

GAO

Report to the Chairman, Subcommittee
on Investigations and Oversight,
Committee on Science, Space, and
Technology, House of Representatives

December 1994

NUCLEAR WASTE

DOE's Management and Organization of the Nevada Repository Project



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United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-258135

December 23, 1994

The Honorable James A. Hayes
Chairman, Subcommittee on
Investigations and Oversight
Committee on Science, Space,
and Technology
House of Representatives

Dear Mr. Chairman:

In February 1991, the Department of Energy (DOE) hired a management and operating contractor (management contractor) for a 10-year period at an estimated cost of \$1 billion to engineer, develop, and manage a system for permanently disposing of highly radioactive waste. The centerpiece of this disposal system, which was mandated by the Nuclear Waste Policy Act of 1982, as amended, is a geologic repository for disposing of waste. The system also includes capabilities for packaging and transporting waste from nuclear facilities to the repository and possibly a facility for storing waste before it is finally disposed of in the repository. One of DOE's original objectives for hiring this management contractor was to reduce the number of participants working on the disposal program. This objective included consolidating under the management contractor much of the work on the program and, in particular, a project to investigate the suitability of Yucca Mountain, Nevada, for the repository.

Concerned about the organization and management of DOE's repository project, you asked us to determine whether DOE is effectively using the management contractor—TRW Environmental Safety Systems, Inc., a wholly owned subsidiary of TRW, Inc.—to manage the project. Specifically, we agreed to review DOE's efforts to consolidate participants' activities, streamline decision-making, and reduce costs at the repository project. In addition, we assessed DOE's recent initiative to reorganize the management of the project.

Results in Brief

DOE has not been using TRW to manage the repository project. Instead, DOE retained the authority to direct the work of each project participant, including the management contractor. Moreover, DOE has not achieved its objective of consolidating work on the project under the management contractor. In fact, there are now more contractors working on the project than before DOE awarded the contract to TRW. These conditions

perpetuated a complex distribution of work and duplication of contractors' responsibilities. As a result, over the last 4 years major project participants used almost one-third of their project funds for management, coordination, and related support activities.

In February 1994, a DOE team evaluated the Department's contracting practices and recommended, among other things, that DOE replace, when appropriate, its cost-reimbursable management and operating contracts, such as the TRW contract, with a combination of competitively awarded fixed-price contracts and performance-based management contracts. Also, in June 1994, DOE's Inspector General recommended that DOE reassess TRW's role on the repository project as a part of an evaluation of the management contractor's performance after 3 years. DOE, however, did not evaluate whether the TRW management and operating contract could be replaced with a performance-based management contract or whether a management and operating contractor was still needed. Instead, on the basis of the contractor's performance, DOE decided to continue the contract for the full 10-year period and to initiate discussions with project participants about assigning TRW a larger role in managing the project. This initiative appears modest in relation to DOE's contract reform objectives and would not consolidate project activities under fewer contractors.

Background

In 1987, DOE decided that a successful radioactive waste disposal program, including the investigation of three candidate repository sites, could best be ensured if DOE had a long-term partnership with a management contractor. Generally, a management and operating contract is an agreement under which DOE contracts for the operation, maintenance, or support of a site or facility devoted to one or more of its programs. DOE retains responsibility for defining the scope of the program and providing technical direction to the contractor; the contractor is responsible for the day-to-day management of the work, including providing necessary resources and technical, schedule, and budget direction to other contractors. DOE and its predecessor agencies have used this type of contract, in which DOE pays virtually all the costs and exercises only broad general oversight, to operate nuclear-related sites and facilities since World War II. The proposed management contract for the disposal program was unique in that the contractor was expected to manage a program rather than a site or facility.

DOE expected that the proposed management contractor would develop waste storage and transportation capabilities and manage the

investigations of the candidate repository sites. DOE also expected that the total number of contractors working on the program would decline because it anticipated that the work of some existing contractors would be transferred to the management contractor. Although amendments to the Nuclear Waste Policy Act in December 1987 directed DOE to investigate only one site, DOE proceeded to hire a management contractor on the basis that the disposal program, and particularly the repository project at Yucca Mountain, needed strong centralized management.

In February 1991, DOE awarded the management contract to TRW.¹ The period of the contract covered 10 years, and DOE had an option to extend the contract another 5 years. In addition, the contract required DOE to evaluate TRW's performance after 3 years and, on the basis of that review, to decide whether the contract should continue beyond 5 years or be terminated.

When DOE awarded the contract, there were seven major and nine minor project participants—contractors and government agencies—already working on the repository project.² With one exception, DOE had drawn the major participants from its nuclear weapons testing program at its Nevada Test Site (part of the Yucca Mountain site is on the test site), located northwest of Las Vegas. Under the management contract, TRW's responsibilities included integrating the work of various program participants, such as existing DOE contractors, and ensuring that a site at Yucca Mountain, Nevada, was properly investigated to determine its suitability for use as a repository.

DOE Has Made Limited Use of the Management Contractor on the Repository Project

Along with assigning TRW specific responsibility to ensure that the investigation of the repository site is consistent with the Nuclear Waste Policy Act of 1982, DOE made TRW responsible for integrating the work of various program participants, such as national laboratories, other federal agencies, and DOE prime contractors conducting work in support of the repository project. DOE has not, however, given the contractor authority to manage the investigation project, nor has it reduced the number of project

¹The principal reasons for the delay between DOE's decision to hire a management contractor and the contract's award were the need to revise the procurement documentation to reflect the 1987 amendments and a legal challenge by TRW to DOE's initial decision in 1988 to award the contract to Bechtel Systems Management, Inc. For information on the legal challenge, see Nuclear Waste: Quarterly Report as of March 31, 1989 (GAO/RCED-89-178, Aug. 14, 1989).

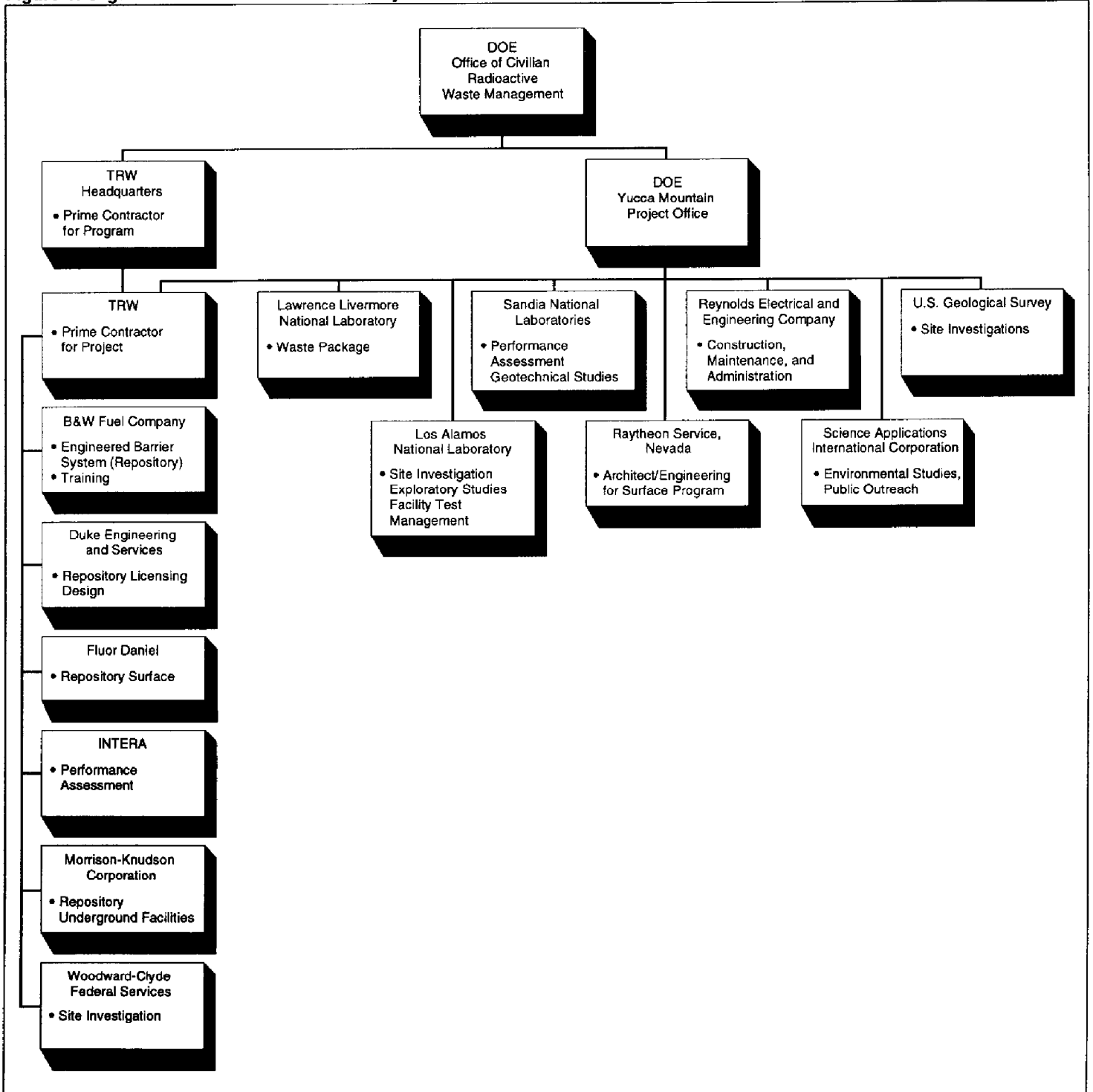
²GAO defined major participants as contractors and government agencies receiving \$5 million or more in annual project funding and minor participants as contractors and agencies receiving annual project funding from \$100,000 to \$5 million.

contractors by consolidating work under TRW and its subcontractors. Instead, DOE added TRW and its subcontractors to the existing project organization and, therefore, overlooked opportunities to streamline decision-making and reduce costs.

DOE Does Not Use the Management Contractor to Manage the Repository Project

DOE has not given TRW authority to manage the site investigation. Instead, TRW and other project participants report to DOE's project office, which retains control of the day-to-day investigation activities. (See fig. 1.) Language in the contract and the project office's reluctance to give authority to TRW contributed to this arrangement.

Figure 1: Organization of Yucca Mountain Project Office



(Figure notes on next page)

Note: Effective October 1994, Science Applications became a subcontractor to TRW, and Raytheon essentially ended its role on the repository project.

The contract states that TRW will, among other things, be responsible for the conduct of field-related site characterization (investigation) and environmental work, utilizing existing project contractors. TRW also is responsible for providing technical, schedule, and budget direction to project contractors. The contract also states, however, that direction from TRW to DOE's national laboratories, other federal agencies, and contractors at the Nevada Test Site must pass through the DOE representative. These laboratories, agencies, and contractors have included six of the project's seven other major, and several of the minor, participants.

Also, DOE managers at the repository project resisted what they considered to be TRW's intrusion into the project. The former DOE project manager told us that he did not see the need to hire a management contractor but was overruled by senior program officials. Thereafter, at his direction, the project office established procedures that limited TRW to providing technical and management support to the project office to ensure that the office retained sole authority to direct all project participants.

Project Work Has Not Been Consolidated

A DOE priority in hiring a management contractor was to consolidate work under the contractor's direction and reduce the number of participants working on the disposal program, including the repository project. DOE, however, has not achieved this objective at the project. Instead, DOE added TRW and its subcontractors to the seven major participants already working on the project when the contract was awarded. One result is that DOE is supporting the management and administrative costs of two architecture and engineering contractors. Also, the agency has not taken advantage of the opportunity afforded by the management contract to make project contractors more accountable and to integrate projects, as well as to simplify the assignment of work tasks and the administration of contracts.

DOE has been reluctant to transfer work to TRW from its other contractors, in part because its own project management has been reluctant to accept the contractor on the project. Also, other project participants perceived a "conflict of interest" in TRW's dual roles of integrating project activities and performing some project activities. Such a conflict, they maintained, could

permit TRW to take unfair advantage of other participants in allocating project work.

The management contract identified work then assigned to existing contractors that potentially could be transferred to TRW. In 1991, TRW assumed responsibility for some of this work and, at DOE's direction, developed a plan for transferring the remaining work. Thereafter, Science Applications International Corporation, which had been providing technical and management support to DOE's project office and was the largest contractor on the project, argued that implementing the transfer plan would infringe on its contractual rights. As a result, DOE agreed to review the plan and make adjustments if warranted. Although DOE concluded that the plan was sound and essential to carrying out its program mission, DOE deferred transferring some of the work addressed in the plan, including work assigned to Science Applications. The deferred work was subject to annual review to determine whether it would be transferred. The first review, performed in June 1993, did not result in a transfer of work.³

Although DOE has, after 3 years, transferred some of the project work to TRW, six of the seven major participants that were working on the project at the beginning of 1991, as well as nine minor participants, continue to work on the project. The seventh major participant—Raytheon Services, Nevada—essentially left the project at the end of fiscal year 1994. Some participants have special expertise and narrow project responsibilities. For example, the U.S. Geological Survey is a major participant whose role is essentially limited to scientific studies of the Yucca Mountain site. Others, however, perform more traditional engineering, construction, and support services that the management contractor could either directly perform or subcontract to others if it was responsible for these activities. Furthermore, six subcontractors to TRW also have roles on the project. (See fig. 1.)

In April 1993, TRW proposed to assume responsibility for architecture and engineering services for the site drilling program from Raytheon Services, Nevada. TRW's stated intent was to establish a single point of responsibility and accountability for all design work, improve the integration of design work among the various elements of the project, simplify the process of assigning new and modified tasks, and eliminate the encumbrance of administering two architecture and engineering contracts (TRW was also

³At the request of the Chairman, House Committee on Science, Space, and Technology, we are investigating the circumstances pertaining to this review for possible conflict of interest involving senior managers of the project office and Science Applications.

providing this service for the design of an underground exploratory studies facility and the repository).

DOE's handling of TRW's proposal illustrates a reluctance to consolidate project work under the management contractor. DOE's project office initially responded that it would retain Raytheon on the project. Early in 1994, however, the project office decided to transfer Raytheon's work to Science Applications, which did not have existing architecture and engineering capability on the project. According to officials in the project office, DOE made this decision to take advantage of Science Applications' familiarity with the drilling program and to ensure that TRW did not appear to be taking unfair competitive advantage of other contractors by recommending that their work be transferred to TRW.

Finally, not only has DOE not reduced the number of project participants, but also more participants are now working on more aspects of the project than when DOE brought the management contractor on board. To help manage the investigation project, DOE has divided the work activities into 13 basic categories and subdivided these categories into thousands of subcategories. Four of the basic categories directly relate to the potential development of a repository and waste disposal system at Yucca Mountain. These categories include site investigation activities and activities related to the development of designs for the waste package and repository and to the development of an underground facility for exploratory studies. Other basic categories, such as environmental monitoring activities at Yucca Mountain, regulatory activities, project management, and support services, also support the potential development of a repository at the site. In fiscal years 1991 and 1992, an average of five major participants worked in each of the project's basic work categories. In fiscal years 1993 and 1994, this average increased to six participants (counting TRW and its subcontractors as one participant).

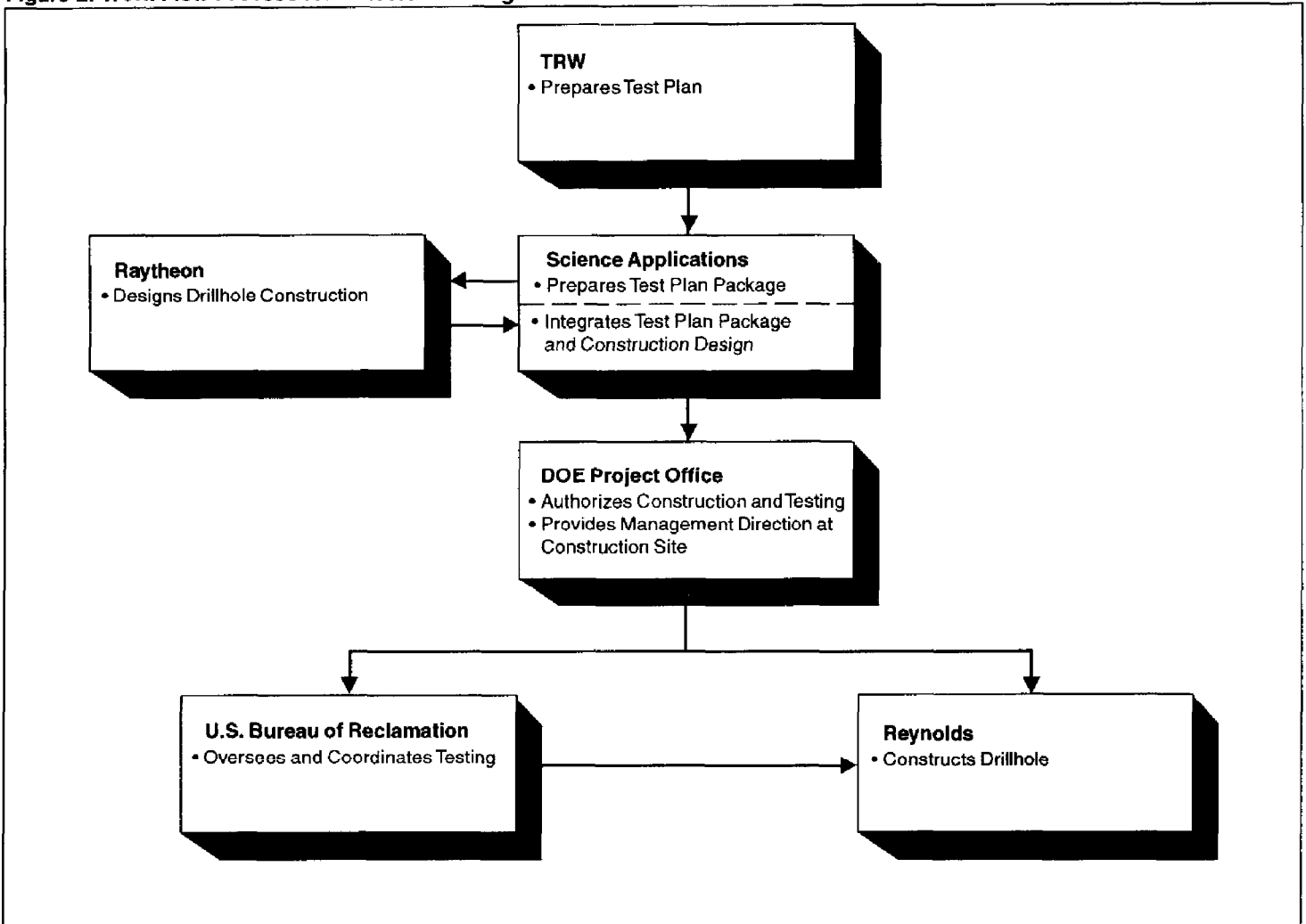
Project Decision-Making Has Not Been Streamlined

Limiting TRW's role in the project while allowing each contractor independence has perpetuated a complex distribution of work and duplication of contractors' responsibilities.

Construction management on the Yucca Mountain project is spread among several contractors with little control to ensure that planning, design, and performance are coordinated and comply with the project's testing needs. For example, DOE's project office and five participants are involved in drilling a test hole from the surface of the Yucca Mountain site. (See fig. 2.)

Three project contractors and other subcontractors are also involved in planning construction and testing in the underground exploratory studies facility.

Figure 2: Work Flow Process for Test Hole Drilling



While project management suffers from a complex distribution of work, project integration is also a problem. A March 1994 review of quality assurance performed by DOE on how effectively the project was integrating data for design purposes found, among other things, the following:

- Some of the work being done was so narrowly focused that information necessary to complete or modify construction designs, which could have been collected while the work was in progress, was overlooked. Subsequently, the work had to be redone to provide this information.
- Some of the project's principal investigators were withholding data until they could publish professional papers without regard for other project participants' needs for the data.

The Nuclear Waste Technical Review Board, which was created by the Congress to evaluate DOE's disposal program, also found that integration was lacking among those working on plans for the repository, on the waste package that would be placed in the repository, and on the underground testing of the effects of heat from waste on the packages and the repository.⁴ The Board expressed concern that designs and test plans in these areas are not far enough along in their development to provide needed information for the design of one part of the underground test area. The Board added that delaying the testing on the effects of heat would, in turn, delay making critical decisions on, among other things, the final design of the waste packages.

DOE Has Not Taken Advantage of Cost-Reduction Opportunities

By not consolidating and streamlining project operations, DOE has forgone an opportunity to reduce costs for management, coordination and planning, and administration that absorb resources that could otherwise be used on scientific investigations of the site.⁵

Costs for management, coordination and planning, and support services accounted for about \$225 million, or 34 percent, of the \$679 million in total project costs incurred by TRW (including its subcontractors) and the seven other major project participants in fiscal years 1991 through 1994.

Because each project participant incurs costs for management, coordination and planning, and support services in performing its assigned activities, the total costs of these types of activities are affected by the number of project participants. Therefore, consolidating project activities under fewer participants could potentially reduce the total costs for management, coordination and planning, and support services and free up more project funds for other uses, such as site investigations and activities

⁴Report to the U.S. Congress and the Secretary of Energy, January to December 1993 (Nuclear Waste Technical Review Board, May 1994).

⁵Management costs do not include the salary and related costs of the DOE employees assigned to the project office.

related to the repository, exploratory studies facility, and waste package design. As we have previously reported, relatively few project funds have been allocated to these latter activities; for example, DOE allocated only \$60 million of \$166 million in project funds to these work activities in fiscal year 1992.⁶

Where consolidations have occurred, TRW has reported reductions in project staff and costs achieved by eliminating redundancies and realizing economies of scale. According to the contractor, for example, in eight work activities transferred to it, the number of staff has been reduced from 257 to 184 at an estimated annual savings of \$7.2 million. DOE recognized these consolidations as notable achievements in its evaluation of TRW's performance in the first 6 months of fiscal year 1993.

DOE, however, has not taken full advantage of opportunities to consolidate and streamline project activities under fewer contractors. For example, TRW had estimated that transferring Raytheon's architecture and engineering responsibilities to TRW would save about \$2 million annually in management and support costs. As discussed earlier, because DOE decided to transfer this work to Science Applications, the Department will continue to support the costs for management, coordination and planning, and support services incurred by two architecture and engineering contractors.

DOE Missed Opportunity to Reevaluate Repository Project Organization

In February 1994, a DOE contract reform team recommended, among other things, that the Department replace, when appropriate, its standard cost-reimbursable contracts (such as TRW's management contract) with a combination of competitively awarded fixed-price contracts and performance-based management contracts. Also, in June 1994, DOE's Inspector General recommended that DOE reassess TRW's role on the repository project as a part of the required evaluation of TRW's performance after 3 years. But DOE did not evaluate whether the TRW management and operating contract could be replaced with a performance-based contract or whether a management and operating contractor was still needed. Instead, on the basis of the contractor's performance, DOE decided to continue TRW's contract for the full 10-year period and to initiate discussions with all participants on the repository project about assigning TRW a larger role in managing the project. DOE's

⁶Nuclear Waste: Yucca Mountain Project Behind Schedule and Facing Major Scientific Uncertainties (GAO/RCED-93-124, May 21, 1993).

plans fall short of the recommendations of the Secretary's contract reform team and would not consolidate project activities under fewer contractors.

DOE Reviews Recommended Changes

From June 1993 until February 1994, a contract reform team established by the Secretary of Energy evaluated the Department's contracting practices and developed numerous recommendations for improvement. The team's principal focus was on traditional cost-reimbursable management and operating contracts, such as the contract DOE had awarded to TRW. According to the Secretary's preface to the team's report, common to the many weaknesses in DOE's contracting practices is that DOE is not adequately in control of its contractors and is not in a position to ensure the prudent expenditure of taxpayer dollars.

Among other things, the contract reform team found that many award-fee contracts suffer from the absence of well-defined performance criteria and measures that would allow DOE to effectively evaluate whether and how much to award in fees. The reform team recommended that DOE replace its standard management and operating contract with a new performance-based management contract. The performance-based management contract would be designed to retain the talents of the private sector in integrating the efficient operation of a site or facility, with no presumption that the contractor would itself handle any or all of the site operations. The team also recommended that DOE strengthen the agency's systems for selecting and managing contractors and review current management and operating contracts for the purpose of identifying discrete tasks for fixed-price contracts and subcontracts. (For additional details on the contract reform initiative, see app. I.)

Also, in June 1994, the Inspector General issued a report on his office's review of the management of the Yucca Mountain project that identified several weaknesses.⁷ The Inspector General found, in part, that 2-1/2 years after DOE hired TRW, the anticipated reduction in the number of participants on the repository project had not materialized, nor had management and integration of the project been effectively implemented.

The Inspector General reported that the provision in the management contract requiring DOE to evaluate TRW's performance after 3 years provided a unique opportunity to streamline the project, better define the roles of the participants, and achieve cost savings. The Inspector General recommended that the contractor's role be reassessed in conjunction with

⁷Audit of Costs and Management of the Yucca Mountain Project (DOE/IG-0351, June 23, 1994).

the performance evaluation. Prior to the award of the management contract to TRW, DOE's Inspector General had questioned whether DOE needed to hire a management contractor because the 1987 amendments to the Nuclear Waste Policy Act had reduced the number of candidate sites for a repository from three to only the one site at Yucca Mountain. At that time, managers of the disposal program disagreed with the Inspector General because, in their view, the program and repository project needed strong centralized management.

DOE Decides to Continue TRW Contract and Restructure Project Organization

Earlier this year, DOE assembled a team that evaluated TRW's performance for the 3 years ending in February 1994. On June 24, 1994, the director of the program concluded on the basis of that evaluation that (1) TRW had demonstrated the technical and managerial expertise required to succeed in fulfilling its mission and (2) it was unlikely that reopening the competition would result in the award of a contract to a successor whose performance would be materially better. Therefore, the director determined that the contract should be continued for its full 10 years.

In conjunction with the specific review of TRW's performance and a general review of the program and project, the director of the disposal program initiated a restructuring of the arrangement of participants in the repository project to define clear lines of responsibility and accountability. The director said that he recognized, upon assuming his position in 1993, that the organization of the project—including the interrelationships among participants—was a fundamental problem that would take several years to correct. The first step in correcting the problem—reorganizing the program and the project office at the federal level—has been completed, and the next step is to restructure the arrangement of project participants. This step, the director said, involves two principal components.

First, DOE wants to make TRW responsible and accountable for managing and integrating all site investigation activities. To accomplish this objective, DOE must find a way to give TRW authority over all other project participants that perform these activities. DOE's preferred approach is for the other participants to enter into contracts with TRW.⁸ Discussions on this initiative among DOE, TRW, and performing participants are ongoing.

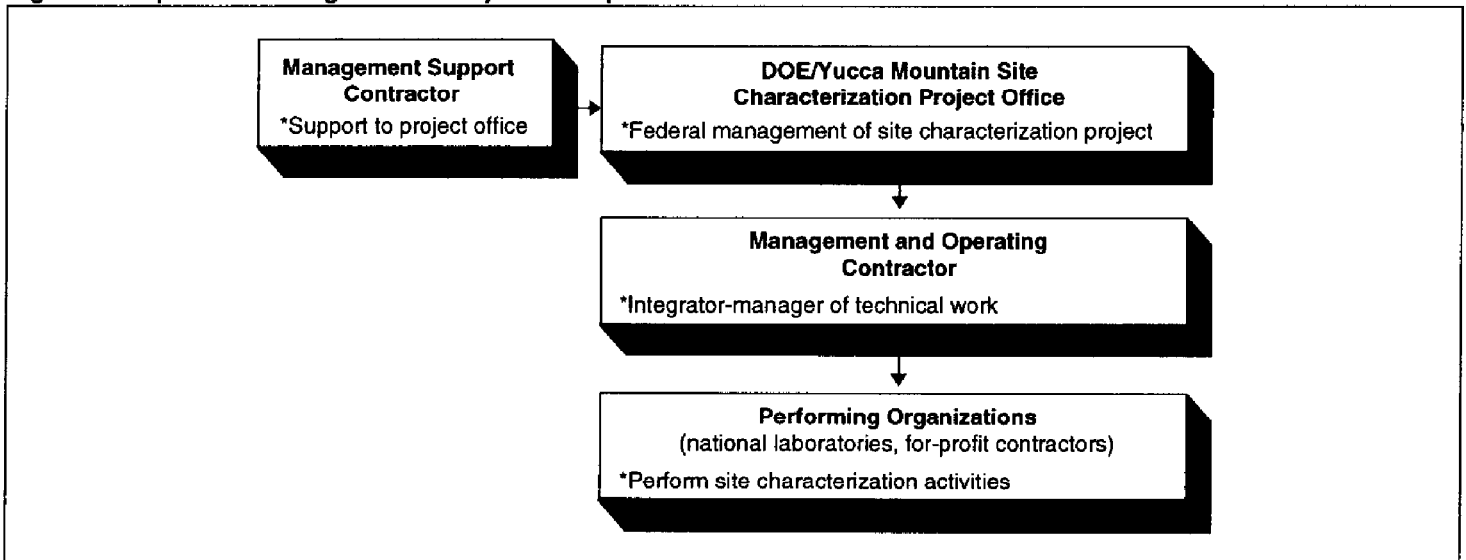
Second, DOE intends to establish a separate contract for assisting its project office in developing the technical bases for key project decisions

⁸An exception is the U.S. Geological Survey; as a federal agency, it may not subcontract to TRW. DOE expects to retain its present agreement with the Geological Survey and negotiate a written understanding with that agency on the agency's relationship to TRW.

that DOE must make. Currently, such assistance, called management support, is provided by both TRW and Science Applications. For the initial implementation of this initiative, Science Applications and its subcontractor—Integrated Resources Group—became subcontractors to TRW on October 1, 1994. For a period of time expected to last up to 3 years, the specific employees of TRW and of these two subcontractors that perform management support services will be organizationally and physically separated from the rest of their organizations. At the end of this initial period, DOE expects to competitively award a new contract for management support services for the entire disposal program, including the repository project.

According to the director of the disposal program, the new arrangement of project participants that he is attempting to put in place would be consistent with the reforms advocated by the contract reform team. (Fig. 3 illustrates the project organization envisioned by DOE.)

Figure 3: Proposed Rearrangement of Project Participants



Source: DOE.

DOE's Actions Fall Short of Contract Reform Goals

Although DOE's planned reorganization of the repository project could, if implemented, place more authority and accountability under the management contractor, DOE's plans fall short of the recommendations of

the Secretary's contract reform team and DOE's Inspector General. For example, by deciding to continue TRW's management contract, DOE put itself in the position of retaining the contractor for 7 more years under a traditional cost-reimbursable management contract. The contract reform team had concluded that such contracts should be replaced, when appropriate, with fixed-price contracts and/or management contracts that have performance measures built into them.

Moreover, the proposed reorganization of participants would not consolidate project activities under fewer contractors. With the exception of Raytheon Services, which, as discussed earlier, is withdrawing from the project, TRW's team of subcontractors, several of DOE's national laboratories, and the other existing project participants would remain on the project. In addition, in about 3 years, DOE expects to award a new contract for management support services for the disposal program, including the project.

In January 1994, the Secretary initiated an independent financial and management review of the repository project headed by a 2-member panel appointed by the Secretary and the governor of Nevada. On November 10, 1994, the panel selected a contractor to conduct the review over approximately the next year. Because the review is to include an analysis of the effectiveness of the project organization, it may, when completed, provide better insights on the extent to which DOE's initiative to reorganize the project meets the Department's contract reform goals.

Conclusions

Although TRW is responsible for some elements of the disposal program, DOE has retained authority and responsibility for directing the work of each participant, including TRW, on the repository project. Moreover, because there are more participants now than ever, project participants spend about one-third of their project funds on management, coordination and planning, and support activities. DOE now recognizes a need to improve the organization and management of the repository project and has begun discussions toward that objective with project participants. Nevertheless, DOE's proposal to reorganize the repository project appears modest in relation to the Department's contract reform goals and would not consolidate project activities under fewer contractors. We are not, however, recommending at this time that DOE take additional steps toward achieving the Department's contract reform goals and the original objective of consolidating project activities pending the completion of the Secretary's independent financial and management review of the project

and DOE's response to the findings, conclusions, and recommendations of that review.

Agency Comments


We discussed the facts in this report with the director and deputy director of DOE's disposal program and with the manager and deputy manager of DOE's repository project office. These officials agreed with the facts in this report and added that the report should recognize the initiatives that DOE is taking to establish a rational, effective arrangement of project participants. The officials said that these initiatives are consistent with the results of the Secretary's review of the Department's contracting practices. We incorporated a description of DOE's initiatives into our report.

A discussion of our scope and methodology appears in appendix II. Our work was performed from August 1993 through December 1994 in accordance with generally accepted government auditing standards.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 7 days after the date of this letter. At that time, we will send copies to the appropriate congressional committees; the Secretary of Energy; and the Director, Office of Management and Budget. We will also make copies available to others on request.

Please contact me on (202) 512-3841 if you or your staff have any questions. Major contributors to this report are listed in appendix III.

Sincerely yours,



Victor S. Rezendes
Director, Energy and
Science Issues

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Abbreviations

DOE	Department of Energy
TRW	TRW, Inc.

Description of Findings and Recommendations of the Secretary of Energy's Contract Reform Team

From June 1993 until February 1994, the Secretary's contract reform team evaluated the Department of Energy's (DOE) contracting practices and developed proposals for improving these practices. The team's principal focus was on cost-reimbursable management and operating contracts. This is the kind of contract DOE awarded to TRW, Inc., on the disposal program and has traditionally used for many of its contractors that work at both the Nevada Test Site and the Yucca Mountain project. According to the Secretary's preface to the team's report, common to all of the numerous weaknesses in DOE's contracting practices identified by experts within and outside of DOE is a simple but fundamental problem: DOE is not adequately in control of its contractors. As a result, the Secretary said, the contractors are not sufficiently accountable to DOE, and DOE is not in a position to ensure prudent expenditure of taxpayer dollars in pursuit of its principal missions.

The contract reform team found that

- contracting effectiveness generally has suffered from lack of competition due, in part, to DOE's long-term relationships with particular contractors;
- many award-fee contracts suffer from the absence of well-defined performance criteria and measures that would allow DOE to effectively evaluate whether and how much to award in fees; and
- DOE's financial management practices have generally failed to produce information needed, such as research dollars spent on costs other than front-line researchers, for effective management.

The reform team recommended that DOE replace its standard management and operating contract with a new performance-based management contract. The performance-based management contract will be designed to retain the talents of the private sector in integrating the efficient operation of a site or facility, with no presumption that the contractor will itself handle any or all of the site operations. The team also recommended that DOE strengthen the agency's systems for selecting and managing contractors and review current management and operating contracts for the purpose of identifying discrete tasks for fixed-price contracts and subcontracts.

The team reported that implementation of its recommendations would represent fundamental changes to the agency's contracting practices. That is, instead of simply awarding or extending traditional cost-reimbursable contracts, DOE will now

**Appendix I
Description of Findings and
Recommendations of the Secretary of
Energy's Contract Reform Team**

- determine whether discrete tasks or functions can be performed and bid on separately or subcontracted on a fixed-price basis;
- develop objective, policy-based performance measures and incentives when a cost-reimbursable type of contract is appropriate for some or all of the work;
- use the best contracting approach for a specific facility/site that addresses required work, policy-driven requirements, and incentives; and
- actively pursue and solicit competition for new contracts.

Scope and Methodology

We used a four-step methodology to determine whether DOE is effectively using TRW as a management and operating contractor to consolidate site investigation activities, streamline project decision-making, and reduce project costs. First, we reviewed DOE's management and operating contract with TRW, related regulations, and documentation on the agency's justification for hiring a management contractor. We compared TRW's roles on the program and the investigation project with the contract and DOE's justification to determine whether TRW is performing as DOE intended.

Second, we identified all major and minor participants—contractors and government agencies—on the investigation of Yucca Mountain in fiscal years 1991 through 1994 to identify participants that entered and left the project after DOE hired TRW.⁹ We reviewed TRW's proposals to DOE for implementing the contract, identified the work that the agency transferred to TRW, and documented the agency's reasons for approving or disapproving transfers of work. We compared this information to both the terms of TRW's contract and DOE's justification for hiring a management and operating contractor to determine whether the planned and actual realignment of work has been consistent with the contract and DOE's justification.

Third, we documented the responsibilities and authorities of TRW and other project participants. We also documented the project's decision-making process—the authority to manage discrete work functions and provide direction to project participants—and the possible effects these arrangements have on the efficiency and effectiveness of project performance. Finally, for fiscal years 1991 through 1994, we reviewed project documents, such as cost reports, that identified costs that major project participants incurred in each work category.

To determine whether a management and operating contractor is the best means of consolidating project activities and integrating elements of the disposal program, we first used the results of the analysis described above to determine whether DOE has effectively used TRW as a management and operating contractor on the investigation project. Because we concluded from this analysis that DOE has not used TRW to manage that project, we could not determine, on the basis of project experience, whether a management and operating contract is the best approach for managing the disposal program and investigation project. Therefore, to provide insight on this issue, we used the results of the Secretary of Energy's contract

⁹We defined major participants as contractors and government agencies receiving \$5 million or more in annual project funding and minor participants as contractors and agencies receiving annual project funding from \$100,000 to \$5 million.

Appendix II
Scope and Methodology

reform initiative as criteria for determining whether the use of a traditional management and operating contract is the best approach for managing the investigation of Yucca Mountain and integrating that project and other elements of the disposal program.

Major Contributors to This Report

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Related GAO Products

Nuclear Waste: Comprehensive Review of the Disposal Program Is Needed
(GAO/RCED-94-299, Sept. 27, 1994).

Independent Evaluation (GAO/RCED-94-258R, July 27, 1994).

Nuclear Waste: Yucca Mountain Project Management and Funding Issues
(GAO/T-RCED-93-58, July 1, 1993).

Nuclear Waste: Yucca Mountain Project Behind Schedule and Facing
Major Scientific Uncertainties (GAO/RCED-93-124, May 21, 1993).

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