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NUCLEAR WASTE

Department of Energy's Project to Clean Up Pit 9 at Idaho Falls Is Experiencing Problems

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The Honorable Tom Bliley
Chairman
The Honorable John Dingell
Ranking Minority Member
Committee on Commerce
House of Representatives

Cleaning up facilities that over the past 50 years have produced the nation's supply of nuclear materials for weapons is an enormous and complex challenge facing the federal government. In fiscal year 1997, the Department of Energy's (DOE) Environmental Management program is expected to spend about $5.6 billion to clean up radioactive and hazardous wastes. This effort is being performed primarily under cost-reimbursement contracts by contractors that manage and operate (M&O contractors) many of DOE's facilities. DOE, however, has found that using the M&O approach is expensive and slow. To reduce cleanup costs and spur greater progress, DOE is pursuing a new contracting strategy, which it calls "privatization." This approach relies on the use of a competitively awarded fixed-price performance contract, through which DOE purchases waste cleanup services from a private contractor. While we have been supportive of DOE's efforts to reform its contracting practices, we have also been concerned that the Department effectively manage this transition.

One of DOE's first privatization projects intended to clean up radioactive wastes is the Pit 9 project at the Idaho National Engineering and Environmental Laboratory. In your letter of January 31, 1997, you expressed concerns about the status of the Pit 9 project and the potential for cost overruns. As agreed with your offices, we focused our review on (1) DOE's basis for selecting a fixed-price contracting approach and a subcontract for the project, (2) the basis for awarding the subcontract to Lockheed Martin Advanced Environmental Systems, and (3) the current status of the project.

Results in Brief

DOE chose a fixed-price approach for the project because Department officials believed a fixed price would help limit the project's total cost and provide an incentive for contractors to use efficient practices in carrying out the cleanup by shifting the risk of nonperformance to the contractors. DOE officials believed they had a better chance of achieving these goals with a fixed-price approach than with a cost-reimbursement approach,

even though uncertainties existed about the actual wastes in the pit. DOE also directed its M&O contractor at the Idaho Falls site to conduct the procurement process for the selection of a subcontractor and to oversee the project.

The M&O contractor awarded the subcontract to Lockheed Martin Advanced Environmental Systems on the basis of several key factors, including the adequacy of its technical proposal, its apparent technical and managerial expertise, its successful completion of the test phase, the price—about $200 million, and a guarantee of performance under which the company would return all payments received if its treatment system failed to work properly. Because of reservations about the maturity of the technologies, the M&O contractor expanded the test phase of the procurement from a review of references and results of prior work to include pilot scale testing of key aspects of the proposed systems.

Estimated completion of the project is at least 26 months behind the original subcontract schedule. The waste retrieval and processing facilities are not ready, and no retrieval or treatment of wastes has begun. Instead, DOE has been assessed $940,000 in fines by its regulators—the state of Idaho and the Environmental Protection Agency—for failure to meet deadlines for submitting acceptable design documents. Lockheed Martin Advanced Environmental Systems estimates that its costs have already exceeded the subcontract price and has requested $257 million for its work through June 30, 1997, as well as a new cost-based subcontract to reimburse the company for all future costs. These changes, if implemented, would bring the total subcontract price for the Pit 9 cleanup to well over twice its original $200 million value. The company's basis for requesting more money is its view that problems with the project are largely attributable to DOE and its M&O contractor for improper administration of the subcontract, excessive interference, and substantially changing the estimate of types and amounts of materials contained in Pit 9. DOE officials said that it may be several months before they have an official position on the company's claims, but DOE and the M&O contractor disagree with the assessment of what caused the problems and instead point mainly to the subcontractor's insufficient application of technical and management skills on the project.

Discussions are continuing, and the outcome of the disagreement is uncertain. Meanwhile, because of these contract difficulties and the related legal implications, the M&O contractor has hired outside legal counsel for the Pit 9 project and, under the terms of the M&O contract, DOE

is responsible for paying those legal fees. Whatever the outcome, the Pit 9 project, as originally conceived, is clearly a failure. It simply cannot be completed in the time frame or within the price agreed to by the subcontractor. This has important future implications because DOE's planned investment in privatization cleanup projects is growing—the Department included over $1 billion in its fiscal year 1998 budget request for 11 such projects.

Background

Pit 9 is an inactive waste disposal pit, slightly larger than 1 acre in surface area. From November 1967 through June 1969, various wastes ranging from contaminated rags to storage drums with hazardous chemicals and plutonium-contaminated sludge were dumped into the pit and covered with a layer of soil. DOE estimated that the pit contains about 250,000 cubic feet of transuranic and hazardous wastes[1] and contaminated soil needing treatment. Because the wastes and soil are radioactive, retrieving and treating them involves special handling so that workers are not exposed to contamination and radioactive materials are not released to the environment.

Starting in 1991, DOE and its regulators—the Environmental Protection Agency (EPA) and the state of Idaho—began exploring ways to remediate Pit 9. They hoped that in doing so, they would also obtain information that would help in cleaning up other locations at the Idaho Falls site. DOE and its regulators agreed to clean up Pit 9 as an interim action under Superfund[2] by retrieving soil and wastes from the pit, separating those materials that could be returned to the pit without treatment, treating the remaining soil and wastes to achieve at least a 90-percent reduction in volume, and packaging the remaining concentrated materials for on-site storage until final disposal.

Pit 9 is one of the first of several privatization projects at DOE sites. DOE's Office of Environmental Management, which is responsible for cleanup efforts, intends privatization projects to involve fixed-price, competitively

[1]Transuranic wastes, man-made radioactive elements produced from uranium during a nuclear reactor's operations, emit alpha particles. Alpha-emitters are dangerous because of concerns about inhaling them. Hazardous wastes are wastes regulated by the Environmental Protection Agency and authorized states under the Resource Conservation and Recovery Act of 1976. Hazardous wastes at Pit 9 include carbon tetrachloride and mercury.

[2]The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)—commonly referred to as Superfund—allows an interim action, which is not necessarily a final cleanup action. The regulators agreed to address the Pit 9 cleanup as an interim action to expedite the overall cleanup effort at the Idaho Falls site and to reduce the risks associated with the contamination at the pit.

awarded contracts. A private contractor would finance, design, build, own and operate any required waste cleanup facilities, and DOE would pay the contractor only for a successful cleanup. Under a fixed-price contract, the contractor is paid a specified amount that is not subject to adjustment on the basis of the contractor's actual costs. However, under certain conditions, the contractor can request an adjustment to the contract price for work that is done outside of the scope of the original contract. Such an adjustment is subject to review and approval by DOE and would result in a contract modification if approved.

This fixed-price approach is in contrast to the Department's past practices, under which DOE used a cost-reimbursement contract, told the M&O contractor how to perform waste-related cleanup activities, and paid the M&O contractor regardless of what was accomplished. Cost-reimbursement contracts provide for payment of all costs incurred by the contractor to the extent that these costs are allowable under the specific contract provisions—reimbursable costs can include such things as labor, materials, overhead, subcontract costs, and legal fees. Cost-reimbursement contracts establish an estimate of total costs for the purpose of obtaining and obligating the funds.

DOE Preferred a Fixed-Price Subcontract

DOE chose a fixed-price approach for the Pit 9 project because Department officials believed a fixed price would help limit the project's total cost and provide an incentive for contractors to use efficient practices in carrying out the cleanup by shifting the risk of nonperformance to the contractors. During the early stages of the procurement process, concerns arose about the appropriateness of a fixed-price approach and the risks involved, such as the uncertainty about the contents of the pit. Nevertheless, senior DOE officials decided that this approach was warranted, given the high costs and the inefficient performance the Department had experienced with cost-reimbursement contracts, private industry's expressed interest in performing the cleanup using a fixed-price arrangement, and the potential benefits of the approach. DOE directed its M&O contractor to conduct the procurement and selection process and to oversee the subcontractor selected because the Department believed that the M&O contractor had the necessary expertise and that a subcontract would allow greater application of the private sector's best practices.

DOE Chose a Fixed-Price Approach to Limit Costs and Shift Performance Risk to the Subcontractor

DOE was looking for a new approach for the Pit 9 project—one that would reduce the overall cost, shift the risk of nonperformance to the private sector, and thus provide an incentive for contractors to use efficient practices in carrying out the cleanup. To accomplish these objectives, DOE decided upon a fixed-price approach to the cleanup. Under this approach, DOE planned to pay only for actual remediation of the Pit 9 wastes—at a fixed price intended to cover all applicable costs associated with the project (e.g., those for equipment, mobilization, processing, etc.).

The fixed-price approach was selected despite some indications that it was not well suited for an application such as Pit 9. Limited guidance exists on selecting a contract type; however, the Federal Acquisition Regulation (FAR) suggests that a firm fixed-price contract, which best utilizes the basic profit motive of the private sector, should be used when the risk involved is minimal or can be predicted with an acceptable degree of certainty. Given that there was little certainty about the contents of the pit, this guidance seems to suggest that a fixed-price contract may not have been the best approach. In addition, questions that later arose during the procurement process regarding whether the proposed technologies were sufficiently developed added to the risk and uncertainty of the project.[3] On the other hand, the FAR also suggests that a firm-fixed-price contract may be suitable where performance uncertainties can be identified, reasonable estimates of their cost impact can be made, and the contractor is willing to accept a firm fixed price representing assumption of the risks involved.

Questions about whether a fixed-price approach was appropriate for the Pit 9 cleanup surfaced during the early stages of the procurement process. For example, some DOE officials at the site had expressed concerns about using a fixed-price approach given the uncertainties associated with the contents of the pit. In addition, responses to the draft request for proposal (RFP) included concerns from interested firms that a fixed-price approach would have to reflect large contingencies and could therefore result in higher bids from the competitors. In addition, these responses stated that a fixed-price subcontract could generate claims for additional reimbursement if work outside the scope of the contract occurred.

Even with these concerns, DOE decided to use a fixed-price approach. According to DOE officials at the Idaho Falls site, they realized that a fixed-price approach to this cleanup entailed some risks due to the uncertainties of the pit's contents. However, DOE also believed there was

[3]A study released after the subcontract was finalized, A Systematic Look at TWRS Privatization, Pacific Northwest National Laboratory (Jan. 1995), reported that privatization—which includes using a firm-fixed-price contract—works best when the technology is mature and the work is well defined.

much to be gained, including information on how to effectively clean up other DOE disposal sites, if this new approach were successful. In addition, DOE had come under criticism from private industry for continuing to fund what was perceived as research and development efforts of its M&O contractors without any actual cleanup. According to senior DOE officials, private industry was confident that it had the technology to clean up the wastes and preferred a fixed-price arrangement. Therefore, senior DOE officials at Idaho Falls and headquarters decided that the potential benefits associated with fixed-price contracting outweighed the possible risks.

As we noted in our recent report on DOE's estimates of potential savings from privatizing cleanup projects, DOE's use of fixed-price contracts has not always been an effective method to minimize cost growth on projects.[4] For example, a 1993 study of DOE's Environmental Restoration projects found that, for a representative sample of projects, cost growth on projects with fixed-price contracts was almost 75 percent, more than double that of projects with cost-reimbursement contracts. This cost growth occurred primarily because projects were poorly defined, leading to contract change orders after the contracts were signed.[5] A 1996 update to the study showed that cost overruns ranged from about 30 to 50 percent but did not distinguish between projects with fixed-price and cost-reimbursement contracts.[6]

DOE Decided to Manage Using a Subcontract

In conjunction with its decision to use a fixed-price approach to the Pit 9 cleanup, DOE also decided to have its M&O contractor—EG&G Idaho, Inc.[7] (EG&G)—conduct the procurement process, select the subcontractor, and oversee the subcontractor's efforts at Pit 9. According to DOE officials, there were several reasons for choosing a subcontract for this effort:

[4]See Nuclear Waste: DOE's Estimates of Potential Savings From Privatizing Cleanup Projects (GAO/RCED-97-49R, Jan. 31, 1997).

[5]The Department of Energy, Office of Environmental Restoration & Waste Management, Project Performance Study, Independent Project Analysis, Inc. (Reston, Va., Nov. 30, 1993). Because the study included both completed and ongoing projects, some of the costs were estimated.

[6]The Department of Energy, Office of Environmental Restoration & Waste Management, Project Performance Study Update, Independent Project Analysis, Inc. (Reston, Va., Apr. 1996).

[7]When the procurement process began, the M&O contractor at Idaho Falls was EG&G-Idaho, Inc. The M&O contract came up for renewal in 1994, Lockheed won the competitive bidding for the M&O contract, and Lockheed Idaho Technologies Company (LITCO) became the new M&O contractor in October of 1994. Lockheed later merged with Martin Marietta, and LITCO became LMITCO (Lockheed Martin Idaho Technologies Company).

- DOE believed that EG&G already had the necessary expertise to evaluate the technical proposals submitted by interested firms and to oversee the cleanup, whereas DOE did not have the expertise in-house and would have had to acquire it.
- DOE considered the Pit 9 project to be within EG&G's area of responsibility and wanted EG&G to oversee the cleanup.
- DOE believed the project could be executed more efficiently as a subcontract through EG&G because using the M&O's procurement and contracting standards would simplify and streamline the procurement process and make it easier to implement private sector best practices.

On the basis of these reasons, DOE authorized EG&G to initiate the procurement process for the Pit 9 cleanup and to select a subcontractor to remediate the wastes on a fixed-price basis. The cleanup was to be conducted in three phases: (1) proof of process, which would include a technical review of the results of prior projects to verify that the proposed retrieval and processing systems were effective (phase I); (2) limited production test, which would operate the completed system on small quantities of actual waste from Pit 9 to determine if it worked as designed (phase II); and (3) full scale operations to remediate the contents of the pit (phase III).

Subcontractor Selected on the Basis of Proposal, Experience, Price, and Performance Guarantee

Lockheed Martin Advanced Environmental Systems (LMAES) was selected for the subcontract on the basis of its technical proposal, cleanup experience, successful completion of the test phase, proposed price, and willingness to provide a corporate guarantee of performance if the system did not work as envisioned. However, much of LMAES' prior experience had been on smaller and simpler cleanup efforts, and its proposed system had never been tested in a full-scale operation. Despite technical concerns raised during the review of the proposals and the proof-of-process test phase, EG&G determined that the corporate guarantee included in the subcontract would protect the government's interests if the treatment process failed.

Procurement Process Used Phased Approach

EG&G began the procurement process in 1991, using a phased approach, under which interested firms would submit their technical proposals first, and price would be negotiated later with the successful firm. EG&G's first step was to put a notice in the Commerce Business Daily, which described the requirements for the Pit 9 comprehensive demonstration and the relevant experience needed. According to the Pit 9 mission statement, the

objective of the project was to excavate, characterize, treat as necessary, and dispose of all wastes from the pit at minimum cost to DOE. Fifty private sector firms expressed interest in the project by responding to the notice. After this initial show of interest, EG&G issued a draft RFP to qualified firms, held a preproposal conference with interested firms to discuss the project in more detail and answer questions, conducted a tour of the site to provide additional information, and subsequently revised the draft RFP to incorporate comments from the potential competitors.

The final RFP was issued in November 1991 to 18 prospective competitors who still expressed interest after the preproposal conference and site tour. This RFP contained the technical requirements for the Pit 9 comprehensive demonstration and provided the proposed plan for cleaning up the area, as agreed to by DOE and its regulators. In response to the RFP, EG&G received proposals from three competitors—a team led by Lockheed[8] and two other teams, one led by Rust Federal Services (formerly Waste Management Environmental Services) and the other by Nuclear Radiation Technologies Corporation.

Source Evaluation Board Used to Evaluate Proposals

EG&G used a Source Evaluation Board (Board)—consisting of eight EG&G employees with technical and administrative expertise—to review and evaluate the three proposals. The Board used a combination of mandatory requirements and technical criteria to evaluate the proposals. The mandatory requirements were these: (1) Offerors must provide demonstrated evidence that they are qualified by experience to treat materials contaminated with the radioactive elements plutonium and americium; (2) offerors must possess or have access to approved analytical laboratory facilities capable of analyzing radioactive, hazardous, and mixed wastes; and (3) offerors must have an established environmental, safety, and health program.

The Board determined that all three competitors met these mandatory requirements. For example, regarding the mandatory requirement for demonstrated evidence of experience, the Lockheed team was deemed qualified on the basis of its cleanup experience with plutonium-contaminated soil on the Johnston Atoll. Although members of the Board checked with some of the references given and found that projects were completed on time and within budgets, none of the experience cited by the Lockheed team matched the size and complexity

[8]The Lockheed team was led by Lockheed-AWC. This entity later became known as Lockheed Environmental Systems and Technologies (LESAT) and finally, with the Lockheed/Martin Marietta merger, as LMAES.

of the Pit 9 cleanup effort. According to a member of the Board, they evaluated the Lockheed team more on the parent corporation's overall reputation and resources.

In addition to the mandatory requirements, the Board used three technical criteria to evaluate the proposals: (1) the technical feasibility of the approach, including the best combination of technologies to achieve remediation; (2) offerors' demonstrated experience and qualifications, including the expertise of key personnel; and (3) offerors' demonstrated ability to perform full-scale operations within an agreed-upon schedule and budget. On the basis of its application of the technical criteria, the Board determined that the teams led by Lockheed and Rust were essentially equivalent in their overall scores. The third team was dropped from consideration after receiving lower scores on the technical criteria.

Proof-Of-Process Phase Expanded

Although the Lockheed and Rust teams were deemed to be essentially equivalent, the Board had significant reservations about whether the proposed technologies were sufficiently developed. According to DOE officials, the private sector—including representatives from the two competing teams—had been telling DOE and EG&G that proven "off-the-shelf" technology was capable of remediating the wastes in the pit. However, the Board believed that while the components of the proposed systems may have been tested individually, they had never been combined into a total system to treat radiologically contaminated materials. The Board reported that none of the proposed technologies or processes fully complied with the intent of the RFP selection criteria, but the Board believed that technology existed in the commercial sector, which, "with additional development, adaptation, schedule and resource considerations provided," could successfully remediate Pit 9 to the desired objectives.

Although the Board had reservations, it also believed that the remaining two technical proposals reflected the best available processes at the time. To mitigate concerns about the proposed technologies, the Board recommended that, in going forward with the procurement, the proof-of-process phase be expanded from a review of references and results of prior work to include pilot scale testing of critical aspects of both treatment systems.

Both Lockheed and Rust were awarded 1-year fixed-price subcontracts for $8 million each to conduct the proof-of-process testing, with payment to be made upon successful completion. The specific tests to be included

were proposed by the competing teams, with concurrence from EG&G. Because the proposed treatment systems were different and the Board's concerns about the technology differed for each team, the tests conducted in the proof-of-process phase were also different for each team and did not include a comprehensive test of the entire process. For example, the tests for the Lockheed team included key aspects of such components as the chemical leach system and the plasma melter, both key pieces of its proposed process. The proof-of-process phase concluded in December 1993, with both teams passing their designated tests and receiving payment under their subcontracts.

Prior to the conclusion of the proof-of-process phase, EG&G sent a request for pricing proposal to both teams. Although DOE's original intent had been to make no payments until actual remediation began, the request for pricing proposal provided for some payments for design milestones and construction progress to keep the overall subcontract price lower by offsetting the cost of financing to the subcontractor. Because of this change in payment strategy, the request for pricing proposal also required a corporate guarantee of performance to protect the government's interests. Under this corporate guarantee, if the subcontractor's proposed system did not pass the limited production test at the completion of construction and installation, the subcontractor would be required to return all payments made to date. When the Rust team declined to provide the corporate guarantee, EG&G deemed Rust to be nonresponsive to the request for pricing proposal and disqualified it from further consideration.

Price Negotiations Focused on Reducing Subcontract Price

The Lockheed team submitted a best and final offer of $206 million for the subcontract and included the corporate guarantee. However, because of overall budget constraints, the maximum that DOE was willing to allocate to the Pit 9 project was $180 million. Therefore, the final negotiations for the subcontract focused on ways to bring Lockheed's best and final offer down to DOE's funding level.

In August 1994, DOE assumed responsibility for the subcontract negotiations with LMAES because the Lockheed Corporation had won the competitively bid M&O contract for the Idaho Falls site, to be effective in October, and concerns were raised about a potential conflict of interest between the two Lockheed companies. To bring the subcontract price down to the $180 million level, DOE officials made two changes.

- First, more of the construction costs were incorporated into progress payments to offset the subcontractor's cost of financing, which reduced the subcontractor's $206 million offer by $6 million to $200 million and shifted some of the costs of financing the project to the government.
- Second, a provision was added to the subcontract for possible follow-on work. This provision allowed the subcontractor to allocate $21 million in equipment to future work rather than the Pit 9 subcontract, further reducing the price to $179 million. However, if the subcontractor is not allowed to proceed with the future work, the subcontractor would receive a $21 million deferred payment for the equipment.[9]

The subcontract for the Pit 9 cleanup was signed in October 1994 and included both design milestone and construction progress payments, unit price payments for remediation of the contents of the pit, and lump sum payments for decontamination and decommissioning and profits. (For additional information on the types and amounts of payments made, see app. I.) To address the potential conflict of interest associated with one Lockheed company overseeing a subcontract with another Lockheed company, the Lockheed M&O contractor prepared an organizational conflict-of-interest mitigation plan, which was reviewed and approved by DOE. This resulted in the sequestration of the M&O contractor's Pit 9 contract administration and oversight group from the rest of the organization and the establishment of a program oversight board to monitor the dealings between the M&O contractor and the subcontractor.

Subcontractor Wants to Renegotiate Contract Because of Schedule and Cost Difficulties

After nearly 3 years of work on the subcontract, LMAES estimates that the project is substantially behind the original subcontract schedule and that its costs already exceed the total subcontract price of $200 million. Yet the waste retrieval and processing facilities are not ready, and no wastes have been retrieved or processed. LMAES claims DOE, through its M&O contractor, interfered in the performance of the subcontract and made substantial changes to the estimates of the materials in the pit. As a result, LMAES contends that its corporate guarantee of performance is no longer applicable to the project. LMAES requested a total of $257 million for costs through June 1997 and wants any future work on the project to be done under a cost-reimbursement subcontract. DOE and the M&O contractor are studying LMAES' request but believe LMAES is responsible for many of the current problems because it assigned personnel with inadequate technical and managerial skills to the project. DOE, its M&O contractor, and LMAES are

[9]Because the $21 million payment will be made whether or not the subcontractor processes the additional waste through its treatment facility, we refer to the Pit 9 subcontract price as $200 million in this report—the $179 million stated subcontract price plus the $21 million deferred payment.

involved in discussions on how to move the project forward. Meanwhile, LMAES has substantially slowed its work on the project to limit its costs and said that it will not resume normal construction activities unless the subcontract is satisfactorily renegotiated.

Project Is Behind Schedule and Over Subcontract Price

On March 28, 1997, LMAES notified the M&O contractor that although initial plans called for having facilities operational in time to start a limited production test in August 1996, such testing cannot begin until March 1998. Likewise, LMAES estimated that it would not be able to complete the project until April 2001, a delay of 26 months, compared with the subcontract's deadline of February 1999. By that date, LMAES was to have retrieved and processed all wastes from the pit, returned untreated soil to the pit, decontaminated and decommissioned the retrieval and treatment facilities, and removed its retrieval facility from the site.

Even though building construction is not complete and no wastes have been processed, LMAES reports that its costs have already exceeded the $200 million subcontract price. On the basis of its reported actual costs of $197.2 million through December 1996, LMAES estimated its total reimbursable costs to be $257.4 million by June 30, 1997.[10] For any work conducted after April 1, 1997, LMAES asked to convert the existing subcontract to a cost-reimbursement basis. These changes, if implemented, would bring the total subcontract price to well over twice its original $200 million value. At DOE's request, the Defense Contract Audit Agency is auditing LMAES' cost records.

The current situation is in sharp contrast to the information DOE submitted in its fiscal year 1997 budget request. At that time, DOE reported that the Pit 9 effort was a highly successful project with savings estimated at $134 million compared to what it would have cost under a cost-reimbursement project managed by the M&O contractor. In our previously cited January 1997 report on DOE's privatization savings estimates, we reported that this cost savings estimate was at best premature because the project was still under construction and had experienced technical and other problems.[11]

[10]LMAES asked for $158.1 million in payments in addition to the $52.9 million already received through March 1997. LMAES expected an additional $46.4 million to be recovered through future milestone payments or some other method.

[11]Nuclear Waste: DOE's Estimates of Potential Savings From Privatizing Cleanup Projects.

In addition to possible increases in the subcontract price, DOE has incurred or will incur other costs related to Pit 9. For example, DOE has paid $23.1 million for phase I testing and preliminary design activities, $12.9 million for project oversight by the M&O contractor, and about $3 million for DOE oversight costs. DOE was also assessed $940,000 in fines by its regulators—the state of Idaho and EPA—for failure to meet enforceable deadlines for submitting acceptable design documents for the project, as specified in the Federal Facility Agreement and Consent Order for the Idaho Falls site. DOE will pay the fines and is studying its options for recovering the cost from either the M&O contractor or LMAES. Under the Agreement to Resolve Disputes signed with DOE's regulators in March 1997, the next enforceable deadline is September 30, 1997—failure to meet this deadline could result in additional fines. In addition, because of the contract difficulties with LMAES and the related legal implications, the M&O contractor has hired outside legal counsel for the Pit 9 project, and, under the terms of the M&O contract, DOE is responsible for paying those legal fees.[12]

Subcontractor Faults DOE for Schedule and Cost Problems

LMAES blames DOE and its M&O contractor for a large portion of the schedule and cost problems. The company stated its case in its Request for Equitable Adjustment[13] to the M&O contractor and DOE. In summary, this document focuses on three main factors that LMAES says were under DOE's control and led to the schedule and cost problems: (1) improper administration of the fixed-price subcontract; (2) too much interference with a fast-track approach that was necessary to meet subcontract deadlines; and (3) changing estimates of Pit 9's contents. LMAES argues that these factors, particularly DOE's involvement in design activities and changing pit inventories, have materially changed the Pit 9 project from what the subcontract originally required. Therefore, LMAES believes that its corporate guarantee of performance is no longer applicable to the project.

[12]We have previously reported on DOE's efforts to control the legal expenses its M&O contractors incur in defending themselves against class action lawsuits. See Managing DOE: The Department's Efforts to Control Litigation Costs (GAO/T-RCED-96-170, May 14, 1996); Managing DOE: The Department of Energy Is Making Efforts to Control Litigation Costs (GAO/RCED-95-36, Nov. 22, 1994); and Managing DOE: Tighter Controls Needed Over the Department of Energy's Outside Litigation Costs (GAO/T-RCED-94-264, July 13, 1994).

[13]This document contains LMAES' rationale for claiming that the government caused the project to be behind schedule and over budget. The process of requesting an equitable adjustment is provided for in the "changes" clause of the subcontract. The changes clause is a standard clause in government contracts and subcontracts that authorizes the contracting officer to make changes within the general scope of the contract and, where warranted, make equitable adjustments in the contract price, delivery schedule, or both.

Subcontract Administration

LMAES says that it undertook the project with the expectation that it would have comparatively more freedom on the privatized fixed-price Pit 9 project than on a project procured under a cost-reimbursement approach, while accepting more risk if it failed. The company assumed there would be minimal government oversight and administration of the subcontractor's effort because of DOE's representation in subcontract specifications that the Pit 9 project was an "integrated 'turnkey' pilot" effort, with the "subcontractor assuming maximum responsibility, authority, and liability." LMAES said that as a result, it expected to be able to follow a results-oriented approach in which it could use best commercial practices in exercising its own judgment as to how the task should be done.

In contrast to what it expected, LMAES says that DOE and its M&O contractor actually administered the subcontract using substantial and intrusive oversight that was inconsistent with DOE's privatization concept. Under the privatization agreement for the Pit 9 project, LMAES was to construct, own, and operate the facilities and accept the financial risk by providing a guarantee that payment for its services would depend on successfully remediating the wastes. However, LMAES officials believe that DOE administered the project as if DOE itself were incurring the risks. As evidence, they cite the fact that between January 1995 and July 1996, DOE and its M&O contractor made more than 7,000 detailed review comments on the firm's designs for the project and expected LMAES to take them into account while completing the design. These comments ranged from ones on significant safety issues such as whether a criticality alarm system was required, to other less significant questions, such as whether workers would be allowed in a personnel transfer trailer during movement of the trailer.

According to LMAES, the amount of oversight was a problem because the number of review comments slowed its efforts and left the company unable to exercise the degree of flexibility it expected when it negotiated the subcontract. For example, employees had to spend time responding to DOE's and the M&O contractor's comments rather than anticipating and working on the next steps needed to respond to the subcontract schedule. In having to respond to this degree of oversight, LMAES said that it was performing unanticipated work, well beyond the subcontract's scope, in order to keep the project moving forward.

Fast-Track Schedule

DOE's approach also limited the company's ability to respond to the extraordinary pressures of a fast-track project, according to LMAES

officials. Design/build, fast-track, phased construction is a process whereby design and construction work are performed simultaneously. Design and construction stages are broken into several discrete packages and completed in phases. As soon as the design is completed for part of the project, construction work on that portion of the project begins. For example, LMAES began construction of the treatment building before the design for the chemical treatment system was finalized. LMAES, DOE, and the other parties to the effort agreed on this approach in order to comply with the construction schedule specified in the December 6, 1993, request for price proposal for phases II and III of the project, which included a required January 1, 1995, date to "start staging and installation." The request for price proposal also specified that the subcontract to remediate Pit 9 would be awarded on June 1, 1994. The subcontract was not effective until August 1994,[14] and LMAES claims the delay jeopardized achieving the mandatory January 1, 1995, date for the start of construction.

LMAES says that a fast-track approach required that the subcontractor be allowed a great deal of discretion in determining the manner, means, and methods of meeting the project's requirements within the agreed-upon price and schedule. The company believes, however, that DOE's oversight and involvement were so excessive as to remove all discretion for reducing the time required for the project's completion. For example, it contends that about one-quarter of the 2,500 safety-related review comments were inappropriate for a fast-track project because they were based solely on omissions or discrepancies that existed because design of the facilities was progressing on a parallel track with construction.

LMAES also says that DOE did not provide all necessary information in a timely manner. The agreement between LMAES and DOE called for the Department to provide any review comments on LMAES' plans and designs within 30 days. LMAES analyzed DOE's review response times and found that the average was about 53 days. LMAES officials said that the delays in receiving comments were another factor in the company's inability to keep the project moving as scheduled.

Contents of the Pit

Since 1994, when the subcontract was signed, DOE and the M&O contractor have refined the information they had concerning the possible contents of Pit 9. That information was also provided to LMAES. While DOE and the M&O contractor said that the information did not represent a modified inventory for the pit, LMAES claims that the changes in estimated quantities

[14]Although the subcontract was not approved until October 1994, LMAES was given an interim letter subcontract effective in August 1994 so work could begin.

and types of materials were so extensive as to materially affect the treatment system's design.

DOE has limited information as to the actual contents of the pit because, at the time the wastes were placed in the pit, DOE did not intend to later retrieve them. Therefore, few records were kept, and DOE has no precise knowledge of what quantities and types of materials are in the pit. However, in 1991, the M&O contractor initially estimated the types and quantities of radioactive and other materials in the pit, on the basis of the available shipping records, process knowledge, written correspondence, and other information from DOE.

Beginning in 1993, the M&O contractor initiated an effort to develop information for its baseline risk assessment for all of the disposal pits and trenches at the Idaho Falls site's subsurface disposal area, including Pit 9. Individual disposal pits were not inventoried, but rather the overall inventory for the area was apportioned to the pits and trenches on the basis of the shipping records, the dates the pits were open, etc. The estimates for the contents of Pit 9 were refined several times, and LMAES cites multiple instances in which the subsequent revisions created the potential for substantial changes in the proposed approach to remediating the wastes. For example:

- In February 1995, DOE and its M&O contractor notified LMAES of updated information indicating that considerably more salts, organics, and radioactive activation and fission products[15] were present than initially believed. These additional materials, LMAES said, would slow the speed at which materials could be processed through the plasma melter. Since the melter was a key feature of the treatment process, anything that affected the melter was of significance. In addition, the updated estimates of radioactive materials increased the potential for workers' exposure to radiation.
- In February 1996, DOE and its M&O contractor provided LMAES with additional information that indicated significantly higher potential radioactivity in the form of cobalt^{60} and cesium^{137}, both of which emit radiation in the form of gamma rays.[16] LMAES says that its original designs for processing of the Pit 9 wastes did not contemplate such high levels of

[15]Activation products are metals that have been exposed to nuclear reactions, e.g., cobalt^{60}, while fission products are the result of nuclear fission reactions, e.g., cesium^{137}.

[16]Gamma rays are the most penetrating of the three forms of radioactivity and require the most shielding to protect personnel from exposure.

gamma-emitters, indicating a need for additional personnel shielding in the treatment building.

DOE Attributes Most Problems to Subcontractor's Performance

DOE and its M&O contractor are studying LMAES' claims and are involved in discussions on how to move the project forward. In the interim, the M&O contractor has notified LMAES that both the M&O contractor and DOE see no justification for converting the subcontract to a cost-reimbursement basis; instead, they expect LMAES to continue performing the subcontract as awarded. DOE officials said it may be several months before they have an official position on LMAES' other financial claims. However, DOE and the M&O contractor disagree with LMAES' interpretation of why the cleanup is behind schedule and its costs are above the subcontract price. DOE and the M&O contractor acknowledge that their oversight of the project has been more extensive than they had expected but contend that the degree of involvement was necessary because of LMAES' inadequate approach to safety. DOE and the M&O contractor attribute the delays and cost overruns primarily to the insufficient technical and managerial skills the company initially placed on the project.

Subcontract Administration and Fast-Track Schedule

DOE and its M&O contractor contend that their oversight of the project has been related to their responsibilities for ensuring adequate consideration of environmental safety and health. Although a fixed-price approach shifts the risk of nonperformance to the subcontractor, DOE still retains some of the risks. For example, the subcontract indemnifies LMAES in the case of a catastrophic nuclear accident, and therefore that risk is not shifted from DOE to the subcontractor. However, DOE, its M&O contractor, and its regulators noted that initially LMAES personnel seemed particularly limited in their knowledge about necessary regulatory requirements, including those dealing with nuclear materials, and, as a result, submitted inadequate designs. Therefore, DOE and the M&O contractor said they had to provide much more oversight, including more design review comments, than they expected for a fixed-price subcontract.

As an example of why their extensive involvement was needed, DOE and its M&O contractor cited their visit to the test site for the project's chemical treatment system. When DOE and M&O contractor officials examined the assembled system, they noted what appeared to be many safety-related problems. In effect, DOE and the M&O contractor said, LMAES had assembled a standard piping system without consideration of the nuclear environment at Pit 9. The piping was subject to many leaks at the joints and was so complex that the area would have been a safety hazard and

prohibitive to decontaminate if leaks occurred. More significantly, the system as designed was potentially susceptible to "criticality"—that is, to the potential that radioactive materials could be brought together in sufficient concentrations to sustain a nuclear chain reaction. In addition, the system lacked an adequate mechanism for tracking the radioactive materials that were moving through the chemical treatment process.

DOE and M&O contractor officials acknowledged that the combination of design problems and the many review comments made it more difficult for LMAES to accomplish a fast-track schedule. The officials believe, however, that the extent of the problems they were observing required them to raise questions for LMAES to consider as project development continued. DOE officials stated that part of the reason for the large number of review comments was that LMAES tended to ignore some comments the first time. As an example, EPA pointed out in its February 1996 design review comments that having an adequate capacity for the ventilation system was important to ensure safe operations. EPA stated it had raised this concern previously but LMAES had not responded to it. In addition, DOE officials do not agree with LMAES' analysis of the timeliness of review comments and state that such comments were generally submitted on time. The M&O contractor also disagreed with LMAES' analysis and pointed out that LMAES' submittals were often incomplete and the review period should not have started until a complete document was received.

Contents of the Pit

DOE and its M&O contractor also disagree with LMAES' contentions regarding the significance of the updated information about the pit's contents that they shared with LMAES. They noted that the updated information was not a formal revision to the contractual estimate of the contents, and therefore the subcontractor had the discretion whether to use it. DOE and its M&O contractor further noted that LMAES' subcontract proposal stated that all technologies used in its proposed approach were proven in current industrial-scale applications and that the treatment scheme was "very robust, in that any chemical, radiological, or physical characteristic of waste in Pit 9 can successfully be processed." LMAES pointed out that its treatment scheme ensured that the Pit 9 process could successfully handle other buried or stored transuranic and transuranic mixed wastes as well as low-level mixed wastes and hazardous wastes in the DOE complex. In addition, DOE and M&O contractor officials noted that the subcontract included a clause allowing for future adjustments if differing site conditions are encountered—for example, if the pit's actual contents differ from the estimates when excavation occurs.

Insufficient Technical and Managerial Skills

DOE and M&O contractor officials said they believed LMAES' parent corporation would use its vast worldwide resources to provide the necessary expertise to accomplish the work. However, the officials contend this did not happen, at least in the early phases of the work. For example, the officials point out that Lockheed reported in a 1995 peer review of LMAES' Pit 9 activities that there was a lack of adequate personnel with experience with nuclear materials to successfully execute the design review function, provide environmental safety and health oversight during construction, and administer the environmental safety and health functions during operations. Similar findings were noted in an assessment DOE performed at the same time.

Another problem contributing to the lack of progress on the subcontract, according to DOE and M&O contractor officials, was the high number of times the LMAES project staff has changed—as of May 1997, there had been four project managers. LMAES acknowledges the turnover, but maintains that the administrative approach used by DOE and the M&O contractor materially increased the complexity of the requirements associated with the project, necessitating the assignment of managers with more experience to get the job done. For example, LMAES officials said the current program manager is one of the most respected within Lockheed Martin, LMAES' parent company. DOE officials said that with these frequent changes in leadership, some important actions were left unaddressed for a considerable length of time. For example, it was not until February 1997, after the current manager was appointed, that LMAES developed a complete system requirements document, which compiles the system performance and design requirements of the subcontract into one place so that managers can more clearly identify what the processes should be designed to do.

DOE has also faulted the M&O contractor for its performance in overseeing the Pit 9 project, which has affected the overall award fee received under its performance based contract.[17] Since October 1994, DOE has been critical of the M&O contractor's performance on Pit 9. For example, in rating the M&O contractor's overall performance for the period ending March 30, 1996, DOE identified Pit 9 as the primary reason for the M&O contractor's declining performance in managing the Environmental Restoration program at the site. DOE attributed the M&O's declining performance on Pit 9 to a continued lack of management control systems, an apparent lack of accountability in ensuring the timely submittal of two

[17]Under DOE's contract with the M&O contractor, a portion of the payments to the contractor is based on how effectively it performs the work. DOE assesses that performance on a semiannual basis and allocates award fees from a pool of funds.

key documents to regulators, and weak project management planning and prioritization of issues. However, DOE also gave the M&O contractor credit for aggressively trying to keep activities on schedule and resolve design-related issues at the earliest opportunity. We could not determine the impact of the M&O contractor's performance at Pit 9 on the amount of its overall award fee. However, since 1994, DOE has considered the M&O's overall performance under the contract to be "good," with performance evaluation scores in the 86 to 90 percent range and performance award fees totaling $33.3 million for the 2-year period.

Conclusions

It remains to be seen whether DOE and its M&O contractor will be able to hold Lockheed Martin Advanced Environmental Systems accountable for the extra costs for the Pit 9 project, negotiate changes and pay substantially more to complete the project, or attempt to recover the government's investments to date. Whatever the outcome, the Pit 9 project, as originally conceived, is clearly a failure. It simply cannot be completed in the time frame or within the price the subcontractor agreed to. This has important future implications because DOE's planned investment in privatization cleanup projects is growing—the Department included over $1 billion in its fiscal year 1998 budget request for 11 such projects. In light of this growing emphasis on privatization, the outcome of the Pit 9 subcontract negotiations may provide some insight into DOE's overall ability to achieve privatization goals, including lowering project costs and shifting the risk of nonperformance from the Department to the contractors.

Agency Comments

We provided DOE, the M&O contractor, and LMAES with a draft of this report for their review and comment. DOE disagreed with our conclusion that the project, as originally conceived, was a failure and also expressed concern about the tone of the report. The M&O contractor also disagreed with our conclusion but said the report presented a reasonably accurate portrayal of circumstances and events pertaining to the Pit 9 project. LMAES, as well as DOE and the M&O contractor, also provided comments on technical aspects of the draft, which we have incorporated where appropriate (see app. II for DOE's comments, app. III for comments from the M&O contractor, and app. IV for LMAES' comments).

DOE and the M&O contractor disagreed with our conclusion that the project, as originally conceived, is a failure. DOE noted that although the original project schedule cannot be achieved, it is premature to conclude that the

government's costs on the project will increase. The M&O contractor identified lessons learned, such as the need for a more careful analysis of what the subcontractor claims it can accomplish, that it said kept the project from being a failure. We continue to believe, however, that it is clear that the project has failed to achieve its schedule and cost targets. Specifically, (1) the project is more than 2 years behind schedule, costs greatly exceed the subcontract price, and LMAES has said it will not resume normal construction activities unless the subcontract is satisfactorily renegotiated; (2) DOE has already incurred fines and penalties; and (3) DOE is responsible for the M&O contractor's legal fees in connection with the project. As a result, it is impossible for the project to be completed in the time frame or within the price LMAES agreed to. In addition, we do not agree that lessons learned mitigate the fact that the Pit 9 project has failed to achieve its schedule and cost targets.

DOE also said the tone of our report, especially concerning the inventory of the pit and LMAES' opinions about the project, unfairly represented DOE's knowledge about the contents of the pit while giving too much credit to LMAES' views of why the project is experiencing problems. In our view, the report is fair and balanced on these issues. Regarding the pit inventory, our report says that DOE is not certain of the pit contents, in part because DOE has poor records of the materials shipped there. The various estimates of pit contents demonstrate that DOE is uncertain of the actual inventory. Concerning the causes of problems on the project, we summarize and attribute the viewpoints of DOE, the M&O contractor, and LMAES in a similar way, and we have not taken a position on the merits of any of the arguments.

LMAES said we should have emphasized problems with proof-of-process testing (phase I) to reflect its view that the testing was deficient because it did not demonstrate the subcontractor's ability to perform within a schedule or budget. We believe that the testing phase was intended to provide some increased assurance to DOE and the M&O contractor that the proposed technologies would work in the Pit 9 environment, and that realistically it could not be expected to ensure the subcontractor's performance within a schedule or budget.

Scope and Methodology

To determine DOE's basis for selecting a fixed-price subcontracting approach, we reviewed the Federal Acquisition Regulation for available guidance and the procurement plan developed by the M&O contractor at the Idaho Falls site. We also reviewed DOE's Private Sector Working Group

Privatization Resource Document and other documentation provided by DOE. In addition, we interviewed the DOE Contracting Officer, Pit 9 Project Manager, and Assistant Site Manager at the Idaho Falls site. We also interviewed DOE's Environmental Management Director of Northwest Area Programs.

To determine the basis for awarding the subcontract to LMAES, we reviewed the RFP, LMAES' response, and the reports of the Source Evaluation Board. We also reviewed the Proof of Process Test Comprehensive Evaluation Report and the contract files that detailed the selection and evaluation process. We also interviewed a member of the Source Evaluation Board and the M&O contracting officer.

To determine the current status of the Pit 9 project, we toured the Pit 9 project site and interviewed project management personnel from LMAES, the M&O contractor, and DOE. We reviewed the Request for Equitable Adjustment and supporting documentation submitted by LMAES. In addition, we reviewed correspondence between the M&O contractor and LMAES and other documentation relating to the inventories of the pit and review of design activities. We also interviewed officials with the Environmental Protection Agency-Region 10 and the Idaho Department of Health and Welfare-Division of Environmental Quality that are responsible for oversight of the cleanup activities at Pit 9. In addition, we reviewed the Pit 9 Record of Decision; Federal Facility Agreement and Consent Order; and Agreement to Resolve Disputes, which assessed the fines against DOE.

We have not attempted to compare the validity of the charges and countercharges about causes of the problems at Pit 9 because of the ongoing negotiations between the parties and the legal process in place to resolve any disagreements.

Our review was performed from March through July 1997 in accordance with generally accepted government auditing standards.

We are sending copies of this report to the Secretary of Energy. We will also make copies available to others on request.

Please call me at (202) 512-3841 if you or your staff have any further questions. Major contributors to this report were William R. Swick, Robert M. Antonio, Carole J. Blackwell, Doreen S. Feldman, Susan W. Irwin, Stan G. Stenersen, and Charles A. Sylvis.

Victor S. Rezendes
Director, Energy, Resources,
and Science Issues

Contents

Abbreviations

DOE	Department of Energy
EPA	Environmental Protection Agency
FAR	Federal Acquisition Regulation
M&O	Management and Operating
RFP	request for proposal
LMAES	Lockheed Martin Advanced Environmental Systems
LESAT	Lockheed Environmental Systems and Technologies

Types of Subcontract Payments and Amounts Paid as of May 31, 1997

Type of payment	Subcontract amount	Payments as of 5/31/97
Milestone payments		
Final design	$43,311,064	$26,151,914
Safety Analysis Report	2,817,370	0
Operational Readiness Review	8,239,237	0
Total milestone payments	54,367,671	
Progress payments (construction of equipment & facilities)	34,787,746	28,234,251
Unit price payments		
Analysis/handling of overburden @$9.69/cubic foot	4,845,000	0
Remediation of the first 100,000 cubic feet of waste material @$341.31/cubic foot	34,131,000	0
Remediation of an additional 150,000 cubic feet of waste material @$148.22/cubic foot	22,233,000	0
Standby costs	785,520	0
Lump-sum payment (decontamination & decommissioning)	4,203,664	0
Profit		
Limited production test	13,373,313	0
Remediation	9,208,500	0
Decontamination & decommissioning	672,586	0
Total	$178,608,000	$54,386,165
Contract modification #12 for water/power	2,135,000	
Revised subcontract price	$180,743,000	

Source: Lockheed Martin Idaho Technologies Company.

Comments From the Department of Energy

Department of Energy
Washington, DC 20585

July 23, 1997

Mr. Victor S. Rezendes
Director, Energy, Resources, and Science Issues
Resources, Community, and
  Economic Development Division
U.S. General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Rezendes:

Thank you for the opportunity to comment on the General Accounting Office draft report of July 1997 entitled "Nuclear Waste: Department of Energy's Project to Clean Up Pit 9 at Idaho Falls Is Experiencing Problems" (GAO/RCED-97-180). We are appreciative of the open communications between your representatives and our staff at the Idaho Operations Office and Headquarters. The Department of Energy acknowledges that the General Accounting Office incorporated the majority of the factual corrections provided prior to the issuance of this draft report; however, the Department requests that the General Accounting Office reconsider its positions on several points made in the referenced report.

The General Accounting Office cites two reports by Independent Project Analysis, Inc., which were also cited in a General Accounting Office report of January 1997 entitled "Nuclear Waste: Department of Energy's Estimates of Potential Savings From Privatizing Cleanup Projects" (GAO/RCED-97-49R). The General Accounting Office should clarify that these reports included both completed and on-going projects. Thus, some of the results in the report are based on predictions versus actuals.

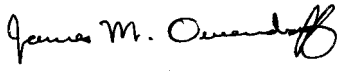
Another issue involves the manner in which certain statements are presented. For example, on page 6, last paragraph, sixth line, the report states ".. that there was little certainty about the contents of the pit ... seems to suggest that a fixed price contract may not have been the best approach." This statement implies that the Department had little knowledge of the contents of the pit, when in actuality there was substantial but not total knowledge of the pit contents. This uncertainty was also countered by representations by Lockheed Martin Advanced Environmental Systems (Lockheed Environmental Systems and

Technologies at the time) that their technologies were sufficiently robust to be able to handle those uncertainties, thereby making a fixed-price contract an appropriate alternative to conventional procurement. The General Accounting Office continues this approach throughout the section of the report summarizing Lockheed Martin Advanced Environmental Systems viewpoints (pages 15-23). The General Accounting Office represents these viewpoints as fact, where in reality they are only claims which have not been supported by documentation or validated by the cognizant Contracting Officers.

The final point to be made involves a statement in the Results in Brief (page 3) and Conclusions (page 28) sections referring to the Pit 9 project as "clearly a failure." Objectives for the Pit 9 project included the demonstration of "off the shelf" technologies for nuclear waste retrieval and treatment, the supply of needed characterization data for decision support for the remediation of of the remaining burial pits and trenches in Idaho, and the stabilization of a source of environmental contamination. The project is behind schedule and the original objectives have yet to be realized, but the project has not been canceled or abandoned by either party. The statement on page 28 that "It simply cannot be completed in the time frame or within the price LMAES agreed to." which echoes a similar statement on page 3, is only correct with regard to schedule. The General Accounting Office's implication that the cost to the Government has increased significantly is premature. Lockheed Martin Advanced Environmental Systems is claiming costs significantly above the original subcontract price and have submitted a Request for Equitable Adjustment. This submittal will be evaluated on its merits. It is premature for the General Accounting Office to draw a conclusion, such as it has, with respect to the ultimate cost of the project to the Government.

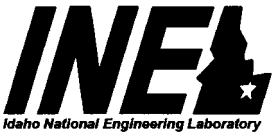
If you have questions regarding these comments, please contact me or have a member of your staff contact Ms. Betty Nolan, Director, Office of Intergovernmental and External Affairs, at (202) 586-5373.

Sincerely,



James M. Owendoff
Acting Principal Deputy Assistant Secretary
for Environmental Management

Comments From Lockheed Martin Idaho Technologies Company



LOCKHEED MARTIN

Lockheed Martin Idaho Technologies Company
P. O. Box 1625 Idaho Falls, ID 83415

July 21, 1997

Mr. Victor S. Rezendes, Director
Energy, Resources, and Science Issues
United States General Accounting Office
441 G. St. NW, Rm. 2964
Washington, D. C. 20548

COMMENTS ON DRAFT REPORT ENTITLED "NUCLEAR WASTE: DEPARTMENT OF ENERGY'S PROJECT TO CLEAN UP PIT 9 AT IDAHO FALLS IS EXPERIENCING PROBLEMS" - SJW-13-97

Dear Mr. Rezendes:

We have concluded our review of the subject document and find that it presents a reasonably accurate portrayal of circumstances and events pertaining to the Pit 9 Comprehensive Demonstration Project at the Idaho National Engineering and Environmental Laboratory.

However, we do have some specific comments as follows:

1. For clarity purposes on Page 2, the first sentence of the second paragraph, under RESULTS IN BRIEF, should be changed to the extent that Lockheed Martin Advanced Environmental Systems (LMAES) was selected for Phases II and III of the project after successfully completing the Phase I requirements.

2. The middle paragraph on Page 3 contains a sentence that declares the Pit 9 project a failure. We request that the following be included in that same paragraph:

   The Pit 9 Project performance to date, as unsatisfactory as it has been, has produced some valuable lessons.

   I. Despite industry's promises at subcontract formation, a more circumspect analysis of representations should be made prior to accepting the promises at face value.

   ii. Even in a fixed price subcontract, sufficient clauses must be used for monitoring the subcontractor and providing recourse to the contractor for poor performance. For example, greater reporting requirements must be imposed in the nuclear remediation environment and liquidated damages should be included.

iii. A prorated audit and a risk analysis must be conducted in every case regardless of the size and reputation of the subcontractor.

3. On Page 6, the last sentence of the first complete paragraph starting with the words, "Under this approach . . . ," should be modified to include the fact that title to all facilities and equipment would remain with the subcontractor.

4. On Page 13, the last paragraph which discusses the issuance of the request for pricing proposal should be amended to include a statement to the effect that prior to the submission of the Phase II and III proposal, each prospective subcontractor was provided funding for a 30 percent design effort via a change order to the Phase I subcontracts. This action was intended as a "bridge" between the end of the Phase I work and the start of the Phase II and III work. The purpose of the "bridge," was to facilitate achievement of the schedule for remediation, provide both prospective subcontractors additional information for proposal preparation and maintain team continuity.

5. On Page 14, the first sentence of the last paragraph should be changed to include the fact that a letter subcontract was awarded to LESAT (LMAES) by EG&G Idaho, Inc. in August 1994 to initiate the project. The definitive subcontract was then executed in October 1994.

6. On Page 16, the sixth sentence in the first paragraph which starts with "DOE officials in Idaho Falls ...," should be amended to include LMITCO.

7. The sentence at the top of Page 18 that reads "...Federal Facility Agreement and Consent Order for Idaho Falls..." should read INEEL instead of Idaho Falls.

8. On Page 19, LMAES argues that DOE administered the subcontract as if it bore all the risks. To specifically answer that statement, the following should be inserted after the first line on page 26.

   Additionally, in a fixed price subcontract, most of the risks are on the subcontractor, the M&O contractor and DOE are not risk free. If the subcontractor fails to perform at all or on time, LMITCO and DOE suffer substantial delay problems in having the remediation accomplished. Further, DOE has suffered financial exposure for two reasons. First, the subcontract authorizes progress payments and DOE has paid approximately $54 million in such payments. LMITCO and DOE have the commensurate responsibility to ensure that

acceptable progress has, in fact, been accomplished. Second, the subcontract contains a flowdown of the indemnification clause in the LMITCO contract with DOE pursuant to the Price Anderson Act, by which DOE agrees to indemnify LMAES for catastrophic nuclear accidents. That indemnification clearly was a risk DOE assumed under the fixed price subcontract.

Finally, LMITCO and DOE face liability for fines and ES&H violations imposed by the State of Idaho, EPA and other authorities.

9. The first paragraph on Page 21 where it is inferred that the M&O was responsible for the delay in award that subsequently jeopardized the construction start date should be amended to include a statement that the delay in award was, in part, caused by requests from the prospective subcontractors for more time in which to put their proposals together. Furthermore, LMAES was successful in achieving the first major milestone in the subcontract, "Start Staging and Installation" by the due date of January 1, 1995.

10. On that same page, LMAES complains of the lack timely comments provided by LMITCO. We request that the following be inserted at the top of Page 26:

"LMAES' submittals were often incomplete, making it unacceptable to reviewing agencies to trigger the review period. Furthermore, the review process for particular documents was either a 30 or 45 day period, depending upon the document. LMAES' complaint made no distinction by type of document and did not acknowledge the fact that it measured the time elapsed from its date of delivery irrespective of the completeness of the document."

11. The last paragraph of Page 24 should be amended to read as follows:

~~As an example of why their extensive involvement was needed, DOE and its M&O contractor cited their review of a change in visit to the test bed for the projects' chemical treatment system. In November 1994, about 1 week after the subcontract was awarded, LMAES notified DOE's regulators that the counter current ion exchange system" which was one of the critical aspects of the proposed system tested during the proof-of-process phase, would be replaced with relatively inexpensive filters. LMAES proceeded with the design change, but~~ (W)hen DOE and M&O contractor officials examined the assembled system ~~about 1 year later~~, they noted what appeared to be many safety-related problems. In effect, DOE and the M&O contractor said, LMAES had assembled a standard piping system without consideration of the nuclear environment at Pit 9. The piping was subject

to many leaks at the joints, with many moving parts, and was so complex that the area would have been a safety hazard and prohibitive to decontaminate if leaks occurred. ~~More significantly~~ Additionally, the system as designed was potentially susceptible to "criticality"- that is, to the potential that radioactive materials could be brought together in sufficient concentrations to sustain a nuclear chain reaction. In addition, the system lacked an adequate mechanism for tracking the radioactive material that was moving through the chemical treatment process.

12. If item 11 above is not incorporated into the report, the first sentence on Page 25 starting with "...DOE's regulators...," should read that LMAES notified LMITCO.

13. The last sentence of the middle paragraph on Page 27 states that LMAES did not prepare a system requirements document (SRD) until February 1997. That is an incorrect statement. LMAES submitted an SRD to LMITCO in October of 1994. The document was of poor quality and numerous comments were provided by LMITCO. No revisions to that initial SRD were made, to our knowledge, until February 1997, when an essentially complete rewrite was submitted.

Thank you for the opportunity to review the draft report. If you have any questions, please call me at 208-526-4655.

Sincerely,

Claire Fitch
for

Steven J. Winston, Vice President
Technical and Management Integration

cc: L. A. Green, DOE-ID, MS 1117

Comments From Lockheed Martin Advanced Environmental Systems

Lockheed Martin Corporation
6801 Rockledge Drive Bethesda, MD 20817
Telephone 301-897-6000

LOCKHEED MARTIN

July 21, 1997

United States General Accounting Office
441 G St., N.W., Room 2964
Washington, DC 20548

Attention: Mr. Victor S. Rezendes
Director - Energy, Resources, and Science Issues

Subject: Lockheed Martin Advanced Environmental Systems' Comments on Draft Final GAO Report Concerning Pit 9 at the Idaho National Engineering and Environmental Laboratory

Dear Mr. Rezendes:

Thank you for providing Lockheed Martin Advanced Environmental Systems the opportunity to comment on the subject report. The following comments are directed to specific pages and paragraphs of the report.

Page	Comment
Page 2	To be more accurate concerning the current schedule, the first sentence of the third paragraph should be revised to read: "Estimated completion of the project is approximately 26 months behind the contract schedule in effect at the time of award."
Page 6	The second full paragraph addresses FAR guidance concerning selection of contract type. We suggest the paragraph be revised to reflect that FAR 16-103(a) provides clear guidance concerning the selection of contract types and that selection of contract type is "generally a matter of negotiation." That FAR section further states that the objective is to "negotiate a contract type and price that will result in reasonable contractor risk..."

Page 10 The third sentence of the first paragraph suggests that the guarantee of performance would protect the government's interest to the detriment of the contractor. LMAES believes that it was the duty of both the M&O contractor and the DOE to resolve all technical concerns with the selected team prior to contract award and not rely on the guarantee of performance to shift all risk to the contractor.

Page 13 Add the following sentence to the second full paragraph, after the fourth sentence:

> "Proof of Process testing was conducted using surrogate materials that were represented to be Pit 9 surrogates."

The second full paragraph should also be revised to reflect that the POP test did not prescribe tests which demonstrated the difficulty of integrating existing technology components into a total system. Despite the fact that the evaluation board had as one of three technical criteria, demonstration of the ability of offerors to perform full scale operations within an agreed upon schedule and budget, the POP test did not measure this criteria. The evaluation, therefore, was deficient in bringing realism into the evaluation process.

Page 15 To be more accurate, the first full paragraph, last sentence should be revised to read:

> This resulted in the M&O contractor's Pit 9 contract administration and oversight group being sequestered from the rest of the organizations, and the establishment of a program oversight board, including a representative directly appointed by DOE, which "oversees" significant contract administration actions by the DOE contracting office and the M&O contractor and is generally responsible for monitoring the dealings between the M&O contractor and the subcontractor."

Page 16 First sentence should be revised to add the words "the original contract" between words "behind" and "schedule" to reflect the original contract as the baseline.

Page 18 First sentence, first full paragraph should be revised to reflect that LMAES has accepted a substantial amount of responsibility for past Pit 9 problems. Suggest deleting "virtually all" and substitute "a large portion".

Page 26 LMAES disagrees with the notion that it was appropriate for the government to provide the new pit inventory data "for information only." LMAES believes that such new Pit content data had to be considered within the Pit 9 contract due to potential programmatic impacts for failing to consider the newly disclosed very dangerous radioactive and hazardous waste.

Page 27 The final sentence of the first full paragraph is misleading. To be more accurate, it should be revised to read:

"For example, in February 1997, after the current manager was appointed, LMAES revised its Systems Requirements Document ("SRD"), which compiles the system performance and design requirements of the subcontract into one place so that managers can more clearly identify what the processes should be designed to do. The revisions to the SRD, originally submitted by LMAES in November 1994, incorporated changes to the retrieval and treatment approaches that had been made by LMAES since contract award."

Please call me at 208-234-3500 if you have any questions concerning our comments .

Sincerely,

Rockne J. Buraglio
Director of Contracts/Subcontracts
Lockheed Martin Advanced
Environmental Systems

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