that DOE's approval of fees earned by the contractors relied upon contractor-generated documents. To correct this deficiency, the self-assessment recommended (1) that the cognizant DOE heads of contracting at each field location, as part of their overall contract administration plan, identify the mechanisms, responsibilities, and authorities for ensuring that contractor performance against established objectives is appropriately monitored and (2) that performance achievements are verified.

In 1999, DOE's follow-up assessment of the effectiveness of the actions taken in response to the 1997 self-assessment found that the recommendation that contractor performance be monitored and achievements verified had been implemented. Specifically, field offices reported that their plans for administering contracts had been appropriately modified and instituted. In addition, the follow-up assessment stated that (1) early results indicated a substantial improvement in the way incentives were being managed from DOE headquarters and administered at DOE field contracting offices and (2) anecdotal evidence suggested that contractor performance had improved.

In 2002, the Contract Administration Division again performed a self-assessment that examined, in part, how contract administration planning and execution was conducted at various DOE field locations. The findings and conclusions of this review were somewhat inconsistent with those of the 1999 follow-up assessment. The 2002 review, like the 1997 assessment, determined that few sites had the resources capable of validating contractor cost or technical information and most sites must rely almost exclusively on the contractor's data. The review noted, in one instance, that financial data provided by the contractor were generally accepted by DOE, not on the basis of reasonableness and allowability, but on the basis of the contractor's "acceptable" self-assessment of the procedures used to collect those data. However, unlike the 1997 assessment, the 2002 review contained no specific recommendation to correct this overreliance on contractor data.

According to the Director of DOE's Contract Administration Division, because of funding constraints and other factors, no broad self-assessment of contractor administration has been done since 2002. The director added that DOE now conducts individual site assessments as necessary rather than conducting more comprehensive assessments. According to

information provided to us in April 2004, the last individual site assessment was made in August 2003 and documented in December 2003. This site assessment identified problems similar to those reported in the 2002 self-assessment. Specifically, the site assessment noted that, with respect to one contract reviewed, there was no evidence of effective cost controls and/or contract management. The site assessment contained no formal recommendation to fix this problem. On the other hand, the site assessment contained a recommendation to address the high rate of expenditure on this contract over the remaining 2-year-option period. The assessment recommended that the DOE site office review the scope and cost of its current task orders for prioritization and inclusion in the remaining option term.

In August 2003, DOE began to certify the reliability of contractors' project management systems that generate the performance data used to monitor contractors' progress. However, as of December 2004, the department has assessed and certified project management systems for only 2 of the 33 major projects we reviewed and does not have a time table for completing this certification program.

In commenting on the draft report, DOE noted that both Environmental Management and the Office of Engineering and Construction Management have been validating contractors' cost and schedule performance baselines for several years. In our view, DOE validation of contractor baselines will not fully address the problems that have been identified. Validating baselines is just the first step in performing adequate contractor oversight. After baselines have been validated, DOE must not overly rely on contractor accounting systems in reporting costs and on contractor-collected project data in awarding fees. That is the message from two DOE self-assessments of performance-based contracting. With respect to DOE's experience in baseline validation, the Civil Engineering Research Foundation's July 2004 report for the Office of Engineering and Construction Management found that some improvements in baseline validation were needed. This report noted that many of the DOE projects it reviewed were formulated with inadequate baseline estimates. In addition, the report stated that periodic baseline changes were occurring that masked the true status of certain projects. The report recommended that DOE develop guidelines that appropriately control the rebaselining of projects.

DOE further stated that the promulgation of contract management planning guidance and the requirement for a contract management plan

addressed many of the issues that the 2002 self-assessment identified. However, in our view, until a subsequent assessment is done, it remains unclear whether this DOE action has adequately resolved the issues identified in the 2002 self-assessment. For fiscal year 2005, DOE is planning to examine the contract management plans and contractors' purchasing systems.

DOE Has Not Required Its Contracting Officers and Contracting Officer Representatives to Receive Earned Value Management Training

During the early 1990s, OMB issued several reports on civilian agencies' contract administration practices that found that agencies frequently experienced cost overruns and delays in receiving goods and services because their contracting officials allocated more time to awarding contracts than to administering existing ones. In response, OMB revised its Circular A-11 to require that federal agencies assess and certify contractors' project management systems for proper use of earned value management principles. OMB also identified several other deficiencies, including a lack of proper training for agency officials performing contract oversight. According to administrators at the National Aeronautics and Space Administration, earned value management training is essential for their contracting officers to adequately assess whether a contractor's project management system complies with the private industry's standard.

We found that, with the exception of NNSA, DOE has not required its contracting officers or contracting officer representatives to receive earned value management training, even though they are responsible for determining whether the contractor's project management system complies with the private industry's earned value management standard after the contract is awarded. The following three DOE documents contain the contracting officer's responsibilities, the standards against which those responsibilities are to be discharged, and the training requirements for contracting officers:

- Chapter 1 of DOE's *Reference Book for Contract Administrators*, issued in 2000 and in effect through October 2004, outlines the contracting officers' many responsibilities, including a review of the adequacy of the contractor's project management system.¹² The reference book states

¹²In November 2004, DOE revised this chapter in the Reference Book for Contract Administrators. Although the revised chapter does not mention this specific responsibility, in at least 2 contracts we reviewed, we found that the contracting officer had this responsibility.

that the system's adequacy must be confirmed by the contracting officer with the support of other DOE headquarters and field office personnel, as appropriate. The reference book also indicates that corrective action plans resulting from DOE reviews of contractor project management systems are to be tracked until the DOE contracting officer confirms that all open issues are closed.

- DOE Order 413.3, "Program and Project Management for the Acquisition of Capital Assets," also issued in 2000, specifies that contractors' project management systems must comply with the American National Standards Institute's standard on earned value management. The order states that this requirement applies only to systems involved in controlling the performance of projects costing more than \$20 million in total. The order also requires that contractors' systems provide cost and schedule performance, milestone status, and financial status to DOE on a monthly basis.
- DOE Order 361.1A, "Acquisition Career Development Program," issued in April 2004, outlines the training and certification requirements for DOE contracting officers and contracting officer representatives. The order identifies a training curriculum for these officers by functional area—including, among others, procurement contracts; interagency agreements and sales contracts; grants and cooperative agreements; loans and loan guarantees; and the government purchase card. The order, however, does not require either the contracting officer or the contracting officer representative to receive earned value management training.

The Director of the Contract Administration Division corroborated our assessment of DOE's order for acquisition career development. The director noted that the only reference to earned value management training in DOE Order 361.1A requires that DOE project directors, not contracting officers, complete a course on earned value management systems. Without this training, however, it is unclear how DOE contracting officers and contracting officer representatives can fulfill their responsibilities and properly assess the adequacy of the project management systems of departmental contractors. In providing us with exit conference comments, DOE Office of Contract Management officials acknowledged that contracting officers do have a responsibility in the area of earned value management and will be receiving training on that subject in the future. Subsequently, in December 2004, DOE provided contracting professionals at DOE headquarters with a 1-hour course on earned value management.

DOE said that this training session, which was video recorded, is being required nationwide for all DOE contracting officials. As opposed to this 1-hour course, we noted that NNSA requires its contracting officials to participate in a 48-hour course on the fundamentals of earned value management.¹³

The Reliability of PARS Data Is Limited

The reliability of the project cost and schedule data that PARS provides to senior DOE managers is limited by problems with the data's accuracy, completeness, and timeliness. In general, the accuracy of PARS report data is uncertain because DOE (1) has assessed the reliability of contractors' project management systems for only 2 of the 33 major projects we reviewed, (2) generally measures projects' cost and schedule performance in PARS against the current DOE-approved cost and schedule baselines without also tracking performance against the original targets, and (3) has not provided most of its major project directors with the training needed to ensure contractors are generating accurate performance data. PARS report data are not complete because DOE program offices have not submitted performance data to PARS for 3 major projects, as well as at least 2 smaller projects, and PARS reports do not provide each project's estimated cost at completion or other helpful, forward-looking data. In addition, the Office of Engineering and Construction Management stated that the June 2004 PARS report's performance data for 6 major projects and 5 smaller projects were significantly out of date, primarily because contractors did not provide updated project performance information. Senior managers have used PARS data to take actions that averted cost increases for certain projects that were experiencing cost or schedule challenges. Without reliable data, however, PARS has not provided senior managers with information about cost increases and schedule slippages for many projects, and the status of many other projects is uncertain.

The Accuracy of Most PARS Data Is Uncertain

Three factors impair the accuracy of cost and schedule data reported in PARS. First, DOE officials told us they have little assurance that the cost and schedule data for most projects in PARS are accurate because DOE has not assessed the reliability of contractors' project management systems

¹³In addition, during fiscal year 2004, the Office of Environmental Management offered five 5-day classes on earned value management to DOE project directors and other individuals involved in project management.

that generate such data for data reliability, particularly those systems believed to be using incorrect methods. Second, for almost all projects, PARS reports compare cost and schedule performance against DOE's current baselines, without identifying the extent of cost or schedule slippages that previously occurred. Third, most DOE project directors lack the necessary training to evaluate and verify the accuracy of the performance data that contractors generate, according to DOE officials.

DOE Has Assessed Few Contractors' Systems That Generate Project Data

OMB Circular A-11 and DOE Order 413.3 require that DOE assess and certify contractors' project management systems for proper use of earned value management principles in generating cost and schedule performance data before the department approves a project's cost and schedule baseline at its Critical Decision 2 milestone. Earned value management, when used correctly, produces data that reflect a contractor's progress toward completing a project within cost and schedule targets. In essence, earned value management measures the value of work completed against the cost and schedule of work planned, as opposed to comparing actual with planned expenditures. To illustrate, assume a contract calls for 4 miles of railroad track to be laid in 4 weeks at a cost of \$4 million. After 3 weeks of work, assume \$2 million has been spent. By analyzing planned versus actual expenditures, it appears the project is underrunning the estimated costs. However, an earned value analysis reveals that the project is in trouble because even though only \$2 million has been spent, only 1 mile of track has been laid; thus, the contract is only 25 percent complete. On the basis of the value of work done, the project will cost \$8 million (\$2 million to complete each mile of track), and the 4 miles of track will take a total of 12 weeks (3 weeks for each mile of track) to complete instead of the originally estimated 4 weeks.

To ensure correct application of earned value management principles, contractors must develop budgets and schedules based on measurable components of a project, which include defined start points, end points, and scopes of work. In addition, contractors must calculate the value of work performed against the budgets and schedules for the measurable project components. Experts in earned value management told us that without defined start and end points and other measurable project components, project performance data give little insight as to whether cost and schedule performance are on track, and the data might mask more serious problems.

DOE's Office of Engineering and Construction Management and the Defense Contract Management Agency assess whether a given contractor's project management system properly uses earned value management principles by examining whether the contractor's system complies with the industry standards and verifying that the contractor is using the system to manage the project.¹⁴ Once a contractor has fully addressed the concerns identified by the assessment, DOE is to certify the project management system, attesting that project performance data—data that convey progress toward the approved cost and schedule targets—are generated reliably. Assessment and certification of contractors' earned value management systems are critical components of DOE's management of its performance-based contracting, according to DOE earned value management training documents. While only three systems have been assessed since August 2003, Office of Engineering and Construction Management officials told us that they and the Defense Contract Management Agency, working together, could assess the project management systems for about 10 contractors in a given year now that they are becoming more familiar with the process.

In August 2003, the Office of Engineering and Construction Management and the Defense Contract Management Agency began the process of assessing contractors' project management systems as a basis for certifying that they properly use earned value management principles. In September 2004, DOE certified Sandia National Laboratories' project management system for 1 major project, the Microsystems and Engineering Sciences Applications project, and 6 smaller projects. DOE also plans to certify Oak Ridge National Laboratory's project management system for another major project, the Spallation Neutron Source, once minor deficiencies are corrected.¹⁵ Overall, however, DOE has assessed project management systems for only 2 of the 33 major projects we reviewed—and 8 of the 73 projects in PARS—that have passed Critical Decision 2 with DOE-approved

¹⁴The American National Standards Institute/Electronic Industries Association-748-1998 established 32 criteria for use of earned value management. Earned value management is widely employed by the private sector as a means of ensuring reliable project performance information. Contractor project management systems, which include earned value management systems, may have been validated by other external validation entities, but DOE's certification review in collaboration with the Defense Contract Management Agency verifies not only that project management systems have earned value management systems in place but that they are used in a correct fashion.

¹⁵The Defense Contract Management Agency also has assessed the Washington Group International's project management system for the Elimination of Weapons Grade Plutonium project in Russia, which has not passed the Critical Decision 2 milestone.

cost and schedule baselines. (The remaining 65 projects in PARS whose systems have not been assessed have baseline costs of nearly \$75 billion.) According to an Office of Engineering and Construction Management official, the first three contractors' systems were selected for assessment on the basis of visibility, significance, and criticality to the Department's success, but also because cognizant DOE officials were confident that the contractors' project management systems would meet certification criteria.

The National Research Council's 2004 report on DOE's project management found that the quality of earned value management across the department's projects was inconsistent and stated that senior DOE managers do not know whether the reported data on cost and schedule performance are accurate unless contractors' systems are assessed and certified. Because DOE has only recently begun to assess contractors' project management systems that feed data into PARS, DOE officials acknowledged to us that they lack assurance regarding the accuracy of PARS performance data, adding that they believe some of the project management systems not yet assessed have important deficiencies. For example, a DOE expert in earned value management noted that contractors for most Environmental Management projects—about half of the projects in PARS that have passed Critical Decision 2—have not properly implemented earned value management principles because, among other things, many of the projects' components lack defined start and end points. For example, the earned value management expert believes, on the basis of his assessment of work breakdown structures and other project components, that the contractor's project management system for the \$10-billion Yucca Mountain Nuclear Waste Repository project does not properly use earned value management principles and generates performance data that cannot be regarded as accurate. Consequently, senior DOE managers have no assurance that cost and schedule targets will be met, even if the data suggest they will.

Similarly, for several major projects we examined, the contractors' project management systems do not seem to properly implement earned value management principles to measure cost and schedule performance. For example, the \$2-billion East Tennessee Technology Park project at Oak Ridge lacks measurable project components. In some instances, work is categorized into activities such as "general operations" and "contractor operations" that have no apparent defined start and end points. According to the expert in earned value management, the categories of work for this project make it difficult to accurately measure project performance because there is no clear activity or time frame against which to measure costs incurred or time spent. Instead, PARS data for this project seem to

measure only the project's expenditures, which can conceal information on the project's cost and schedule status and progress toward completion. In addition, the \$5.7-billion Tank Waste Treatment and Immobilization Plant at Hanford, Washington, lacks discrete, measurable project components because work is categorized into activities such as "providing technology" and "providing infrastructure" that lack defined start and end points. While we recognize that it is appropriate, according to industry standards, to categorize a small amount of work in this fashion, DOE project management officials said the particular categories of work in these instances reflected a poor comprehension of earned value management and limited their confidence in the assessment of project performance.

Two Office of Engineering and Construction Management officials acknowledged that the accuracy of data for these projects is uncertain because DOE has not assessed whether the contractors' project management systems properly applied earned value management principles. One of these officials suggested that the contractors' project management systems for such projects should be assessed as soon as possible to correct deficiencies and improve the reliability of project performance data provided to senior managers to oversee progress toward cost and schedule targets. The Director of the Office of Engineering and Construction Management agreed that DOE should develop a schedule that would give priority to assessing these and other high-risk and high-cost systems. As of January 2005, a schedule had not been developed, but the director told us that he was in the process of doing so.

PARS Reports Generally Do Not Show Total Cost Overruns and Schedule Slippages

The accuracy of the PARS report data is further impaired because PARS reports generally do not show total cost overruns and schedule slippages, even though DOE requires each project team to estimate life-cycle costs and assess project performance against established cost and schedule baselines. Instead, a project's DOE project director updates the cost and schedule baselines in PARS when DOE approves a contract modification. As a result, PARS reports show relatively small variances between a project's actual performance and its approved baselines, so that many of the projects we reviewed appear not to have experienced problems when, in fact, they did. For almost all projects, PARS reports do not provide data that would enable senior DOE managers to assess (1) a contractor's performance against the project's original DOE-approved baselines to identify total cost overruns and schedule slippages or (2) the effect of any DOE initiatives to control a project's costs. The Civil Engineering Research Foundation's July 2004 report similarly found that PARS cost and schedule data often do not convey the actual status of projects since their inception

because of periodic revisions of cost or schedule baselines. Furthermore, for most Environmental Management projects, PARS measures project performance from arbitrary dates, such as the beginning of the fiscal year, which do not necessarily correspond to progress toward DOE-approved targets. The following examples illustrate how PARS has masked problems with projects by giving an incomplete picture of project costs or project performance:

- The January 2004 PARS report showed that the \$1.6-billion Spent Nuclear Fuels Stabilization and Disposition project at Hanford, Washington, was on track to meet cost and schedule performance targets.¹⁶ However, by April, total costs for the project increased by nearly \$150 million. DOE officials acknowledged that because the January 2004 PARS report to senior DOE managers measured only project performance from the beginning of the fiscal year, instead of against the DOE-approved baselines, the PARS report concealed longer term problems that threatened the project's completion within costs.
- In October 2002, the Tritium Extraction Facility at Savannah River, South Carolina, had an approved total cost of about \$400 million. Costs for the project increased more than \$100 million by September 2003, and subsequent PARS reports showed that costs were on track to meet cost targets, despite the 25 percent increase in the project's costs.
- In June 2004, Environmental Management restructured the PARS reporting for 4 projects at Oak Ridge, Tennessee, by combining their respective costs and schedules with those of other Oak Ridge projects.¹⁷ As a result, Environmental Management stopped reporting project performance data for each project, masking the fact that 2 of them, totaling about \$300 million, were significantly behind schedule. Two Office of Engineering and Construction Management officials believe the projects should be reported separately because combining projects'

¹⁶The January 2004 total cost was about \$1 billion more than DOE's original projected total cost, as noted in our report entitled *Nuclear Waste: DOE's Hanford Spent Nuclear Fuel Storage Project—Cost, Schedule, and Management Issues*, GAO/RCED-99-267 (Washington, D.C.: Sept. 20, 1999).

¹⁷These 4 projects are the East Tennessee Technology Park Three Building Deactivation and Decommissioning, K25/27 Buildings Deactivation and Decommissioning Removal, Molten Salt Reactor Experiment, and Oak Ridge National Laboratory Burial Grounds.

respective cost and schedule data can inhibit the correct use of earned value management.

- The April 2004 PARS report showed that the total cost of the Soil and Water Remediation project at Ashtabula, Ohio, would be \$45 million, although the performance data indicated the project would not likely meet its baselines. However, this amount does not include about \$109 million in expenditures on this project by October 1, 2003. Environmental Management reports this project's total costs to be about \$157 million—more than three times the amount reported in PARS.
- PARS reports that total project costs for the Nuclear Facility Deactivation and Decommissioning project at Columbus, Ohio, will be about \$31.5 million. However, this amount does not include about \$106 million in expenditures prior to 2004. Environmental Management estimates that this project's total cost will exceed \$163 million—more than five times the amount reported in PARS.

The June 2004 PARS report showed that 90 percent of the 63 projects with approved baselines were expected to meet their cost and schedule baselines.¹⁸ However, this percentage may reflect project managers' efforts to keep the projects' baselines up to date rather than improvements in project management performance because PARS generally measures projects' performance against the most current DOE-approved baselines. For example, as shown in table 1, the October 2002 PARS report's assessment of 2 major projects was red because both projects were expected to breach their cost/schedule performance baselines. However, the September 2003 PARS report's assessment of these major projects was green because total project costs were within the revised baseline that DOE had subsequently approved. The September 2003 PARS report did not indicate the extent to which each project's total costs had exceeded the costs that DOE approved at Critical Decision 2 on the basis of an approved conceptual design report and acquisition strategy.

¹⁸These 63 projects did not include 25 Environmental Management projects. Nineteen, or 76 percent, of the 25 Environmental Management projects were expected to meet cost and schedule baselines.

Table 1: PARS Reports Assess a Project’s Cost and Schedule Performance against Only the Current DOE-Approved Baselines

Dollars in millions

Project name	Total cost	Overall assessment	PARS comments
Waste Treatment and Immobilization Plant Project (Hanford)			
October 2002 PARS report	\$4,746.9	Red ^a	Proposed baseline approval is scheduled. Unable to validate baseline; cannot recommend approval.
September 2003 PARS report	5,781.0	Green ^b	No comment.
Tritium Extraction Facility Project (Savannah River)			
October 2002 PARS report	\$401.0	Red ^a	This project has a baseline breach. Baseline Change Proposal is being prepared for Secretarial approval.
September 2003 PARS report	506.4	Green ^b	No comment.

Source: GAO compilation of data for selected projects from fiscal year 2003 PARS reports.

^aRed indicates that a project is expected to breach its cost/schedule performance baseline.

^bGreen indicates that a project is expected to meet its cost/schedule performance baseline.

In addition to these projects, the 90 percent figure includes many Environmental Management projects, whose performance is measured over time frames that do not necessarily reflect performance against DOE-approved baselines. Further, the 90 percent figure does not reflect the 4 Oak Ridge projects whose performance data showed imminent performance problems before being combined with the performance data of other projects at the site.

DOE officials told us that the monthly PARS reports are the primary tool for communicating project performance information to senior management. However, for many projects—particularly those overseen by Environmental Management—PARS does not report projects’ life-cycle costs or performance against original baselines, even though DOE requires each project team to estimate life-cycle costs and assess project performance against established cost baselines and schedule milestones. Office of Engineering and Construction Management officials acknowledged that reporting life-cycle costs and project performance against original cost and schedule baselines in PARS would make cost or schedule challenges easier to identify, and Environmental Management officials told us they plan to report life-cycle costs and project performance against original baselines in PARS reports beginning by December 2004.

In addition to Environmental Management's plans for PARS reporting, the Office of Engineering and Construction Management intends to make several upgrades to the PARS database, such as making the process for entering monthly data more efficient and easier for users to understand and ensuring that the correct data are being entered. Office of Engineering and Construction Management officials reported that they are in the process of implementing these improvements. However, these upgrades do not address the limitations to reporting accurate data that we identified. Furthermore, these improvements do not address limitations in the reliability of data stemming from contractor's project management systems that have not been assessed or data that have not been reviewed.

Most DOE Project Directors Lack Certification in Earned Value Management

Project directors are DOE's focal point for assessing the contractors' cost and schedule performance data that feed into PARS. However, most of DOE's project directors have not been certified in earned value management, further reducing assurances that PARS data are accurate. Because DOE believes that it is critical for project directors to understand earned value management, the department informally designates its project directors as "acting directors" if they have not completed the project manager career development program, which includes training in earned value management. Office of Engineering and Construction Management officials told us that while some acting project directors are proficient in earned value management and capable of evaluating the reliability of contractor-generated data, other acting project directors are not.

DOE recently implemented the project management career development program through which project directors are being trained in, among other things, earned value management. However, DOE had trained only about 25 percent of them through this program as of July 2004, with plans to train the remaining 75 percent by May 2006. A DOE official told us that the appropriate level of earned value management training for acting project directors depends on their experience in using earned value management. While DOE aims to assess project directors' capabilities in earned value management to ensure that they are competent, validating the adequacy of prior earned value management experience for acting project directors has been time consuming. The lack of trained projects directors reviewing the accuracy of a project's performance data may, in some cases, adversely affect the ability of senior DOE managers to properly assess the status of major projects.

PARS Lacks Complete Information

In addition to reporting data of questionable accuracy, PARS provides incomplete data, therefore senior DOE managers may not be aware of the need to implement corrective actions to prevent cost overruns or schedule slippages. We identified the following 5 projects—3 major projects to refurbish nuclear weapons and 2 projects costing more than \$100 million each—that are not in the PARS database, despite DOE's requirement that projects costing more than \$5 million provide monthly reporting:¹⁹

- *W80 Life Extension Program.* NNSA recently increased the total cost of this program, designed to extend the service life of the W80 nuclear warhead by replacing components, from \$1.3 billion to about \$2.45 billion.
- *W76 Trident Missile Life Extension Program.* NNSA expects this project, designed to extend the service life of the W76 nuclear warhead by replacing components, to cost about \$680 million over the next 4 years.
- *B61 Alteration 357 Life Extension Program.* NNSA expects this project, designed to extend the service life of the B61 bomb, to cost nearly \$500 million. Our July 2003 report recommended that DOE improve its oversight of the life extension program's cost and schedule status.
- *Purple and BlueGene/L Supercomputers under the Advanced Simulation and Computing Program.* NNSA expects this project, to cost about \$290 million and be completed in 2005.
- *Enterprise Project.* NNSA increased the total cost of this project, which will replace the accounting and management systems at Los Alamos National Laboratory, from about \$70 million when it was initiated in 2001 to nearly \$160 million.

¹⁹Our report entitled *Nuclear Weapons: Opportunities Exist to Improve the Budgeting, Cost Accounting, and Management Associated with the Stockpile Life Extension Program*, [GAO-03-583](#) (Washington, D.C.: July 28, 2003) recommended that DOE manage its weapons refurbishment programs as projects. Although DOE agreed with this recommendation, NNSA has not implemented it. DOE defines a project as a specific undertaking, with defined beginning and end points, that supports a program mission.

The National Research Council's 2004 report found that DOE has not acted in a timely fashion to include all projects costing more than \$5 million in PARS. Office of Engineering and Construction Management officials told us DOE is still in the process of applying project management principles to many of the department's operational activities. While DOE's program offices are responsible for converting these activities to projects, many of the program office personnel responsible for applying project management principles do not have the necessary training, according to an Office of Engineering and Construction Management official. While project management training is available, DOE has required only project directors and other senior-level employees to take this training. An Office of Engineering and Construction Management official told us this training would help expedite the application of project management principles to DOE's operational activities.

In addition, for many projects included in the PARS database, PARS reports do not provide important performance information that senior DOE managers need to assess the projects' status. In some cases, project performance data are not reported because the project is incorrectly listed as being in the design phase when, in fact, it has passed Critical Decision 2. For example, contractors have spent almost half of the approved funds for 2 projects at the Idaho National Engineering and Environmental Laboratory projected to cost \$4.3 billion without reporting performance data in PARS.²⁰ The PARS reports show that these projects are still in the design phase and, therefore, are not subject to reporting performance data, but a DOE official acknowledged that both projects have, in fact, passed Critical Decision 3 and other subsequent milestones. As a result, senior DOE managers cannot rely on PARS for accurate and current performance information for these projects, nor can they rely on PARS to determine whether these projects require corrective actions.

For these and other projects, PARS also lacks forward-looking data, such as scheduled work to be performed, the projects' upcoming milestones, and the projects' estimated cost at completion. Without such data, PARS cannot provide information on projects' cost or schedule challenges and DOE management does not have a basis for projecting progress or identifying trends. While not in PARS, this information is available from acting project directors. For example, although early cost savings for the

²⁰These are the Solid Waste Stabilization and Disposition and the Radioactive Liquid Tank Waste Stabilization and Disposition projects.

Microsystems and Engineering Sciences Applications project at Sandia National Laboratories led to favorable performance data, DOE's project director identified supply imbalances in the steel market that would increase the estimated construction costs. Using this information, the project director revised the project's estimated total cost. Currently, PARS reports to senior DOE managers lack such forward-looking data that could alert them to future cost or schedule challenges. The National Research Council's 2004 report stated that PARS reports should display forward-looking data to notify senior managers of upcoming milestones. In addition, several acting project directors told us that forward-looking data, such as data on estimated costs at completion, should be included in PARS to identify project performance challenges for senior DOE managers.

To further illustrate this need, the total costs of some DOE projects are projected to increase dramatically in the future, despite PARS reports showing that they are expected to be completed on time and within budget. For example, PARS report data show that the Hanford's Tank Waste Treatment and Immobilization Plant is projected to meet the DOE-approved baseline of \$5.78 billion. However, PARS does not show that DOE approved a \$1.4-billion increase above the project's original contract estimate of \$4.35 billion in April 2003, nor does it show that the U.S. Army Corps of Engineers, in a May 2004 report, stated that project costs would probably exceed the \$5.78-billion cost baseline by \$720 million.²¹

Even though the DOE project management teams knew of cost and schedule performance problems for the Tank Waste Treatment and Immobilization Plant project, PARS reports have shown that this project was on track for meeting cost and schedule targets. An Office of Engineering and Construction Management official told us that PARS monthly reports do not include forward-looking data and trend data to minimize the amount of time necessary for senior managers' review. As a result, PARS did not provide senior DOE managers for this and other projects with important information to analyze potential future challenges. Forward-looking performance information, such as scheduled work to be performed and estimated cost at completion, would better enable senior

²¹U.S. Army Corps of Engineers, *Independent Cost & Schedule Baseline Review Summary Report, Hanford Waste Treatment and Immobilization Plant* (Walla Walla, Washington: May 28, 2004). Also GAO, *Nuclear Waste: Absence of Key Management Reforms on Hanford's Cleanup Project Adds to Challenges of Achieving Cost and Schedule Goals*, [GAO-04-611](#) (Washington, D.C.: June 9, 2004).

managers to address project management challenges and minimize cost overruns or schedule slippages.

PARS Lacks Timely Information

Further compounding reliability concerns, we identified problems with the timeliness of PARS data that may limit the ability of senior DOE managers to effectively identify and apply corrective actions. Specifically, we found that cost and schedule performance data were significantly out of date at some time during our review for 8 of the 33 major projects we reviewed and 20 smaller projects in PARS that had passed Critical Decision 2. In these instances, data were out of date because DOE has not effectively enforced requirements that contractors produce updated monthly cost and schedule performance data, and that project directors ensure current performance data are reported into PARS. For some projects, the lack of up-to-date data masked problems that resulted in cost overruns and schedule slippages. For instance:

- The September 2003 PARS report showed that the Spent Nuclear Fuels project at Hanford, Washington, was on track to meet its DOE-approved total project cost of about \$1.6 billion and its schedule completion date of 2007; however, these data were 3 months out of date. Subsequently, the April 2004 PARS report (1) showed that total project costs had exceeded the project's cost baseline by nearly \$150 million and (2) indicated that the project would exceed this revised total cost and the scheduled completion date would slip. In June 2004, the contractor requested additional funding from DOE because both cost and schedule performance continued to worsen.
- The September 2003 PARS report showed that the K25/27 Buildings Deactivation and Decommissioning Removal project at Oak Ridge, Tennessee, was on track to meet its DOE-approved total project cost of about \$265 million and its schedule completion date of 2008. However, the contractor did not update the project's performance data until April 2004, when the PARS report showed the project would still meet its cost baseline. Environmental Management officials told us that although they knew for several months that the K25/27 project's total cost would exceed its baseline, the PARS cost data were not updated because the project was being combined with 5 other Oak Ridge projects. The total cost of the K25/27 project could exceed \$400 million—more than 50 percent above the DOE-approved total project cost.

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- In June 2004, the Soil and Water Remediation project at Pantex, Texas, had a DOE-approved total project cost of about \$175 million, but the Office of Engineering and Construction Management could not assess the project's performance because data were not provided. Subsequently, the September 2004 PARS report showed that the project was at risk of exceeding its DOE-approved schedule target.

In addition to these timeliness problems, the monthly data in PARS reports typically lag a project's actual performance by 2 to 3 months because of the time contractors need to generate the data and the time DOE project managers need to review and incorporate the summary data into the PARS database. The 2004 National Research Council report stated that the lack of timely data prevents senior managers from using PARS to assess the performance of projects in real time. Similarly, Department of Defense officials familiar with project management have said that using such data to assess project performance is like "overseeing by looking through a rear view mirror" because performance problems have usually gotten worse by the time departmental managers become aware of them.

We found that the Department of Defense requires all of its newer contracts to use electronic data interchange to provide more timely information to department program managers.²² In addition, some acting project directors told us that electronically linking PARS to contractors' project management systems would improve timeliness because manually entering cost and schedule data into the PARS database had often resulted in delays of 2 to 3 months to complete the process. In some instances, data were entered incorrectly, although in each instance the data were corrected before being reported to senior managers. While the DOE project directors we contacted uniformly agree that manually entered data are correctly entered by the time PARS monthly reports are delivered to senior managers, electronically linking PARS to contractor systems could eliminate the potential for such errors and enhance senior managers' ability to address potential cost or schedule challenges in real time. Alternatively, DOE might include a provision requiring timely monthly reporting in all applicable contracts.

When data can be relied upon, DOE senior managers have taken corrective actions to address cost or schedule challenges while minimizing costs to

²²GAO, *Major Acquisitions: Significant Changes Underway in DOD's Earned Value Management Process*, [GAO/NSIAD-97-108](#) (Washington, D.C.: May 5, 1997).

the government. For example, NNSA terminated the Sandia Underground Reactor Facility project, which was intended to reduce the future operational costs associated with securing a reactor, when management learned that cost estimates had increased by more than 150 percent between project conception and the final design phase. The project was terminated before costs were incurred. In another instance, Environmental Management approved a contractor's recovery plan to complete the Melton Valley Closure project at Oak Ridge, Tennessee, whose schedule performance had slipped dramatically and required corrective actions. The contractor lengthened work hours and modified its approach for constructing a subproject. As a result, the recovery plan showed that the scope of work could be accomplished without increasing project schedule.

Conclusions

Since 1990, we have designated DOE's contract management, which we have broadly defined to include contract administration and project management, as a high-risk area for fraud, waste, abuse, and mismanagement. Although DOE has implemented important contract administration and project management reforms, problems persist and many major projects continue to experience millions of dollars in cost overruns and years of delays. Two deficiencies—the lack of contracting criteria for major projects and the lack of reviews of the project management terms in major project contracts—have resulted in questionable DOE contracting decisions that limit its ability to effectively control cost and schedule performance. For example, many of DOE's contracts for major projects have used performance incentives that have used a technical, schedule, or performance incentive without an associated cost incentive or cost constraint, thereby giving contractors an incentive to pay limited attention to costs when working toward meeting technical or performance levels in order to earn a higher award fee.

Furthermore, for major projects, DOE has given insufficient emphasis to the oversight of contract administration, which begins after contracts are awarded and helps ensure that the department gets what it pays for. DOE needs to give increased emphasis to reviewing how it administers contracts; correcting previously identified weaknesses, such as overreliance on contractor data; and providing training to its contracting officers. Without such actions, the department is totally dependent on its contractors' self-reports on their performance.

Because of problems with the accuracy, completeness, and timeliness of the PARS data, senior DOE managers lack key project performance

information for assessing the progress of many major projects and making decisions about corrective actions. In particular, because DOE has assessed the reliability of only three contractors' project management systems that feed data into PARS, senior managers cannot be certain that the contractor systems are producing reliable data. Such data are critical to good project management and affect DOE's assessment of contractor performance. Absent reliable data from the contractor systems, DOE lacks assurance that the fees it awards for a contractor's project management actions are well deserved.

Recommendations for Executive Action

To ensure the use of effective performance incentives for major projects, we recommend that the Secretary of Energy direct the Associate Deputy Secretary with responsibility for contract and project management to take the following two actions:

- develop a major projects chapter in the DOE Acquisition Guide that specifies a systematic contracting approach, including, for example, criteria for (1) ensuring that incentive fee awards are based on reliable performance data, (2) using appropriate cost and schedule incentives, (3) better linking fee awards to performance for major projects that are part of larger site cleanups, and (4) determining which indirect work-related activities should and should not be considered in awarding contractors' fees, and
- clarify roles and responsibilities for reviewing contracts prior to award to ensure project management consistency.

To strengthen departmental oversight of contract administration for major projects, we recommend that the Secretary of Energy direct the Associate Deputy Secretary with responsibility for contract and project management to take the following three actions:

- conduct comprehensive self-assessments of contract administration at least every 3 years,
- identify corrective actions to reduce the overreliance on unvalidated contractor data in awarding contract fees that was identified in previous self-assessments, and
- train contracting officials in earned value management.

To improve the reliability and usefulness of project performance data in PARS, we recommend that the Secretary of Energy direct the appropriate managers to take the following seven actions:

- develop a schedule for assessing the reliability of the contractors' project management systems, giving priority to major projects and those projects with systems believed to be using incorrect methods to generate PARS data;
- revise DOE manual 413.3-1 to provide guidance that enhances the accurate reporting of total cost and project performance data into PARS, such as the reporting of life-of-project cost and schedule variances;
- expedite training for major project directors in earned value management concepts;
- ensure that program office officials receive currently available project management training so that they can better identify the elements of a project, and apply the project management concepts necessary for them to report performance data in PARS;
- incorporate forward-looking trend data into PARS reports so that senior managers can better identify negative trends and potentially take corrective action;
- explore options for ensuring that contractors provide cost and schedule performance data to PARS on a monthly basis, such as making monthly submissions a requirement in all applicable contracts; and
- explore options for providing senior DOE managers with more timely project performance data by, for example, electronically linking contractors' project management systems to PARS.

Agency Comments and Our Evaluation

We provided DOE with a draft of this report for its review and comment. In written comments, DOE generally concurred with our recommendations but provided clarifying comments on four of the recommendations. (See app. III.) First, concerning our recommendation that DOE develop a major projects chapter in its Acquisition Guide, DOE stated that the department has already developed an extensive body of material that constitutes a “systematic contracting approach” for the acquisition and management of departmental major projects, but added that the department will develop

an overview and summary of this information in a major projects chapter in its Acquisition Guide. We believe this chapter will further enhance DOE's guidance, particularly if the department provides criteria that address each of the four issues identified in our first recommendation. Second, concerning our recommendation on DOE's comprehensive assessment of contract administration, DOE stated that the department did not stop conducting comprehensive assessments. In response, we have revised our recommendation to state that DOE should conduct these assessments at least every 3 years. Third, concerning our recommendation that DOE identify corrective actions for reducing overreliance on unvalidated contractor data, DOE stated that the department had already taken positive steps to reduce its overreliance on contractor data by, for example, reviewing and validating such data and project baselines. DOE added that the department would continue to identify any corrective actions necessary to reduce overreliance on contractors' data in awarding fees. While we agree that validating project baselines is an important first step, we believe that DOE's efforts to ensure that contractor performance data are reliable by certifying contractors' project management systems is vital. Fourth, concerning our recommendation that DOE link PARS and contractors' project management systems, DOE stated that our recommendation is too narrowly focused, particularly in light of DOE's efforts to implement a departmentwide enterprise architecture solution. We agree, and we have revised our recommendation accordingly. In addition, DOE stated that it believes the draft report contained a number of inaccuracies and provided detailed comments. We have revised the report, where appropriate, in response to these comments.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to the Secretary of Energy and other interested parties. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have any questions on this report, please contact me at (202) 512-3841. Key contributors to this report were Richard Cheston, Robert Baney, Nathan Anderson, Bernice Dawson, Cynthia Norris, Judy Pagano, and Doreen Feldman.

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The Department of Energy's 33 Major Projects That We Reviewed

Project name and construction line number	Contract type	Cost incentive or cost constraint for individual project in contract?	Schedule performance incentive for individual project in contract?	Fee available for individual project?
Fernald, Ohio				
Non-Nuclear Facility Decontamination and Decommissioning (OH-FN-0050)	Cost plus incentive fee	Yes	Yes	No ^a
Silos (OH-FN-07) ^b	Cost plus incentive fee	Yes	Yes	No ^a
Soil & Water Remediation (OH-FN-0030)	Cost plus incentive fee	Yes	Yes	No ^a
Solid Waste Stabilization & Disposition (OH-FN-0013)	Cost plus incentive fee	Yes	Yes	No ^a
Hanford Reservation: River Protection				
Hanford Tank Waste Treatment and Immobilization Plant (01-D-416)	Cost plus incentive fee	Yes	Yes	Yes
Radioactive Liquid Tank Waste Stabilization & Disposition (ORP-0014)	Cost plus award fee	No	Yes	Yes
Interim Tank Retrieval System (94-D-407) ^c	Cost plus award fee	No	Yes	Yes
Tank Farm Restoration and Safe Operations (97-D-402) ^b	Cost plus award fee	No	Yes	Yes
Hanford Reservation at Richland, Washington				
Nuclear Facility Decontamination and Decommissioning—Fast Flux Test Facility Project (RL-0042)	Cost plus award fee	No	Yes	Yes
Nuclear Facility Decontamination and Decommissioning—Remainder of Hanford (RL-0040)	Cost plus award fee	No	Yes	Yes
Nuclear Facility Decontamination and Decommissioning—River Corridor Closure Project (RL-0041)	Cost plus award fee	No	Yes	Yes
Nuclear Material Stabilization & Disposition – PFP (RL-0011)	Cost plus award fee	No	Yes	Yes
Soil and Water Remediation – Vadose Zone (RL-0030)	Cost plus award fee	No	No	Yes
Solid Waste Stabilization & Disposition—200 Area (RL-0013)	Cost plus award fee	No	Yes	Yes
Spent Nuclear Fuels (RL-0012)	Cost plus award fee	No	Yes	Yes

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The Department of Energy's 33 Major
Projects That We Reviewed**

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Project name and construction line number	Contract type	Cost incentive or cost constraint for individual project in contract?	Schedule performance incentive for individual project in contract?	Fee available for individual project?
Idaho National Engineering and Environmental Laboratory				
Advanced Mixed Waste Treatment Facility (97-PVT-2)	Fixed price	No	No	No
Spent Nuclear Fuel Dry Storage (98-PVT-2) ^b	Fixed price	No	No	No
Lawrence Livermore National Laboratory				
National Ignition Facility (96-D-111)	Cost plus award fee	Yes	Yes	No ^d
Oak Ridge, Tennessee				
East Tennessee Technology Park Three-Building D&D and Recycle Project (OR-0040)	Cost plus incentive fee	Yes	Yes	Yes
Facilities Capability Assurance Program (88-D-122-27 & 88-D-122-42) ^c	Cost plus award fee	No	Yes	Yes
Spallation Neutron Source (99-E-334)	Cost plus incentive fee	Yes	Yes	Yes
Rocky Flats Facility at Denver, Colorado				
Nuclear Facility D&D/North Side Facility Closures (RF-0040)	Cost plus incentive fee	Yes	Yes	No ^a
Nuclear Facility D&D/South Site Facility Closures (RF-0041)	Cost plus incentive fee	Yes	Yes	No ^a
Nuclear Material Stabilization & Disposition (RF-0011)	Cost plus incentive fee	Yes	Yes	No ^a
Soil & Water Remediation (RF-0030)	Cost plus incentive fee	Yes	Yes	No ^a
Solid Waste Stabilization & Disposition (RF-0013)	Cost plus incentive fee	Yes	Yes	No ^a
Sandia National Laboratories				
Microsystems and Engineering Science Application (01-D-108)	Fixed price	Yes	Yes	No ^d
Savannah River Site				
High-Level Waste Removal from Filled Waste Tanks (SR-0014C)	Cost plus award fee	No	Yes	Yes
Tritium Extraction Facility (98-D-125)	Cost plus incentive fee	Yes	Yes	Yes
West Valley, New York				
Nuclear Facility Decontamination and Decommissioning (OH-WV-0040)	Cost plus award fee	Yes	Yes	Yes
Nuclear Weapons Refurbishment				
Life Extension Program—B61 ^e	Cost plus award fee	No	Yes	No ^d

Appendix I
The Department of Energy's 33 Major
Projects That We Reviewed

(Continued From Previous Page)

Project name and construction line number	Contract type	Cost incentive or cost constraint for individual project in contract?	Schedule performance incentive for individual project in contract?	Fee available for individual project?
Life Extension Program—W76 ^e	Cost plus award fee	No	Yes	No ^d
Life Extension Program—W80 ^e	Cost plus award fee	No	Yes	No ^d

Source: GAO compilation of DOE data.

^aFee is based on reaching site closure, rather than on completing individual projects.

^bAlthough the September 2004 PARS report showed that this project would cost less than \$400 million, we included it in our review because it was included in our 2002 review of DOE's major projects. (GAO, *Contract Reform: DOE Has Made Progress, but Actions Needed to Ensure Initiatives Have Improved Results*, [GAO-02-798](#) (Washington, D.C.: Sept. 13, 2002).)

^cThis project was designated as a major project when DOE's threshold was \$100 million.

^dNNSA factors performance on these projects into each responsible management and operating contractor's annual performance evaluation and decisions on the amount of the fee awards.

^eNNSA stated that each of these life extension projects involved multiple management and operating contractors (not 1 contract) in multiple locations, which is different from every other project that is listed in this appendix.

Scope and Methodology

Our review focused primarily on 33 major projects that had passed, as of March 2004, the Department of Energy's (DOE) Critical Decision 2 milestone—the point at which the department approves a project's cost, schedule, and scope baselines on the basis of an approved conceptual design report and acquisition strategy. The projects we reviewed include 28 projects that cost more than \$400 million each and 5 projects that our 2002 assessment defined as major projects because their total costs exceeded \$100 million each. Our review did not include 46 major projects that, as of March 2004, had not passed the Critical Decision 2 milestone. Since March 2004, at least 6 major projects have passed the Critical Decision 2 milestone and now have approved baselines. The remaining major projects do not have approved baselines for measuring performance.

To assess DOE's use of performance incentives in contracts to effectively control cost and maintain schedules, we reviewed relevant requirements in the Federal Acquisition Regulation (FAR) and the DOE Acquisition Regulation, as well as DOE Order 413.3, DOE manual 413.3-1, and DOE's Acquisition Guide, to obtain information on the factors that should be used in determining a contractor's fee. Through this effort, we identified whether the department provided guidance on the appropriate circumstances for using each contract type and the appropriate factors for determining a contractor's fee. In particular, we examined requirements regarding contract provisions for award fees; cost, schedule, and performance incentives; and fee determination plans.

We then compared government and departmental requirements with project-specific elements found in the contracts for each of the 33 major projects that have DOE-approved cost, schedule, and scope baselines to determine whether DOE has used appropriate (1) types of performance incentives, such as cost or schedule incentives, and (2) fee determination plans and fee payments. For instance, to assess whether DOE's contracts used the appropriate incentives for each of three types of contracts, we compared the types of incentives that DOE's contracts and relevant modifications used for each of the 33 major projects with the types of incentives that the FAR and the DOE Acquisition Regulation, as well as departmental orders and guidance, require. We then interviewed cognizant DOE officials to discuss reasons for the inconsistencies we found. In addition, we examined various contract-related documents associated with the 33 major projects we reviewed, such as the "Gold Chart" metrics that Environmental Management uses to measure its progress in DOE's annual budget submission to the Congress. Specifically, we compared the Gold Chart's performance metrics for each of Environmental Management's 25

major projects with the performance measures in each projects' contract. Where differences were identified, we discussed the contents of the Gold Chart and the associated projects' contract with appropriate DOE contracting officials. Furthermore, we interviewed officials in DOE's Office of Contract Management and officials in the Office of Engineering and Construction Management to determine the extent to which DOE had reviewed, prior to award, the contracts for the 33 major projects to ensure that they included appropriate project management provisions.

To assess the reliability of the data DOE uses to monitor and assess contractor performance, we reviewed the Office of Management and Budget's (OMB) directives, DOE's *Reference Book for Contract Administrators*, and other DOE documents and studies to identify relevant requirements and departmental guidance. We identified the roles and responsibilities of contract administration officials and examined the extent to which these officials adhered to their responsibilities. More specifically, we reviewed the department's recent contract administration self-assessments and the frequency with which they were conducted. In so doing, we examined the department's recommendations for improving contract administration and determined whether the recommendations were followed. If they were not followed, we discussed the reasons with cognizant officials in the Contract Administration Division. We also examined DOE's order for acquisition career development, and other related DOE directives, to assess training requirements for DOE's contracting officers and contracting officer representatives, particularly regarding training in earned value management principles.

To determine the reliability of Project Analysis and Reporting System (PARS) data used by senior managers for project oversight, we assessed the accuracy, completeness, and timeliness of PARS data. To assess the accuracy of the project performance data in PARS, we did the following:

- Reviewed DOE Order 413.3, "Program and Project Management for the Acquisition of Capital Assets," and its implementing guidance; OMB Circular A-11, part 7, "Planning, Budgeting, Acquisition, and Management of Capital Assets"; and various documents outlining the requirements in American National Standards Institute/Electronic Industries Association-748-1998, which defines the requirements for earned value management—the component of contractors' project management systems critical for producing reliable project performance data.

- Interviewed cognizant DOE officials in the Office of Engineering and Construction Management, the Office of Environmental Management, the Office of Science, and the National Nuclear Security Administration on the extent to which the performance data that DOE contractors' project management systems produced for PARS met earned value management requirements. These officials included a DOE expert in earned value management, who is responsible for assessing the accuracy of the data that various projects' systems produce. Where specific deficiencies in a contractor's project management system were identified, we obtained relevant documents from the appropriate acting DOE project director and analyzed whether the contractor generated project performance data in accordance with the industry standard. We also interviewed officials in two other major contracting agencies—the Department of Defense and the National Aeronautics and Space Administration—about their experience in implementing earned value management requirements.
- Compared data in monthly PARS reports provided to senior DOE managers from January through September 2004 with project-specific cost and schedule data obtained from earlier PARS reports, cognizant program offices, project status reports, Inspector General reports, and external reviews. When we identified total cost or project performance data discrepancies between PARS and these other sources, we contacted relevant project officials to determine their cause.
- Identified the extent to which contractor-generated data in PARS were sufficiently reviewed and verified by DOE by (1) identifying requirements in DOE Order 413.3 and its implementing guidance for the departmental review and verification of contractor project performance data and (2) interviewing DOE project management officials to determine whether the current breadth of review was adequate and what plans, if any, DOE had for increasing the rigor of its review and verification of contractor data.

To assess the completeness of PARS data, we determined whether the PARS database included major DOE activities—those costing more than \$400 million or that DOE management had designated—identified in our prior reports, Inspector General reports, DOE press releases, and printouts from DOE's Management Accounting and Reporting System. For projects that were not included in PARS, we contacted headquarters project management officials to determine if the projects met the criteria for PARS reporting. For projects that were included in PARS, we examined the

completeness of reported data in various data fields by reviewing printouts from the PARS database and by reviewing the reports of the National Academies' National Research Council and the Civil Engineering Research Foundation, which also examined the completeness of PARS data. In addition, we reviewed a 2004 report by the U.S. Army Corps of Engineers on a major project at Hanford, Washington. Moreover, we discussed options with DOE officials for reporting additional data that would improve PARS' ability to enable senior DOE managers to identify potential cost or schedule challenges.

To assess the timeliness of PARS data, we reviewed PARS monthly reports to senior DOE managers and identified projects whose performance data were out-of-date. For many of these projects, we talked to headquarters and project officials to determine the reasons for delay and explored options with them on how timeliness could be improved. We also interviewed numerous acting DOE project directors to learn how data from their project management systems were summarized and incorporated into the PARS database. In addition, we explored options with DOE headquarters and project officials for improving the timeliness of all data reported in PARS.

Given our review of the documentation provided by DOE and our discussions with DOE officials, we have reservations about the reliability of PARS data. These issues are discussed in this report.

We conducted our work from January 2004 through January 2005 in accordance with generally accepted government auditing standards, which included an assessment of data reliability and internal controls.

Comments from the Department of Energy



Department of Energy

Washington, DC 20585

FEB 0 2 2005

Ms. Robin M. Nazzaro
 Director, Natural Resources and Environment
 U.S. Government Accountability Office
 441 G Street, NW
 Room 2964
 Washington, DC 20548

Dear Ms. Nazzaro:

We have reviewed the draft Government Accountability Office (GAO) Report entitled "Department of Energy: Further Actions Are Needed to Strengthen Contract Management for Major Projects" (GAO-05-123). We appreciated the opportunity to review prior informal drafts of the report to eliminate any inaccuracies and questionable conclusions. We also appreciate that the report recognizes the Department of Energy's (DOE) many improvements in a number of areas related to project and contract management.

The GAO report specifically recognizes a number of improvements in DOE's management of major projects. For example, it notes: the establishment of the Office of Engineering and Construction Management (OECM) to oversee project management; the issuance of a comprehensive project management policy; implementation of a career development program for DOE project managers; implementation of the Project Assessment and Reporting System (PARS); required use of earned value management techniques; a certification program for contractors' project management systems to assure compliance with private industry's standard for earned value management; improved contract processes through the issuance of updates to DOE's Acquisition Guide and the Reference Book for Contract Administrators; and periodic assessments of its contract administration practices.

Because of the importance of the subject matter, the beneficial nature of its suggestions, and the Department's commitment to continuous improvement in this area, DOE concurs generally in all of the draft report recommendations. Nonetheless, despite its prior revisions, the draft report still contains a number of factual inaccuracies and inappropriate conclusions which affect the report's credibility. Although these inaccuracies were addressed in the Department's comments on the draft "statement of facts," they remain an issue in the report. The DOE's responses to the technical and factual inaccuracies, including the report's misrepresentations of certain conversations, are provided to you as an attachment to this letter. We request that the GAO revise its draft report to correct these inaccuracies. If this course of action is not acceptable, DOE requests that the full text of its response (including the attachment to this letter) be published with the final GAO report.

The report provides three sets of recommendations (a total of 13 recommendations in all) to the Secretary in order to improve: (1) the use of effective performance incentives for major projects,



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(2) departmental oversight of contract administration for major projects, and (3) the reliability and usefulness of project performance data in the PARS. Notwithstanding that the Department disagrees with a number of the report's findings, we do agree with the general thrust of the recommendations.

With respect to areas of disagreement, the Department offers the following:

1. **GAO Recommendation:** Develop a major projects chapter in the DOE Acquisition Guide that specifies a systematic contracting approach, including, for example, criteria for (1) ensuring that incentive fee awards are based on reliable performance data, (2) using appropriate cost and schedule incentives, (3) better linking fee awards to performance for major projects that are part of larger site cleanups, and (4) determining which indirect work-related activities should and should not be considered in awarding contractors' fees.

DOE Comment: The Department has already developed an extensive body of material that constitutes a "systematic contracting approach" for the acquisition and management of the Department's major projects. The principles for determining the contract type, the nature of the incentive structure, etc. for contracts are already well established in the Federal Acquisition Regulation and the Department of Energy Acquisition Regulation. Unlike other Federal agencies, DOE has expanded on this information in the form of more detailed internal guidance on contract types and the effective use of performance incentives. The regulatory coverage when taken with the additional requirements of the DOE Acquisition Regulation, the DOE Acquisition Guide, the DOE Performance-Based Contracting Guide, DOE Order 413.3, DOE Manual 413.3-1, the various workshops that the Department has conducted and the various professional training courses made available (both project management and acquisition courses) provides a solid basis for procurement and project management professionals to make informed decisions regarding appropriate types of contracts, incentives, and other pertinent components of properly executed major projects and contracts. Both the Office of Contract Management (OCM) and the OECM work together on acquisition strategies for the Department's major contracts. DOE Manual 413.3-1 requires, prior to approval of CD-1, that the Integrated Project Team develop an acquisition strategy for each project.

Based on the Department's previous review of materials made available by other agencies for the management of major projects, we know of no other agency which has provided as extensive and detailed a body of guidance to its contracting professionals in order to improve the state of contract and project management. Nonetheless, DOE will develop an overview and summary of the various information already extant in this major projects chapter in the DOE Acquisition Guide in accordance with the GAO's recommendation. Additionally, we will update our benchmarking of other agencies to identify other areas of information guidance, and direction that may be useful to the DOE project and contract management practitioners.

2. **GAO Recommendation:** Reinstigate comprehensive self-assessments of contract administration.

DOE Comment: This recommendation implies that the Department has ceased conducting comprehensive assessments of contract administration. Nothing could be further from the truth. As stated in the attached comments, the Department conducted assessments in 1997, 1999, 2002 and 2003. That OCM did not conduct an assessment in 2004 does not indicate that the Department no longer values such assessments or that they will not be performed in the future. Assessments are, and will be, conducted on a periodic basis. For example, during fiscal year 2005, two separate sets of assessments are planned. One set of assessments will examine the effective use by DOE sites of contract management plans (CMP) to manage contracts. A second set of assessments will be conducted on contractor purchasing systems. The Department concurs in the GAO's recommendation "to continue such assessments."

3. **GAO Recommendation:** Identify corrective actions to reduce the over-reliance on contractors' data in awarding contract fees that was identified in previous self-assessments.

DOE Comment: Every procurement agency in the Federal Government relies to some extent on contractor data, a necessity which the Federal Acquisition Regulation recognizes. The Department fully acknowledges the importance of ensuring that such data has been validated to the extent necessary for the effective management of the Department's contracts and projects.

Consequently, the Department has already taken positive steps to reduce any over-reliance on contractor submitted data and the associated baselines. For example, the Office of Environmental Management (EM) regularly reviews and validates such data and baselines. Specifically, EM review teams have performed independent reviews of the Integrated Life Cycle Baselines and Contract Project Baselines of all EM sites over the past two years. To date, all but six EM sites (West Valley, Nevada, Stanford Linear Accelerator Center, Waste Isolation Pilot Plant, Los Alamos National Laboratory, and Energy Technology Engineering Center) have approved baselines which are under configuration control. The criteria for the reviews included, but were not limited to, cost estimation, scope definition, project schedule, earned value management system, performance metrics, regulatory requirements, and government furnished services and items. The goal is to have the baselines for the remaining six EM sites under configuration control by the end of fiscal year 2005.

Additionally, the OECM has been validating project baselines for several years. This was previously commented to GAO at its exit conference and in the Department's written comments on the draft "statement of facts." OECM recently sent a report to Congress documenting its efforts in validating EM project baselines. The Subcommittee on Energy and Water Development Appropriations stated that it supports OECM's efforts and that

OECM “continues to provide a strong focal point for the improvement of project management capabilities throughout the Department.” Furthermore, the Department is in the process of certifying that its contractors’ Earned Value Management Systems comply with the industry standard. We are not aware that any other civilian agency is doing this.

Clearly, DOE has been proactive in addressing the issue of ensuring that data and baselines for the Department’s major management contracts and projects is validated and that the systems which track this data are in compliance with the industry standard. Nonetheless, the Department concurs with the general thrust of the GAO’s recommendation and will continue to identify any corrective actions necessary to reduce over-reliance on contractors’ data in awarding contract fees.

4. **GAO Recommendation:** Explore options for electronically linking contractors’ project management systems to PARS to provide senior DOE managers with timely project performance data.

DOE Comment: The Department agrees with the need to ensure timely project reporting. However, the GAO’s linking of PARS and contractors’ project management systems is too narrowly focused, particularly in light of the Department’s efforts to implement a Department-wide enterprise architecture solution. The recommendation would be beneficial if it were not focused on the existing stand-alone system (PARS), but rather addressed a more comprehensive exploration of options that would improve the timeliness and accuracy of project performance reporting. Consequently, the Department concurs with the concept behind the GAO recommendation and will explore options to improve the timeliness and accuracy of project performance reporting.

Once again, DOE appreciates GAO’s identification of opportunities to improve its project and contract management systems. Additional comments and corrections on the draft report provided by the cognizant DOE organizations are attached for your review. The Department regularly reviews its approach to implementing and managing its projects and their supporting contracts as evidenced by the numerous internal reviews/reports examining the Department’s implementation of these contracts.

The Department continues to seek ways to expand the implementation of what works and correct what does not. We appreciate the GAO's recommendations and will incorporate them into our future improvement efforts.

Sincerely,



Susan J. Grant
Director, Office of Management, Budget
and Evaluation/Chief Financial Officer

Attachments

Related GAO Products

Nuclear Waste: Absence of Key Management Reforms on Hanford's Cleanup Project Adds to Challenges of Achieving Cost and Schedule Goals. [GAO-04-611](#). Washington, D.C.: June 9, 2004.

Nuclear Waste Cleanup: DOE Has Made Some Progress in Cleaning Up the Paducah Site, but Challenges Remain. [GAO-04-457](#). Washington, D.C.: April 1, 2004.

Nuclear Weapons: Opportunities Exist to Improve the Budgeting, Cost Accounting, and Management Associated with the Stockpile Life Extension Program. [GAO-03-583](#). Washington, D.C.: July 28, 2003.

Nuclear Waste: Challenges and Savings Opportunities in DOE's High-Level Waste Cleanup Program. [GAO-03-930T](#). Washington, D.C.: July 17, 2003.

Nuclear Waste: Challenges to Achieving Potential Savings in DOE's High-Level Waste Cleanup Program. [GAO-03-593](#). Washington, D.C.: June 17, 2003.

Department of Energy: Status of Contract and Project Management Reforms. [GAO-03-570T](#). Washington, D.C.: March 20, 2003.

Major Management Challenges and Program Risks: Department of Energy. [GAO-03-100](#). Washington, D.C.: January 1, 2003.

High-Risk Series: An Update. [GAO-03-119](#). Washington, D.C.: January 1, 2003.

Contract Reform: DOE Has Made Progress, but Actions Needed to Ensure Initiatives Have Improved Results. [GAO-02-798](#). Washington, D.C.: September 13, 2002.

Nuclear Waste: Technical, Schedule, and Cost Uncertainties of the Yucca Mountain Repository Project. [GAO-02-191](#). Washington, D.C.: December 21, 2001.

Department of Energy: Follow-Up Review of the National Ignition Facility. [GAO-01-677R](#). Washington, D.C.: June 1, 2001.

Related GAO Products

Nuclear Cleanup: Progress Made at Rocky Flats, but Closure by 2006 Is Unlikely, and Costs May Increase. [GAO-01-284](#). Washington, D.C.: February 28, 2001.

High-Risk Series: An Update. [GAO-01-263](#). Washington, D.C.: January 1, 2001.

Major Management Challenges and Program Risks: Department of Energy. [GAO-01-246](#). Washington, D.C.: January 1, 2001.

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