



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

Audit Report

Management of Fossil Energy Cooperative Agreements




Department of Energy

Washington, DC 20585

July 8, 2005

MEMORANDUM FOR THE SECRETARY

FROM:


Gregory H. Friedman
Inspector General

SUBJECT:

INFORMATION: Audit Report on "Management of Fossil Energy Cooperative Agreements"

BACKGROUND

The Office of Fossil Energy research and development program mission is to create public benefits by enhancing U.S. economic, environmental, and energy security. To help carry out this important mission, Fossil Energy funds cooperative agreements for research and development in coal, hydrogen, clean fuels, and oil and natural gas supply and delivery. Fossil Energy defines specific research areas and, through its National Energy Technology Laboratory, awards and administers the cooperative agreements. At the time of our audit, the total Government share of the open awards was about \$3.6 billion. These agreements require substantive involvement by Federal project managers, and rely on recipients such as private industry and universities to share in the investments needed to complete the project.

In 2000, Fossil Energy conducted an internal project assessment that identified significant weaknesses in its ability to manage research projects and made corresponding recommendations for improvements. Our special report on "*Management Challenges at the Department of Energy*" (DOE/IG-0667, November 2004) also concluded that, in general, many of the Department's major activities could benefit from a more aggressive application of project management principles. Given previous concerns and the magnitude of its research and development program, we initiated an audit to determine whether Fossil Energy was effectively managing research project cooperative agreements.

RESULTS OF AUDIT

Our review disclosed that Fossil Energy was not always adequately involved with monitoring and oversight of its research project cooperative agreements. For over half of the 25 projects reviewed, we observed that Federal project officials had not always taken adequate action to address project management or financial shortcomings. For example, Fossil Energy did not:

- Ensure timely delivery of a market study for a project designed to deliver a low cost fuel cell power plant. When ultimately completed, three years after originally due, officials determined that the most viable marketplace option was a fuel cell significantly smaller in scale than the one being designed;



- Adequately define the scope for a project to demonstrate a technology to recycle by-products of paper processing. It awarded the project without resolving financial problems disclosed through audit – an effort now expected to exceed its originally projected Government cost of \$33 million by more than 46 percent; and,
- Perform sufficient pre-award analyses to evaluate whether costs were comparable to industry standards and/or that sufficient cost analyses were completed.

Issues with Fossil Energy-managed cooperative agreements occurred, in part, because previously identified project and financial assistance management weaknesses were not corrected and project managers were not adequately monitoring and overseeing individual projects. Without improvement, the cooperative agreements managed by Fossil Energy are at risk of not meeting their research objectives, not being completed in a timely manner, and, they will likely cost significantly more than originally estimated.

Fossil Energy officials told us they were committed to improving project management practices. However, they have yet to formalize their approach and provide implementing guidance to their project managers. Management indicated that it planned to form a team to determine gaps between its existing project management practices and the principles promulgated in the Department's Project Management Manual. To address the issues identified in our report, we made several recommendations designed to improve Fossil Energy's management of cooperative agreements and help resolve the particular issues noted in our review.

MANAGEMENT REACTION

Fossil Energy management generally concurred with our recommendations, indicating that it considered our recommendations useful and that actions had been initiated or were planned to strengthen the cooperative agreement program. While management did not agree that we had reflected all evidence it provided to refute a number of our findings, it did agree to take all necessary and appropriate actions to address our recommendations. The comments are included in their entirety in Appendix 3.

Attachment

cc: Deputy Secretary
Under Secretary for Energy, Science and Environment
Chief of Staff
Principal Deputy Assistant Secretary for Fossil Energy

REPORT ON MANAGEMENT OF FOSSIL ENERGY COOPERATIVE AGREEMENTS

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MONITORING AND OVERSIGHT OF FOSSIL ENERGY COOPERATIVE AGREEMENTS

Monitoring and Oversight

Our review disclosed that the Office of Fossil Energy (Fossil Energy) was not always adequately involved with monitoring and oversight of its research project cooperative agreements. For 16 of the 25 projects reviewed, we observed that Federal project officials had not always taken adequate action to address project management or financial shortcomings. Important activities designed to help ensure the success of cooperative research agreements had either not been performed or were not adequately documented. Two of the projects had significant problems that increased project cost and delayed completion.

Molten Carbonate Fuel Cell Project

Federal project managers did not ensure that deliverables critical to success of the Molten Carbonate Fuel Cell project were provided as required and that financial problems of the awardee were addressed. This project was awarded in December 1994 and continued through December 2004, with the primary objective to perform activities necessary to bring a low-cost, market-responsive carbonate fuel cell to the marketplace. Fossil Energy originally awarded the project with a Government share of \$78 million and a total project cost of \$118 million. Fossil Energy later increased the Government's funding by \$17 million for Department of Defense work, and has since increased funding again by about \$40 million. The project's schedule has been extended over six years beyond original estimates. Our examination of this project established that program managers did not:

- Ensure the timely completion of several key deliverables. Although a Market Penetration Plan was specifically required to identify target market segments and the deployment methodology, the plan was not completed until three years after it was due. After the plan was completed, it was determined that a fuel cell significantly smaller in scale than that being designed was necessary. According to the awardee, at least part of the \$40 million cost growth was attributable to development of this smaller fuel cell. Additionally, other key deliverables, such as an engineering design study and product plans, were

not completed until after their original due dates. These deliverables were considered necessary to demonstrate that project objectives were being met.

- Perform adequate reviews, either initial or periodic, of the cost sharing plans prepared by the awardee totaling \$78 million over the life of the project. Based on our examination of the plan, we determined that \$33 million of the claimed cost share was not supported. In particular, we noted that the reviewer in a pre-award cost-share analysis concluded that "the project consists of very little information for review purposes and additional information should be obtain (*sic*) to further substantiate the proposed costs." Our own examination of the participant's records established that no details were provided to demonstrate that these costs were incurred or allocable to the award as required by Federal regulations.
- Document a full evaluation of this project despite a major change to a much smaller fuel cell. In spite of this change, managers went on to fund this award without determining whether the project was still viable. At the time of our review, the project had not met its primary objective, project expenditures had grown by about 42 percent (\$40 million), and the project's schedule slipped more than 6 years beyond the original estimate.

Demonstration of Black Liquor Gasification at Big Island

Fossil Energy project management officials also did not adequately define the scope of the Black Liquor Gasification project and authorized the award without completely resolving financial problems disclosed through audit. This project, designed to demonstrate the efficient steam reforming of black liquor from wood pulping processes, was originally expected to cost \$33 million in Government funding and was awarded in February 2001 with a completion date of April 2006. Since then, costs have increased by 46 percent to \$48 million and scheduled completion has increased by one year to April 2007. Originally, this project was funded through the Office of Fossil Energy, but is currently funded by the Office of

Energy Efficiency and Renewable Energy because of Congressionally-directed budget changes. The project has been managed, however, by Fossil Energy's National Energy Technology Laboratory (NETL) for its entire term. While NETL officials recognized prior to award that technical and financial uncertainties could jeopardize the success of the effort, they did not ensure that controls designed to minimize the risk of failure were effectively applied. In particular we noted that NETL officials did not:

- Ensure that a control designed to minimize the risk associated with adverse pre-award audit findings was effectively implemented. The Defense Contract Audit Agency (DCAA) performed a pre-award audit of the awardee's cost proposal, questioned \$9.3 million, and found \$25.7 million to be unsupported. After receiving the results of the audit, NETL performed a separate review of the proposal. While NETL accepted the costs cited by DCAA as unsupported, it questioned additional direct costs, increasing the total to about \$11.2 million. NETL also modified the allocation base contained in the proposal and more than doubled the indirect costs recommended by both DCAA and the awardee. Because of the risk associated with the unresolved costs, NETL imposed a requirement that the awardee's annual incurred costs be resolved through a DCAA audit. We noted, however, that NETL did not request an audit of incurred costs until October 2004, over three-and-a-half years after award. To date, these audits have not been performed and NETL has not resolved the cost discrepancies described above.
- Ensure that the project was adequately defined prior to award. Before the award was made, NETL officials concluded that it was "ill-defined" at the outset and noted that they had "...no idea what it will cost, nor do we appear to have a good handle on the technology and/or requirements involved in determining that cost." Despite this uncertainty, NETL did not conduct an independent assessment of the project until almost two years after it was initiated.

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- Use a control built into the project designed to ensure that project costs were appropriately validated. NETL created two budget periods in the award; the first was for the awardee to validate its costs, and the second was to be used to fund the actual project. However, NETL obligated almost \$18 million in advance funding to this project before the baseline was appropriately validated by the awardee and the decision to proceed into the second budget period had been made.
 - Enforce a requirement designed to limit or control cost growth that was initially applied because of questions regarding the awardee's proposal. NETL imposed a provision to limit cost growth beyond 25 percent of the original estimated Departmental share but then chose to not enforce its application. Once actual growth exceeded the prescribed limit, the provision was removed and increases were funded. The only documented justification was that NETL officials had included the provision and, since it was not specifically required by regulation, they could remove it at their discretion. To date, the Department has committed \$15.2 million in additional funding to the project, an increase of over 46 percent over initial estimates, and the project schedule has slipped by about 12 months.

General Management and Control Issues

Our review also revealed a number of weaknesses or omissions that could adversely impact Fossil Energy-managed cooperative agreements and increase the risk that they will not meet their objectives. For 16 of the 25 agreements, project officials did not perform needed reviews or waived requirements designed to ensure that the Government's interests were protected. Problems with these projects included:

- Ten agreements were not subjected to sufficiently detailed pre-award analysis by the project managers. For example, some project managers simply concluded that the plans appeared to be

adequate without performing a detailed analysis and some managers told us that they relied on "gut feeling" to conduct their analysis. Some managers compared proposed costs to industry standards, while others did not.

- Risk management plans, considered a project management best practice, had not been prepared for either of the two projects specifically cited in our report. The project manager for the Black Liquor Gasification award acknowledged that the project would have benefited from a formalized plan. Additionally, we could not locate risk management plans for the other projects in our review. Risk assessments provide mechanisms to identify potential areas where additional attention may be warranted and provide a greater reflection of the uncertainties associated with the high-risk type of projects managed by Fossil Energy.
- NETL officials obligated funds to four projects even though the decision to proceed had not been made. In one case, we observed that once those funds were made available, an awardee expended approximately \$75,000 without approval.
- In two instances, NETL could not provide documentation of cost analyses for scope reductions where Federal funding was not decreased. In one case, two tasks were removed from the project without a corresponding reduction in Government cost. In the other, Government cost remained the same even though the scope was reduced and participant funding decreased by about \$3 million.
- Officials waived delivery of some required technical and financial reports on six cooperative agreements. These reports are the primary mechanism used to track financial status and are often the only deliverables to show technical results.
- NETL did not conduct a review of prior performance of potential awardees before

awarding three cooperative agreements. These awards were all made despite the recipients having three or more additional awards that had not been closed-out for periods of up to six years because the awardee had not fulfilled the award's terms and conditions.

Project Management Practices

Issues with Fossil Energy-managed cooperative agreements occurred, in part, because previously identified project and financial assistance management weaknesses were not corrected and project managers were not adequately monitoring and overseeing individual projects.

Previously Identified Weaknesses

Even though about four years had elapsed, Fossil Energy had not completed action to fully correct project management weaknesses disclosed by an internal assessment conducted in 2000. This assessment, performed by NETL on major projects, identified many strengths such as projects that support Department missions, the use of third party independent reviews, and built-in project decision points. However, it also identified many weaknesses, such as a lack of guidelines and policies in the areas of risk analysis, cost and schedule development and analysis, and project reviews. To correct these weaknesses, the report made recommendations for improvement such as developing specific guidelines. Additionally, the report recommended periodic future reviews of major projects to gauge effectiveness of the corrective actions. To date, however, the recommended guidelines and policies had not been developed and the status of the recommendations is not being tracked. Additionally, a follow-up assessment has not been conducted. NETL has, to its credit, implemented some improvements such as enhanced training for project managers, and participation in the Department's Project Management Career Development Program.

We also determined that recommendations from a previous Office of Inspector General report on grant deliverables had not been applied to cooperative agreements. In our report, *Audit of Departmental Receipt of Final Deliverables for Grant Awards* (DOE/IG-0415, December 1997), we noted instances of report waivers and insufficient reviews of prior performance, and made recommendations to discontinue reporting waivers and to require grantees to meet the terms

and conditions of previous awards before making new awards. The Department agreed with this report's recommendations and issued a financial assistance letter directing all Department elements to implement them. Cooperative agreements are financial assistance awards and are subject to this same guidance.

Monitoring and Oversight

Lacking specific guidance, levels of monitoring and oversight of projects varied between project managers and often omitted important project management control techniques. As noted earlier, project managers frequently did not perform needed pre-award analyses or prepare risk assessment plans. For example, in the case of the Black Liquor Gasification project, although NETL recognized prior to the award that the project was "ill-defined," it did not conduct an assessment of the enhanced risk and develop additional strategies to mitigate those risks. Even when controls were developed to address a problem project, the requirement to comply was subsequently waived or required follow-on reviews were not performed. Such activities are inconsistent with Department requirements to strengthen project management, and substantially increase the risk that these cooperative agreements may not achieve their objectives.

Project Benefits

As a result of its problems with project management, Fossil Energy may not fully realize its objectives to advance the security, affordability, and environmental acceptability of fossil fuel supply and use through the use of cooperative agreements. A substantial portion of the Fossil Energy cooperative agreement research and development investment, totaling over \$3.6 billion, could be at risk unless enhanced project management techniques are adopted. Without improvement, Fossil Energy is at risk that the cooperative agreements it manages may not meet their research objectives, not be completed in a timely manner, and cost significantly more than originally estimated.

RECOMMENDATIONS

To strengthen the management and oversight of Fossil Energy cooperative agreements and mitigate the problems described in our report, we recommend that the Principal Deputy Assistant Secretary for Fossil Energy:

1. Ensure that Fossil Energy employs the project management principles prescribed by the Department in managing cooperative agreements to include conducting risk assessments, conducting reviews of prior performance, and ensuring that technical progress reports are received;
2. Expedite the formation of a project management practices review team to evaluate project management practices and enforce existing Department project management requirements;
3. Develop action plans, and track to resolution the recommendations made in the 2000 internal major project assessment;
4. Direct project managers to ensure that project controls are enforced, and to conduct thorough, periodic project assessments, including a review of cost details; and,
5. Direct the contracting officer for the Molten Carbonate Fuel Cell project to review and make a determination of allowability for \$33 million of unsupported cost sharing claimed under the award.

MANAGEMENT REACTION

Fossil Energy management generally concurred with our recommendations. Management considered our recommendations useful and noteworthy and stated that actions had been initiated or were planned to strengthen management of cooperative agreements. More specifically, management has proposed the creation of a Project Management Guidance Working Group to address recommendations 1, 2 and 4, and the NETL Director of Acquisition has been specifically tasked with examining the allowability of costs associated with the Molten Carbonate Fuel Cell project in accordance with recommendation 5.

In addition, management indicated that it had made substantial progress in satisfying recommendation 3 and specifically cited actions taken based on prior project management assessments. Management stated that the March 2000 Pilot Self-Assessment Team made recommendations that resulted in significant changes to project management guidelines and procedures. Management further noted that the Project Self-Assessment Team found NETL's project management to be world class in several critical areas.

In responding to a draft of this report, management also stated that it did not believe that the report reflected evidence provided to refute a number of the report's findings. However, management agreed to consider the need for additional improvement in project management practices.

Management comments are included in Appendix 3.

AUDITOR COMMENTS

Management's planned actions are responsive to our recommendations. However, we take issue with management's assertion that we did not fully consider all information supplied by Fossil Energy. We provided management with detailed briefings and a written analysis supporting our evaluation of such information, and in several instances, we incorporated the information provided by management into the body of the report. In other areas, we concluded that the information provided did not refute our findings. For example, we did not believe that the progress cited as a result of the Pilot Self-Assessment team's efforts was "substantial." The Self-Assessment Team specifically stated that project management improvements were necessary for NETL to be considered an overall world class organization. The report notes that NETL would need to develop a documented project management philosophy to describe the policies on project issues such as earned value management and risk planning and assessment. To date, these actions have either not been completed or were insufficient to address the areas of concern cited by the Pilot Self-Assessment team.

Appendix 1

OBJECTIVE	To determine whether Fossil Energy was effectively managing research project cooperative agreements.
SCOPE	We conducted the audit from March 2004 to June 2005 at Department of Energy Headquarters in Washington, D.C.; the National Energy Technology Laboratories (NETL) at Pittsburgh, PA, and Morgantown, WV; and awardees in Danbury, CT; Allentown, PA; and Big Island, VA.
METHODOLOGY	<p>To accomplish the audit objective, we:</p> <ul style="list-style-type: none">• Identified a universe of 734 cooperative agreements managed at NETL, and reviewed procurement files for a judgmental sample of 25 of these awards;• Held discussions with NETL management related to cooperative agreements and project management policies and practices, and a previous project assessment;• Conducted interviews with award recipients regarding the status of selected cooperative agreements;• Sampled and examined cost transactions from selected cooperative agreements, including details of cost sharing commitments;• Reviewed applicable Federal regulations, Department Orders and Manuals, and other project management and procurement guidance;• Reviewed performance related information including the most recent budget request, Performance and Accountability Report, and Departmental Strategic Plan to determine compliance with the <i>Government Performance and Results Act of 1993</i>;• Held discussions with Headquarters officials regarding cooperative agreement funding and selection and programmatic responsibilities;

- Reviewed project specific Defense Contracting Audit Agency reports to identify findings and recommendations made on recipient financial capabilities, accounting systems, and indirect cost and labor rates;
- Performed a detailed review of each project file checking for compliance with requirements of 10 CFR 600 and analyzed them for anomalies associated with the technical progression of the project;
- Held meetings with project officials and program managers responsible for the selected projects to discuss project goals and objectives, status, and noted problems as well as discuss project management roles and responsibilities; and,
- Conducted a project expenditure review at one recipient location to determine whether costs charged to the Department were allowable and supportable.

The audit was performed in accordance with generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Accordingly, the audit included reviews of Department and regulatory policies, procedures, and performance measures related to Fossil Energy project management. We assessed performance measures in accordance with the *Government Performance and Results Act of 1993* and concluded that Fossil Energy had established performance measures related to its major programs. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We did not conduct a reliability assessment of computer-processed data because we did not consider such data critical to achieving our audit objective. Additionally, financial data was examined from recipients' accounting systems that were certified by the Defense Contract Audit Agency.

Management officials waived the exit conference.

PRIOR REPORTS

Office of Inspector General Related Reports

The Office of Inspector General has issued many reports related to project management practices in the Department of Energy. Below is a sampling of such reports from the previous three years.

- *Special Report on Management Challenges at the Department of Energy*, (DOE/IG-0667, November 2004). This special report identified the most significant management and performance challenges facing the Department, and identified project management as an internal control challenge area that the Department has been criticized over for many years.
- *Major Clean-Up Projects at the Idaho National Engineering and Environmental Laboratory*, (DOE/IG-0649, May 2004). This audit disclosed that the Department faced significant challenges in completing its major projects in accordance with its original expectations.
- *Management Controls Over Administration of the WERC Project*, (OAS-M-04-03, May 2004). The audit found that WERC (A Consortium for Environmental Education and Technology Development) was not executing all the planned activities set forth in its annual budget proposals. Additionally, the audit questioned \$193,000 of expenditures.
- *The McNeil Biomass Project*, (DOE/IG-0630, December 2003). Despite policy changes designed to improve the management of energy-related financial assistance awards, the Department's oversight of the McNeil Biomass Project was inadequate.
- *Dual Axis Radiographic Hydrodynamic Test Facility*, (DOE/IG-0599, May 2003). The audit disclosed that DARHT will not be complete before June 2004, 15 months behind schedule. The report concluded that National Nuclear Security Administration project management control needed improvement, citing unrealistic budget estimates and an insufficient contingency fund.
- *The Department of Energy's Tritium Extraction Facility*, (DOE/IG-0560, June 2002). The Tritium Extraction Facility will cost substantially more than the planned \$401 million. Further, based on current progress, it is unlikely that the facility will be completed by February 2006. Completion of the TEF within its baseline cost, schedule, and scope was in jeopardy because the project team had not made full use of available project management controls including project risk assessments and adequate contingency funds, among others.

Appendix 2 (continued)

Government Accountability Office Reports

- *Fossil Fuel R&D: Lessons Learned in the Clean Coal Technology Program*, (GAO-01-854T, June 2001). This testimony focused on the findings of GAO reviews of Fossil Energy's Clean Coal Technology Program conducted over a ten-year period and the lessons that can be learned from past efforts. GAO found that many projects had experienced delays, cost overruns, bankruptcies, and performance problems.
- *Energy Research: Opportunities Exist to Recover Federal Investment in Technology Development Projects*, (GAO/RCED-96-141, June 1996). The Department of Energy does not generally require repayment of its investment in cost-shared technology development projects. The major advantage of having a repayment policy is that the Federal Government could recover some of its investment in successfully commercialized technologies. However, according to Department officials, repayment could also discourage some in industry from commercializing technologies or participating in projects, create an administrative burden on both the Department and industry, and cause technologies to become less competitive in the marketplace. GAO believed that some of these disadvantages could be mitigated by structuring a flexible repayment requirement with the disadvantages in mind. The report recommended that the Department develop and implement a Department-wide policy for requiring repayment of Federal investment in successfully commercialized cost-shared technologies.

Other Reports

- The National Research Council, a division of the National Academy of Sciences, conducted a three-year evaluation of the Department's project management practices. Below is a summary of the most recent annual report, *Progress in Improving Project Management at the Department of Energy, 2003 Assessment*.

The Council found that many positive changes were implemented including, but not limited to, the development of the Project Management Manual, the establishment of the Office of Engineering and Construction Management, and the establishment of the Project Management Career Development Program. The Council expressed concern, however, that development of the Manual was slow and that Department elements have not united to carry out the principles it contains. The Council also expressed concerns with progress made in achieving improvement because of limited human resource investment compared to other organizations. There were simply too few qualified Department project directors and project management support staff for the number and complexity of Department projects. Finally, the Council could offer little assurance that improvements will be permanent because progress to date has been largely on paper, and there was concern that policies and procedures cited above would be circumvented. Additionally, the Department had no metrics in place to measure progress, indicating less than a full commitment to the effort.




Department of Energy

Washington, DC 20585

June 10, 2005

MEMORANDUM FOR: George W. Collard, Assistant Inspector General for Audit Operations
Office of Inspector General

FROM: Mark R. Maddox 
Principal Deputy Assistant Secretary
Office of Fossil Energy

SUBJECT: Inspector General Audit Report on "Management of Fossil Energy Cooperative Agreements"

Thank you for the opportunity to provide a Fossil Energy response to your draft Audit Report titled "Management of Fossil Energy Cooperative Agreements." We consider the recommendations of the draft audit report to be useful and noteworthy as part of the feedback that we use as we strive for continuous improvement in our overall management. NETL has already initiated actions and is planning further initiatives consistent with these recommendations to strengthen our management in the area of cooperative agreements as summarized in the attached action plan.

We also appreciate the opportunity provided by your staff to discuss their findings prior to issuance of the report, and while we believe we provided evidence not reflected in the report to refute a number of these findings, we will of course respect your findings and recommendations and take all necessary and appropriate actions.

Again, thank you for the opportunity for us to provide our feedback on the subject report and we look forward to working cooperatively with your office in future audits and reviews.

Attachment:
OIG Recommendations and FE Response Actions



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Attachment

OIG Recommendations and FE Response Actions

To strengthen the management and oversight of the Fossil Energy cooperative agreements and mitigate the problems described in our report, we recommend that the Assistant Secretary for Fossil Energy:

1. Ensure that Fossil Energy employs the project management principles prescribed by the Department in managing its cooperative agreements, to include conducting risk assessments, conducting reviews of prior performance, and requiring that technical progress reports are received.
2. Expedite the formation of project management practices review team to evaluate project management practices and enforce existing Department project management requirements.
3. Identify, develop action plans, and track resolution of recommendations made in the 2000 project management assessment.
4. Direct project managers to ensure that project controls are enforced, and to conduct thorough, periodic project assessments including a review of cost details.
5. Direct the contracting officer for the Molten Carbonate Fuel Cell project to review and make a determination of allowability for \$33 million of unsupported cost sharing claimed under the award.

FE Action Plan: (recommendations 1, 2, and 4)

In response to recommendations 1, 2 and 4 above, Fossil Energy proposes the creation of a Project Management Guidance Working Group. This group will be charged with the responsibility of developing procedures, certification requirements and implementation guidance to ensure that all research, development and demonstration (RD&D) project management is consistent with project management principles contained in applicable DOE Orders and the Project Management Institute Standard (PMBOK Guide) recognized by the American National Standards Institute.

Recommendations from the Project Management Guidance Working Group are to be completed by September 30, 2005. Fossil Energy's commitment of resources to these activities is fully consistent with our pursuit of continual improvement in our project management practices and procedures. The actions to be taken by the working group are a logical follow-on to previous actions and, building on them, will culminate in a unified and standardized approach for project management that is applicable to Fossil's RD&D projects and consistent with the principles and spirit of applicable DOE Orders and Guidelines.

FE Action Plan: (recommendation 3)

In response to recommendation 3 above, Fossil Energy offers that it has, in substantial part, made progress toward satisfying this recommendation. In support of this position, in response to the National Research Council's (NRC) 1999 study on the management of capital asset projects at DOE, in calendar year 2000, NETL conducted a six month **Pilot Self-Assessment** of its projects valued in excess of \$20,000,000. The assessment team was made up of project managers with experience across the full spectrum of RD&D projects. In addition, external experts in project management provided extensive input on the nature and elements of professional project management.

As a result of this assessment, the following recommendations were made, *and actions taken* that focused on opportunities for improvement:

1. **Develop project management guidelines** -- Prior to NETL's developing a specific set of project management guidelines, the Department issued DOE Order 413.3. NETL then proceeded to map 413.3 requirements against its in-place processes. During this activity we found that NETL sufficiently covered the major elements of the DOE Order and as such they provide good guidance for the management of RD&D projects.
2. **Develop a procurement strategy document** -- A Procurement Strategy Document has been developed as part of the detailed solicitation process and is documented on the Procurement Desktop.
3. **Standardize the reporting system** -- A Standardized Reporting System has been developed and is documented on the Procurement Desktop. It is used as a guide to set up specific reporting requirements on a project-by-project basis and is tailored to project size and complexity.
4. **Improve project manager training** -- A major effort has been made to identify and provide specific training for project managers. In addition, FE has assessed the knowledge, skills, experience, and qualifications of its project management staff against the certification requirements of the Department's Project Management Career Development Program. Based on that assessment, 80% of FE's project management staff qualify for PMI or higher equivalences.

Also, in an effort to educate staff and encourage professionalism, FE has, since the completion of the self-assessment in March 2000, emphasized the importance of its project managers being certified through the Project Management Institute, the internationally recognized professional project management organization. To date 54 FE employees have obtained Professional Project Manager Certifications from PMI.

Finally, it is important to note that the **Pilot Self-Assessment** team also found that in the several critical areas, implementation of project management at NETL is "world class." The following strengths were specifically cited:

- Strategic management
- Project culture
- Project planning
- Project selection
- Cost accounting
- Contracting Officer Representative Certification
- Project information systems
- Organizational performance metrics
- Assessing the value of new business.

In summary, the recommendations made in Fossil Energy's **Pilot Self-Assessment** of 2000 resulted in significant changes to FE/NETL guidelines and procedures, an emphasis on professional certification, and project management training tailored to the specific elements of our RD&D programs. Notwithstanding these prior actions, the OIG audit has caused FE/NETL to consider the need for additional improvement in its project management practices. As a result, since the self-assessment activities referenced in the report are dated and initiatives pursued during the ensuing period reasonably complete, as indicated under our response to recommendations 1, 2 and 4 above, we plan to take a fresh look at the effectiveness of prior actions and the need for and direction of future improvements to ensure FE and NETL retain a world-class project management capability.

FE Action Plan: (recommendation 5)

In response to recommendation 5 above NETL's Director of Acquisition has been tasked to examine the allowability of \$33,000,000 of unsupported cost sharing claimed under the Fuel Cell Energy - Molten Carbonate Fuel Cell project. The Director of Acquisition, with the concurrence of NETL legal counsel, will document and determine the allowability of these unsupported costs not later than September 30, 2005.

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3. What format, stylistic, or organizational changes might have made this report's overall message more clear to the reader?
4. What additional actions could the Office of Inspector General have taken on the issues discussed in this report which would have been helpful?
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