

## DOCUMENT RESUME

05361 - [B1005946]

Opportunities To Fully Integrate Environmental Research and Development into Developing Energy Technologies. EMD-78-43; B-178726. April 6, 1978. 14 pp.

Report to Secretary, Department of Energy; by Monte Canfield, Jr., Director, Energy and Minerals Div.

Issue Area: Energy: Executive Branch Organization and Processes for Dealing with Energy Problems (1611); Environmental Protection Programs: Energy/Environmental Protection Conflicts (2204).

Contact: Energy and Minerals Div.

Budget Function: General Science, Space, and Technology: General Science and Basic Research (251); Natural Resources, Environment, and Energy: Energy (305).

Organization Concerned: Energy Research and Development Administration.

Congressional Relevance: House Committee on Science and Technology; Senate Committee on Energy and Natural Resources.

To ensure that unresolved environmental concerns do not delay or preclude acceptance of new energy technologies in the marketplace, environmental research and development activities must be closely integrated and carried out in concert with the development of such technologies. Both the Department of Energy (DOE) and the former Energy Research and Development Administration established separate offices to oversee and carry out efforts to meet this objective. Findings/Conclusions: A separate, semi-autonomous office within DOE having responsibility for planning, overseeing, coordinating, and evaluating all environmental research and development activities should help provide assurance that potential environmental concerns are not overlooked in developing new energy technologies. However, the office must be given sufficient management support to effectively carry out its overview and coordination responsibilities. Recommendations: The Secretary of Energy should closely monitor the conduct of the environmental research and development program, giving particular attention to coordination and cooperation problems. The Secretary should also closely monitor the development and implementation of the Department's Policy and Program Planning System, including the procedures for integrating and using environmental development plans, to ensure the timely and effective integration of environmental and energy technology development activities. (Author/SC)

5946

---

REPORT BY THE U.S.

# General Accounting Office

---

## Opportunities To Fully Integrate Environmental Research And Development Into Developing Energy Technologies

To ensure that unresolved environmental concerns do not delay or preclude acceptance of new energy technologies in the marketplace, environmental research and development activities must be closely integrated and carried out in parallel with the development of such technologies. Both the Department of Energy and the former Energy Research and Development Administration established a separate office to oversee and carry out efforts to meet this objective.

This report addresses problems that the separate office under the former Energy Research and Development Administration encountered in integrating environmental and energy technology development activities, such as those for in-situ oil shale retorting, and the efforts underway by the Department of Energy to systematically avoid similar problems.





UNITED STATES GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548

ENERGY AND MINERALS  
DIVISION

B-178726

The Honorable  
The Secretary of Energy

Dear Mr. Secretary:

As you know, the Department of Energy (DOE) has been reviewing the programs, policies, and practices it inherited from a number of Federal agencies and has been seeking to establish an overall program management structure for the efficient and effective conduct of DOE's missions and responsibilities. To assist in those efforts, we are bringing to your attention some matters we noted in our survey of the former Energy Research and Development Administration's (ERDA's) environmental activities.

ERDA's environmental research and development (R&D) focused principally on developing nuclear energy technologies such as the liquid fast metal breeder reactor, and fossil energy technologies such as coal liquefaction and in-situ oil shale retorting. Although its environmental R&D efforts appeared to be well integrated with nuclear energy technologies, we found that ERDA experienced considerable difficulty in integrating environmental and fossil energy activities. This difficulty was largely because ERDA's Office of Environment and Safety was unable to obtain the cooperation of the Office of Fossil Energy. Therefore, the Office of Environment and Safety could not effectively carry out its responsibility to oversee and coordinate all environmental activities in ERDA.

ERDA had been implementing a program planning, budgeting, and review system which, in part, was designed to help integrate environmental and energy technology development activities. In this regard, ERDA was preparing environmental development plans which were designed to link these activities and provide a basis for identifying, scheduling, and funding needed environmental tasks. These plans, if integrated and carried out in parallel with the development of associated energy technologies, would have provided a much needed mechanism for ensuring that environmental concerns are identified and addressed

EMD-78-43

prior to making major commitments to the development and/or commercialization of such technologies.

However, upon beginning operations on October 1, 1977, DOE replaced ERDA's system with a new system--the DOE Policy and Program Planning System. Although DOE has adopted the environmental development plans and has proceeded with their development and implementation, formal procedures have not yet been developed to fully integrate them into its Policy and Program Planning System.

Without formally established procedures, we are concerned that DOE may similarly encounter problems in integrating environmental and fossil or other energy technology development activities unless sufficient management attention is given. Accordingly, we are recommending that you closely monitor the (1) conduct of the environmental R&D program, giving particular attention to coordination and cooperation problems and (2) development and implementation of DOE's Policy and Program Planning System, including the procedures for integrating and using environmental development plans, to ensure the timely and effective integration of environmental and energy technology development activities.

#### PERSPECTIVE

There is an urgent need to expeditiously develop new energy technologies to help solve the Nation's energy problems. To ensure that unresolved environmental concerns do not delay or preclude the acceptance of new energy technologies in the marketplace, environmental and energy technology R&D activities must be closely integrated and carried out in parallel with the development of such technologies.

Environmental R&D activities for new energy technologies are carried out in three basic phases. First, the products and byproducts of an energy technology system must be identified and characterized. For those products or byproducts characterized as pollutants, R&D is then carried out to determine how the pollutants are transported in the environment, their effects on the environment and man, and how their undesirable effects can be controlled. Finally, the results of the R&D are evaluated and incorporated as part of the overall efforts to develop new energy technologies. Each of these phases must be closely coordinated and integrated with the efforts to develop the associated energy technologies.

Under ERDA, the Assistant Administrator for Environment and Safety had primary responsibility for managing and directing the environmental technology programs to (1) ensure

that environmental and safety factors are adequately considered in each energy technology and (2) carry out needed environmental R&D. On October 1, 1977, these responsibilities were transferred to DOE's Assistant Secretary for Environment.

While the primary responsibility for environmental R&D rests with one office, the responsibility for developing economically competitive and environmentally acceptable energy technologies rests with the program divisions and offices. Under ERDA, responsibilities for the research, development, and demonstration (RD&D) of the various energy technologies were assigned to four program Assistant Administrators--Fossil Energy; Nuclear Energy; Solar, Geothermal, and Advanced Energy Systems; and Conservation. Under DOE, the Assistant Secretary for Energy Technology is responsible for the RD&D of the energy technologies and the Assistant Secretaries for Resource Applications and for Conservation and Solar Applications are responsible for commercializing energy technologies.

PROBLEMS IN INTEGRATING  
ENVIRONMENTAL R&D INTO ENERGY  
TECHNOLOGY DEVELOPMENT

The ERDA Office of Environment and Safety focused its environmental efforts on nuclear and fossil energy technologies. Officials within this office had extensive previous interactions with ERDA officials involved in nuclear energy RD&D and, accordingly, had been able to closely coordinate and integrate its environmental R&D efforts into nuclear energy technology development activities. However, this office had not been successful in developing a similar close relationship with officials involved in fossil energy development and had encountered problems in coordinating and integrating its environmental efforts into fossil energy technologies. As a result, ERDA's efforts to identify, schedule, and carry out needed environmental R&D tasks had been impaired.

Impaired ability to carry  
out needed environmental tasks

With the creation of ERDA in January 1975, entire organizational components of other Government entities were transferred essentially intact to ERDA. The organizational components transferred from the former Atomic Energy Commission included those that essentially became ERDA's Office of Environment and Safety and the Office of Nuclear Energy. Thus, these two offices already had established relationships on which to coordinate and integrate their activities. On the other hand, the organizational components responsible for nonnuclear energy activities were transferred from other

Federal agencies, such as solar energy from the National Science Foundation and fossil energy from the Department of the Interior. We found that the Office of Environment and Safety's environmental efforts associated with nonnuclear energy activities were largely concentrated in the fossil energy technologies. However, this office had not been able to establish a close relationship with the Office of Fossil Energy. Office of Environment and Safety officials told us that in their limited efforts associated with other nonnuclear energy technologies, they had not encountered any cooperation or coordination problems.

Much of the Office of Environment and Safety's efforts were associated with nuclear energy technologies. Officials within the Office of Environment and Safety told us that they have tried to expand their environmental R&D efforts into all of the nonnuclear energy areas, but limited funds have precluded this, and they have concentrated their additional efforts principally on fossil energy technologies. One official explained that efforts have been concentrated on the adverse environmental effects of fossil energy technologies because they consider such effects to be potentially more hazardous than those from the other nonnuclear energy technologies. In fiscal year 1977, operating outlays for the work carried out by this office totaled \$195.4 million. Over 30 percent of these outlays was for efforts associated with nuclear energy technologies and over 22 percent was for fossil energy technologies as shown in the table on the following page.

<u>Program Area</u>	Fiscal year 1977 <u>outlays</u> (millions)	Percent of <u>total</u>
Nuclear energy (note a)	\$ 60.4	30.9
Nonnuclear energy:		
Fossil	43.8	22.4
Solar	2.8	1.4
Geothermal	3.9	2.0
Conservation	1.4	0.7
Multi-technology (note b)	41.8	21.4
General science	25.9	13.3
Medical applications	<u>15.4</u>	<u>7.9</u>
Total	<u>\$195.4</u>	<u>100.0</u>

a/Includes \$1.8 million for magnetic fusion.

b/R&D applicable to more than one technology.

Environment and Safety officials said that they have not had much success in expanding their overall environmental efforts because their funding levels have not grown as rapidly as the levels for nonnuclear energy technologies. These officials indicated the environmental R&D efforts associated with solar energy, geothermal energy, and conservation technologies were principally for identifying and carrying out small-scale investigations into the environmental issues relating to these technologies. They explained that the environmental issues identified to date in these nonnuclear energy technologies have been relatively minor compared to those surrounding nuclear and fossil energy technologies. The increases in appropriations from fiscal year 1976 to 1977 for work under the auspices of the Office of Environment and Safety and for the program offices responsible for developing energy technologies are shown in the table on the following page.

<u>Program office</u>	<u>Appropriations</u>		<u>Percent increase</u>
	<u>Fiscal year 1976</u>	<u>Fiscal year 1977</u>	
	----- (millions) -----		
Environment and Safety	\$ 198	\$ 234	18
Nuclear Energy (note a)	1,084	1,998	84
Fossil Energy	427	403	13
Conservation	76	161	112
Solar	115	290	152
Geothermal	31	55	77
Advanced Energy Systems (note b)	552	777	41

a/Excludes magnetic fusion.

b/Includes magnetic fusion, high energy physics, basic energy sciences, and nuclear physics.

Environment and Safety officials pointed out that in formulating each annual budget request, they have sought more funds than have been ultimately approved by the Congress. They indicated that reductions both within ERDA and by the Office of Management and Budget (OMB) during the budget process have impaired their ability to keep pace with the various developing energy technologies. In fiscal years 1976 and 1977, the Office of Environment and Safety's budget requests were reduced as shown below.

<u>Fiscal year</u>	<u>Environment and Safety's request to ERDA</u>	<u>ERDA's request to OMB</u>	<u>OMB's request to the Congress</u>	<u>Amount appropriated by the Congress</u>
	----- (millions) -----			
1976	\$273.1	\$219.8	\$188.4	\$198.0
1977	352.2	318.3	215.5	234.0

In response to our inquiries as to the adverse effects of these reductions on their environmental R&D efforts, an Environment and Safety official told us that a number of needed environmental tasks principally associated with fossil energy technologies were not funded. The official pointed out that as a result, the health of a number of people working at, or



residing near, fossil energy plants may be jeopardized because the potential hazards of fossil energy effluents are not completely known. Another official said that environmental researchers are still trying to characterize the pollutants and catch up with the ongoing coal research and development program.

However, these officials could not identify or substantiate the extent to which funding reductions have actually resulted in delays in making the associated fossil energy technologies environmentally acceptable. They explained that the proposed unfunded tasks were for relatively new technologies and it was uncertain at this early stage what impact, if any, would result from their being unfunded. In our opinion, had these tasks been integrated and scheduled in relationship to the development of those technologies, such impacts would have been more readily identifiable.

DOE officials told us that their fiscal year 1978 environmental efforts are essentially a continuation of ERDA's efforts and, therefore, also focus predominately on the developing nuclear and fossil energy technologies. They said, however, that in fiscal year 1979 they plan to expand their environmental efforts related to other new energy technologies such as solar, geothermal, and fusion, as well as their efforts related to fossil energy technologies.

Office of Environment and Safety  
was not aware of Fossil Energy's  
environmental efforts

Both ERDA's Office of Environment and Safety and the Office of Fossil Energy carried out environmental R&D efforts in fossil energy technologies. Although the Assistant Administrator for Environment and Safety was primarily responsible for overseeing and coordinating ERDA's overall environmental R&D efforts, he did not become aware of the nature and extent of most environmental R&D efforts being undertaken by the Office of Fossil Energy until June 1977, during the fiscal year 1979 budget formulation process.

During this process, the Office of Fossil Energy had identified \$65 million for planned environmental R&D, most of which was for a continuation of ongoing efforts. According to an official in the Office of Environment and Safety, his office was aware of the environmental activities associated with only about \$10 million of the requested \$65 million. He said that his office did not participate in the planning of the environmental R&D tasks included in the other \$55 million and was not aware of the scope or nature of such tasks.

In commenting on this matter, ERDA's Assistant Administrator for Fossil Energy said that the Office of Environment and Safety is normally involved in matters concerning environmental compliance and was aware of his office's environmental efforts in this area. However, he said that the balance of the environmental tasks are intricately related to the technical aspects of fossil energy technologies and should be properly carried out by his office. He further pointed out that this planned work is not new, but a continuation of environmental work already underway.

In response to our inquiry as to the amount of funds associated with environmental R&D that was currently being carried out by Fossil Energy, a Fossil Energy official told us they could not provide such information because the work was being done in connection with specific technology development projects and amounts could not easily be separately identified as being for environmental R&D. This official explained that Fossil Energy will be able to identify such amounts for the first time beginning in fiscal year 1979.

In our view, the Office of Environment and Safety must be aware of the environmental efforts being carried out as part of the various energy technology RD&D programs to ensure that such efforts are adequately coordinated. This was not evident, however, with respect to the fossil energy technologies that were being developed by ERDA.

Fossil Energy failed to cooperate  
with Environment and Safety's efforts

In several cases where the Office of Environment and Safety was able to initiate environmental R&D tasks associated with fossil energy technologies, the Office of Fossil Energy did not cooperate with those responsible for carrying out the tasks. For example, in fiscal year 1976, the Office of Environment and Safety assigned to ERDA's Pacific Northwest Laboratories the task of conducting characterization and toxicity studies on in-situ oil shale burn. In October 1975 Pacific Northwest, which is operated under contract by Battelle Memorial Institute, requested sample materials for its studies from the Laramie Energy Research Center, a Government-owned and -operated research facility, which was organizationally aligned to the Office of Fossil Energy and is now aligned to DOE's Office of Energy Technology.

Laramie's "true" in-situ oil shale retorting pilot plant is the only current source of effluents from such plants. Although Environment and Safety officials recognized that conditions may ultimately be considerably different in a

commercialized operation, they felt that there would be sufficient similarities in the products and effluents so that valuable information on the toxicities of substances which would potentially be released to the environment could be obtained. These officials also believed these studies would permit environmental evaluations of changes in the retorting process or operating conditions and would be valuable for formulating procedures and methodologies for environmental evaluations of subsequent demonstrations.

Although Laramie officials acknowledged that they had the only available source of effluents from "true" in-situ oil shale retorting, they were reluctant to provide environmental data to individuals not familiar with their oil shale efforts because of possible public concern over potential environmental or health hazards. Laramie officials, therefore, tried to impose a number of constraints on which materials would be made available to the Pacific Northwest researchers and on how the results of the research were to be evaluated and reported. Officials of the Office of Environment and Safety and Pacific Northwest concluded that they could not carry out the task in a sufficiently independent manner under the constraints. Accordingly, they rejected the proposed constraints, the sample materials were not obtained, and in April 1977, they abandoned the task.

In commenting on this matter, Fossil Energy officials stated that the collection of samples for the characterization of effluents would have duplicated their efforts. They contended that because such efforts are intricately related to energy technology development, these efforts are Fossil Energy's responsibility and not the responsibility of the Office of Environment and Safety. These officials said that these samples would not be representative of effluents that would be released from commercial plants. Hence, they were concerned that the publication of environmental assessments that are derived from such samples may provide environmental groups with erroneous data which might be used by them toward halting the work. They, therefore, believed that the Office of Environment and Safety was trying to get involved much too early.

In our opinion, environmental R&D should be conducted as early as possible so that solutions to potential environmental problems can be sought. To independently assess environmental efforts, we believe that offices, such as the former ERDA Office of Environment and Safety and now DOE's Office of Environment, should be given sufficient management support to effectively carry out their oversight and coordination responsibilities for energy-related environmental R&D.

In this regard, DOE officials, including the Acting Assistant Secretary for Environment, told us that, in contrast to ERDA, DOE management has been providing sufficient support to the Office of Environment. They said that this has been largely the result of a change in management's perception of its objectives under DOE as opposed to those under ERDA. These officials explained that ERDA's management was oriented toward developing better energy technologies through RD&D, but DOE's management is also oriented toward the public acceptance of new energy technologies. Therefore, they said that DOE's management actions to date have completely supported the Acting Assistant Secretary for Environment's efforts to carry out his responsibilities. To illustrate this point, the Acting Assistant Secretary for Environment said that he recently nonconcurred in a proposed geothermal loan program plan because in his opinion certain environmental issues were not adequately addressed. In this case, the Under Secretary refused to approve the document and required that the program plan be revised to consider those issues to the satisfaction of the Acting Assistant Secretary for Environment.

#### ERDA'S INITIATIVES TO RESOLVE THE PROBLEMS

Shortly after ERDA began operations in January 1975, ERDA's management recognized the lack of coordination among its various activities and initiated the development of a Program Planning, Budgeting, and Review system which, in part, was designed to help define and integrate environmental R&D tasks into technology development efforts. The system was to consist of six major phases each building on the preceding phase. These six phases are: (1) normative planning, (2) strategic planning, (3) program planning, (4) resource allocation; (5) program implementation, and (6) program evaluation.

Program planning was to be based on policies and strategies developed during the normative and strategic planning phases. The basic outputs of the program planning phase were to be program plans describing what energy technology work is to be accomplished, institutional plans describing what work each major field organization is to carry out, and environmental development plans identifying needed environmental R&D tasks and scheduling when each task identified should be carried out in relation to an energy technology's development.

Environmental development plans were designed to ensure that environmental, social, and institutional impacts are considered during the RD&D for each energy technology. These plans were to be prepared jointly by the Office of Environment

and Safety and the respective program offices. To facilitate the Office of Environment and Safety's overview of the planning and implementation of environmental R&D tasks, a committee was to be established for each technology, chaired by a representative of the Office of Environment and Safety and comprised of members from that office and from the program office for that technology.

In the resource allocation phase of the proposed planning system, tasks identified to be carried out in the program planning documents, including the environmental development plans, were to be funded. Hence, the system was designed, in part, to bring to management's attention environmental R&D tasks that needed to be funded when the related energy technology task was funded.

ERDA's proposed system, if implemented as designed, would have helped resolve the problems encountered by the Office of Environment and Safety in its environmental R&D efforts associated with fossil energy technologies. In this regard, before its demise in September 1977, ERDA issued 3 of the 34 environmental development plans it had initiated. An Environment and Safety official told us that the preparation of these plans helped in defining needed environmental R&D tasks within the programs covered, and in delineating the respective roles of his office and the energy technology program offices in environmental matters. Under ERDA, the balance of these plans were scheduled to be issued during fiscal year 1978.

#### DOE'S IMPACT ON ERDA'S INITIATIVES

Upon beginning operations in October 1977, DOE replaced ERDA's proposed Program Planning, Budgeting, and Review system and began developing its own Policy and Program Planning System. We noted, however, that DOE's initial interim directive describing the new system did not mention environmental development plans.

In November 1977 an official within DOE's Office of Policy and Evaluation, which is developing DOE's planning system, told us that the environmental development plans were not then part of the system design, but that DOE's planning system is expected to evolve to meet management's needs and such plans may subsequently be integrated into the system. An official within DOE's Office of Environment told us that they were proceeding with the preparation of environmental development plans and expected to have most of them issued during fiscal year 1978.

In January 1978 DOE formally adopted the environmental development plans as part of its system, and by mid-February 1978 had issued 28 plans and was preparing 6 others. DOE officials said that they are in the process of integrating these plans into the system and expected to use them in formulating the fiscal year 1980 DOE budget. In addition to these 34 plans, one of these officials told us that DOE will begin preparing environmental development plans for two or three additional programs during fiscal year 1978. This official said that these additional plans will not be issued until fiscal year 1979.

DOE's Acting Director of Fossil Energy Programs and Acting Assistant Secretary for Environment told us that the completed environmental development plans have helped improve the coordination and cooperation between their respective offices. They said that these plans have provided a reference point for resolving differences between their offices on approaches to environmental R&D tasks associated with certain fossil energy technologies. As a result, they said that jurisdictional disputes, such as that encountered over samples at Laramie, have not been encountered under DOE. In certain fossil energy technologies for which environmental development plans have been issued, they pointed out that their two offices have recently initiated several joint projects. DOE officials said that, based on environmental development plans, the Offices of Fossil Energy and of Environment have initiated six joint environmental/fossil energy projects, such as one which is to assess the various environmental issues surrounding the operation of a coal liquefaction pilot plant in Kentucky. These officials said that, while it is too early to completely evaluate these joint projects, no coordination or cooperation problems have surfaced.

DOE officials told us that they are preparing formal detailed procedures for the integration and use of environmental development plans, which will generally reflect the ERDA procedures currently being used informally by DOE. These officials stated, however, that it will take some time to completely integrate these plans into the DOE system. They believed that such complete integration is unlikely to occur before September 1978.

To better ensure the timely performance of those environmental R&D tasks that must be carried out in parallel with the development of specific energy technologies, environmental development plans should be integrated and considered with program plans in formulating the annual budget. Accordingly, we believe that DOE should continue its efforts to integrate the

environmental development plans into its Policy and Program Planning System as soon as possible.

## CONCLUSIONS

To successfully place a new energy technology into the marketplace, all technical, socioeconomic, and environmental problems or concerns must be resolved. Environmental R&D must be integrated and carried out in parallel with the development of the associated energy technologies to ensure that environmental concerns are identified and addressed prior to making major commitments to the development and/or commercialization of such technologies.

A separate, semi-autonomous office within DOE having responsibility for planning, overseeing, coordinating, and evaluating all environmental R&D activities should help provide assurance that potential environmental concerns are not overlooked in developing new energy technologies. In both ERDA and DOE, such a separate office was established not only to ensure compliance with environmental laws and principles, but also to conduct a comprehensive program of R&D on the environmental effects of energy technologies and programs.

Such an office, however, must be given sufficient management support to effectively carry out its overview and coordination responsibilities. Our survey showed that under ERDA this had not been evident; ERDA's Office of Environment and Safety had not been able to establish sufficiently close working relationships and cooperation with the Office of Fossil Energy. Accordingly, Environment and Safety's ability to carry out needed environmental tasks had been impaired. Without these tasks, potential environmental or health hazards may remain undetected or unresolved until after the technological development of an energy technology is completed. Hence, concern over those potential hazards may delay or preclude that technology's commercialization until such concerns are resolved.

As part of its Program Planning, Budgeting, and Review system, ERDA had initiated environmental development plans which, in part, were intended to help resolve the difficulties encountered in carrying out a closely coordinated program of environmental R&D. Although DOE is proceeding with the preparation and implementation of such plans, these plans have not yet been fully integrated into DOE's overall planning and budgeting system.

DOE is planning to expand its environmental R&D efforts in fossil energy as well as in other new technologies such

as solar, geothermal, and fusion. Such expanded efforts will require careful coordination to ensure that they are well integrated into the related energy technology development activities. Hence, we are concerned that although needed environmental R&D tasks may be identified and scheduled, there will be little assurance that such tasks will be carried out when needed until the environmental development plans are fully integrated into the DOE system.

### RECOMMENDATIONS

We recommend that you closely monitor the (1) conduct of the environmental R&D program, giving particular attention to coordination and cooperation problems and (2) development and implementation of DOE's Policy and Program Planning System, including the procedures for integrating and using environmental development plans, to ensure the timely and effective integration of environmental and energy technology development activities.

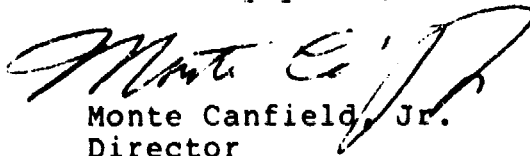
- - - -

As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Copies of this report are being sent to the Director, Office of Management and Budget; the Chairmen, House Committees on Appropriations and Government Operations and the Senate Committees on Appropriations and Governmental Affairs; and the oversight committees for the agency.

The contents of this report have been discussed with DOE officials and their comments have been considered and incorporated, where appropriate. We appreciate the courtesy and cooperation extended to our staff during this survey.

Sincerely yours,

  
Monte Canfield, Jr.  
Director