

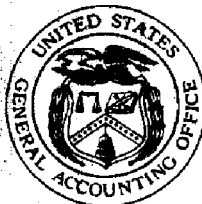
GAO

Report to the Chairman, Subcommittee
on Military Procurement, Committee on
National Security, House of
Representatives

July 1995

DEPARTMENT OF
ENERGY

Savings From
Deactivating Facilities
Can Be Better
Estimated



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

**Resources, Community, and
Economic Development Division**

B-260267

July 7, 1995

The Honorable Duncan Hunter
Chairman, Subcommittee on
Military Procurement
Committee on National Security
House of Representatives

Dear Mr. Chairman:

The Department of Energy (DOE) created the Nuclear Material and Facility Stabilization (NMFS) program within the Office of Environmental Management (EM) in July 1992. Since then, the program has grown to become a major part of DOE's environmental management efforts. At the beginning of fiscal year 1995, DOE was planning to spend about \$813 million on managing surplus facilities that are waiting for decontamination and decommissioning and on providing electrical, transportation, and other landlord-type services at key environmental management sites near Hanford, Washington; Idaho Falls, Idaho; and Rocky Flats, Colorado.

DOE officials have repeatedly said they can reduce the NMFS program's future costs by deactivating surplus facilities—which involves removing radioactive and hazardous materials that DOE must otherwise safeguard and monitor until the facilities are decontaminated and decommissioned—and by upgrading inefficient utilities and other services at sites managed by the program. Interested in assuring that the program achieves these goals, the former Chairman of the Committee's Military Application of Nuclear Energy Panel asked us to (1) determine the proportion of the program's fiscal year 1995 budget that is allocated to projects that could reduce the program's future costs,¹ (2) estimate the difference between the savings that these projects could generate and the costs DOE could incur to obtain these savings (i.e., net savings), and (3) determine the reliability of DOE's estimates for net savings that could accrue from major deactivation projects. As agreed with the Committee, we are sending the results of our work to you because your Subcommittee now has jurisdiction over the program.

¹We defined an NMFS project as any activity or collection of activities that the program manages by using a single EM Activity Data Sheet (ADS). ADSs are the office's primary system for managing projects.

Results in Brief

DOE is allocating about 31 percent, or \$249 million, of the NMFS program's available fiscal year 1995 funding to projects that it expects will reduce the program's future costs. The \$249 million allocation supports 24 deactivation, surveillance and maintenance, and landlord-type projects at the program's three key sites.

We estimated the net savings that DOE could realize for the 11 projects for which sufficient data were available. These 11 projects could yield a combined net savings of \$458 million over their expected lives of 10 to 30 years.² The net savings from individual projects vary widely—two deactivation projects could save several hundred million dollars in surveillance and maintenance costs, while other projects may save considerably less. We could not estimate savings for the remaining 13 projects because, while DOE expects savings to occur, it did not have sufficient data available on the costs and potential savings associated with the projects.

Despite the significant savings that some deactivation projects could generate, DOE has not developed a process for consistently estimating the net savings from deactivation projects. Consequently, DOE is not able to develop reliable or complete estimates of the potential net savings from these projects. DOE officials expect that the number of facilities managed by the program may increase from 1,560 to an estimated 5,900 facilities—an increase of 278 percent—by October 1997 and that budget constraints will tighten. As this occurs, using a reliable process to estimate and compare net savings from deactivation projects, coupled with an assessment of other factors, such as health and safety risks, would help DOE target funds more effectively to those projects that will produce the greatest reduction in future costs.

Background

The NMFS program is becoming an increasingly important part of DOE's environmental management effort.

- Once EM accepts ownership of a surplus facility, the NMFS program becomes responsible for surveillance and maintenance activities. These activities include monitoring the nuclear and hazardous materials within many surplus DOE buildings and other efforts needed to protect the health and safety of workers, the public, and the environment. Surveillance and

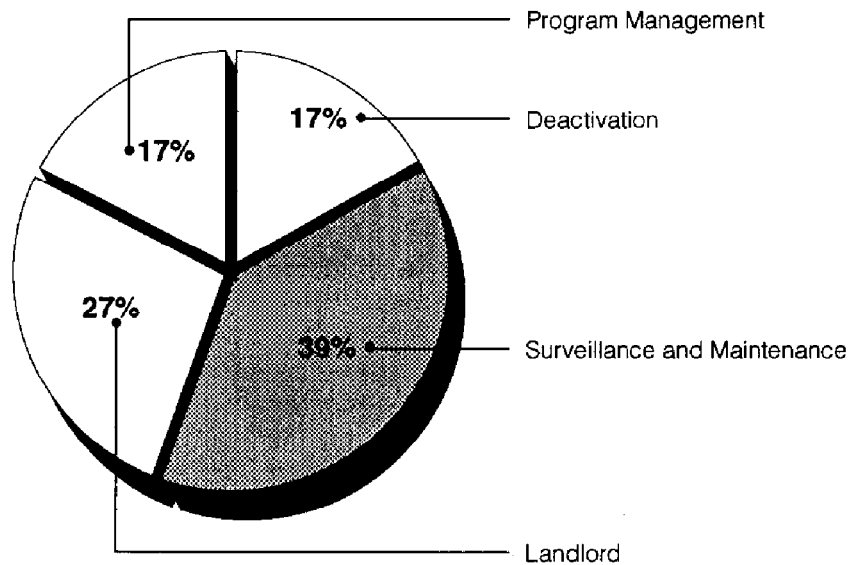
²Unless indicated otherwise, this report presents the projects' cost and savings estimates in 1994 discounted dollars. App. IV explains how we estimated the projects' costs and savings.

maintenance costs are high for a facility that contains large inventories of nuclear and hazardous materials.

- The program is also responsible for deactivating surplus facilities, which is the first phase of stabilizing and cleaning up contaminated facilities. Deactivation includes removing nuclear and hazardous materials and making structural repairs to a surplus facility so that DOE can minimize health and safety risks and reduce surveillance and maintenance costs until DOE starts final decontamination and decommissioning.
- The program's landlord activities fulfill a critical support role for DOE's other environmental programs. Landlord services include maintaining roads, providing medical and fire services, and operating electricity and other utilities at the Hanford, Idaho Falls, and Rocky Flats sites where EM has designated the NMFS program as the sites' "landlord."

As shown in figure 1, surveillance and maintenance costs account for the largest portion of the program's costs. Appendix I provides additional details on the program's projected spending at key sites and EM headquarters.

Figure 1: NMFS Program's Available Fiscal Year 1995 Budget by Type of Activity



The NMFS program's available fiscal year 1995 budget totaled \$812.8 million.

Source: GAO's analysis of DOE's data.

DOE Is Spending About One-Third of the Program's Available Funds on Cost-Saving Projects

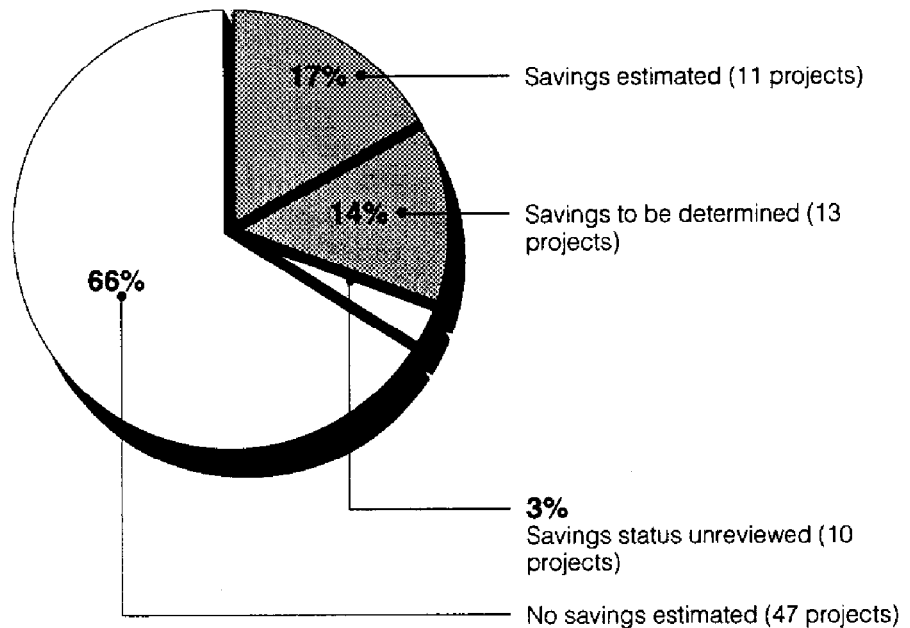
For fiscal year 1995, we estimate that the NMFS program is allocating about 31 percent (\$249 million) of the program's available funding to 24 projects that program officials expect will reduce future costs at Hanford, Idaho Falls, and Rocky Flats. Some of these same projects may also address health and safety concerns at surplus facilities by reducing workers' potential exposures to radiation and hazardous chemicals and by eliminating conditions that could cause accidents and injuries.

The 24 cost-saving projects fall into two categories. The first category includes 11 projects for which DOE has estimated deactivation, surveillance and maintenance, or landlord costs from which we could derive estimated savings. These projects include DOE's deactivation efforts at Hanford's Plutonium-Uranium Extraction/Uranium Trioxide Plants (PUREX/UO3) and Fast Flux Test Facility (FFTF) and landlord projects at Idaho Falls and Rocky Flats. The second category includes deactivation activities that are still in the early planning stages at Idaho Falls and Rocky Flats and projects to upgrade landlord services at Idaho Falls and Hanford that, in

some cases, were started before DOE transferred landlord responsibilities to EM. We could not estimate savings for these projects either because DOE had not determined the costs needed to complete a project or had not estimated the savings that might result.

As shown in figure 2, DOE is allocating the largest proportion of the program's available fiscal year 1995 funds to projects that DOE generally does not expect will reduce surveillance and maintenance or landlord costs. These include projects to (1) conduct surveillance and maintenance at facilities that are not currently being deactivated, (2) provide general landlord services at the program's three key sites, and (3) manage activities at these major sites. Some of these projects also address health and safety risks at the sites. (App. II gives the percentage of funding for deactivation, surveillance and maintenance, and landlord projects in each category.)

Figure 2: Distribution of NMFS Program's Available Fiscal Year 1995 Funding by Savings Potential and Number of Projects



Note 1: The NMFS program's available fiscal year 1995 budget totaled \$812.8 million.

Note 2: The 3 percent of the available fiscal year 1995 budget that we did not review supports activities at DOE headquarters and sites in California, Florida, Ohio, South Carolina, and Tennessee.

Source: GAO's analysis of DOE's data.

The Director of the NMFS program's Office of Integration and Assessment stated that the program is actively seeking opportunities to reduce future costs. However, he indicated that during fiscal years 1993 and 1994, the program had just become responsible for the Idaho Falls and Rocky Flats sites, had completed deactivation plans and was ready to start deactivation at only a few facilities, and had limited staff to reshape budget priorities. He believes that a major reason why more of the available funding has not been directed to cost-saving projects is that 1995

was the first fiscal year in which the NMFS program could effectively redirect funds to deactivation and landlord projects with potential savings.

Potential Net Savings From Fiscal Year 1995 Activities Could Be Significant

We estimate that the 11 fiscal year 1995 deactivation, surveillance and maintenance, and landlord projects for which there was information on cost savings could save a combined amount of \$764 million over the projects' expected lives of 10 to 30 years. With the estimated costs to complete all necessary work subtracted, the projects could save a net amount of \$458 million over this period. However, the actual savings from these projects could vary depending on the projects' final costs, DOE's decisions on when to decontaminate and decommission specific surplus facilities, and other factors. Appendix III provides cost and savings estimates and other information for the 11 individual projects.

DOE's deactivation of PUREX/UO₃ and FFTF accounts for about 86 percent of the potential net savings from the 11 fiscal year 1995 projects. At PUREX/UO₃, DOE intends to almost eliminate the need to perform safety checks and operate safety systems by removing chemicals and nuclear fuel left at the facilities when DOE stopped fuel reprocessing. We estimate that these efforts could reduce total surveillance and maintenance costs at PUREX/UO₃ by about \$244 million during deactivation and the 10-year holding period that NMFS program officials expect before DOE starts decontamination and decommissioning. Subtracting DOE's estimated deactivation costs produces an expected net savings of about \$199 million. At FFTF, DOE could reduce surveillance and maintenance costs by \$297 million during a comparable deactivation and 10-year holding period. Subtracting the projected costs for removing nuclear fuel, draining coolant from the reactor, and completing other deactivation work produces an estimated net savings of \$193 million.

Other fiscal year 1995 projects could generate smaller net savings. For example, at Idaho Falls' Separations and Fuel Dissolution Process Facilities, DOE could receive \$58 million in net savings from deactivating parts of several buildings. Surveillance and maintenance costs for the buildings can be reduced by only a fraction of the total costs because DOE will continue to use other parts of the buildings for environmental work. Consolidating security systems at Idaho Falls, upgrading utilities at Rocky Flats, and conducting other landlord projects could generate from \$800,000 to \$6.6 million in net savings over the projects' 10- to 30-year design lives.

Two of the 11 projects could cost more than they could save. At Idaho Falls, DOE's electrical upgrades could cost a net \$44 million. However, according to DOE officials, the project is needed to reduce electrical outages at facilities that store nuclear materials and to eliminate the threat of electrocution and electrical overload at some facilities. At Hanford, DOE's project to deactivate a group of related nuclear fuel supply facilities could cost \$6 million more than the project's expected savings in surveillance and maintenance costs. By deactivating this group of facilities, DOE will eliminate structural hazards at one building and prevent accidental releases of hazardous materials to the environment at other buildings.

Our savings estimates are sensitive to program officials' assumption that DOE will not start decontamination for at least 10 years after deactivation. At PUREX/UO₃, program officials are using a 10-year period to identify the repairs needed to keep these facilities structurally sound until DOE starts decontamination. However, DOE officials do not have a firm schedule for starting decontamination of surplus facilities. If DOE starts decontamination more than 10 years after completing deactivation, the net savings from deactivating a facility could increase because DOE would benefit from additional years of minimal surveillance and maintenance costs. The additional surveillance and maintenance cost savings would be reduced by the added cost of any unanticipated repairs to keep a facility structurally sound for these additional years.

Our estimates also assume that DOE will complete the 11 projects on schedule. If DOE completes projects earlier than expected, the projects' discounted net savings could increase. For example, we estimate that DOE's discounted net savings from deactivating PUREX/UO₃ could be higher now than when DOE started planning the facility's deactivation because DOE has recently decided to pursue selling the nitric acid that remains at the facility. By selling the nitric acid, DOE could deactivate the facility 1 year sooner than anticipated. If DOE does not start decontamination and decommissioning 1 year earlier than originally planned, completing deactivation sooner increases the project's discounted net savings by about \$7 million.

DOE Can Better Estimate Potential Savings for Major Deactivation Projects

Since preparing the fiscal year 1995 budget, program officials have become increasingly aware of the importance of considering net savings estimates during the budget process. However, partly because DOE's internal orders for managing projects do not require NMFS program officials to prepare overall cost savings estimates for deactivation projects, NMFS program officials have not developed a process for consistently estimating discounted net savings from deactivation projects. For deactivation projects, estimating discounted net savings can involve the following:

- Calculating annual net savings during each year that DOE is deactivating a facility and waiting to start decontamination and decommissioning. Annual net savings are the difference between each year's deactivation costs and the resulting reductions in surveillance and maintenance costs.
- Discounting the annual net savings and computing a total estimate of discounted net savings both during deactivation and during the period until decontamination and decommissioning begins.

For the fiscal year 1995 budget, NMFS program officials did not prepare complete estimates of savings for specific deactivation projects because they believed that they could effectively allocate funds among a limited number of deactivation projects without such information. Program officials determined fiscal year 1995 deactivation priorities after considering such factors as (1) the health and safety risks that a facility posed if DOE did not start deactivation, (2) DOE's readiness to start deactivation work at specific facilities, and (3) the potential difference between a facility's surveillance and maintenance costs during a deactivation project's first and last years.

Defining the general parameters of how the program can prepare and compare savings estimates for deactivation projects is important because DOE's methodology for comparing projects can affect future budget priorities. To illustrate the effect of using alternative approaches for preparing savings estimates, we used two approaches to rank the potential savings that DOE could receive from the five deactivation projects for which DOE had sufficient data to estimate savings. Our first method approximated DOE's approach for estimating savings by (1) computing the drop in surveillance and maintenance costs between a project's first and last years and (2) ranking the five projects according to the resulting savings in surveillance and maintenance costs.³ As table 1 indicates, the result of the first approach was that the FFTF, PUREX/UO3, and Separations

³We used DOE's estimates of surveillance and maintenance costs from the projects' original implementation plans to compute the potential drop in costs. These plans expressed costs in current dollars.

and Fuel Dissolution Process Facilities projects had the highest rankings. Our second approach estimated each project's savings by computing surveillance and maintenance cost savings during deactivation and during a 10-year waiting period and discounting each year's costs and savings to derive the total net savings. Using a ratio of discounted total costs to discounted total savings to compare projects yields the following: Hanford's Building 308 project replaces the FFTF project as one of the program's top three projects.

Table 1: Results of Two Approaches for Determining and Comparing Savings From Deactivation Projects

| Project's Rank | First-year to last-year approach | Ratio of discounted costs-to-savings approach |
|----------------|---|---|
| 1 | FFTF | Building 308 |
| 2 | PUREX/UO3 | Separations and Fuel Dissolution Process Facilities |
| 3 | Separations and Fuel Dissolution Process Facilities | PUREX/UO3 |
| 4 | Building 308 | FFTF |
| 5 | Fuel Supply Facilities | Fuel Supply Facilities |

If DOE received sufficient funds to support all five deactivation projects in this example until they were completed, it would not matter what approach DOE used to estimate and compare projects' future savings. However, if program managers have sufficient funds to support only a limited number of projects, DOE's approach for estimating and comparing projects' savings could alter DOE's funding decisions.

As DOE continues to convert activities from weapons production and other missions, the number of surplus DOE facilities will increase, placing additional pressure on NMFS to effectively allocate funds among facilities. At the beginning of fiscal year 1995, the program managed 1,560 facilities. However, during early 1995, the program accepted responsibility for managing more than 3,000 facilities, including buildings at DOE's Rocky Flats and Savannah River, South Carolina, sites. Program officials expect to accept responsibility for additional facilities at smaller sites in Florida and Ohio before the end of the fiscal year and for as many as 940 additional surplus facilities during fiscal years 1996 and 1997. If these facilities are transferred as expected, the program will be responsible for managing 5,900 facilities by October 1997—a 278-percent increase over the number managed by the program in October 1994.

For fiscal year 1996, the program's budget request will increase to about \$1.68 billion. However, the request includes an almost constant level of funding for the 1,560 facilities in the program before January 1995 and an \$826 million increase for newly transferred facilities at Savannah River and other sites. Program officials expect that the program's budget will decrease over the next few years and that a relatively small amount of resources will be transferred with surplus facilities to partially offset increases in the program's costs.

As budget constraints tighten and the NMFS inventory of surplus facilities grows, program officials will begin to face difficult decisions about which deactivation projects to fund. The projects' potential savings, in addition to the risks that are reduced, can become important factors in making these decisions. In some cases, the benefits from reducing risks at a facility may be sufficiently large to make the deactivation of the facility crucial regardless of the monetary savings. However, when the risks associated with several projects are approximately equal, reliable information about these projects' potential savings can enable DOE managers to target funds to projects that will produce the greatest reduction in future costs.

DOE has taken several steps to develop more complete cost information for deactivation projects that DOE could use to estimate a project's net savings. For example, during June 1994, DOE released a project management plan for PUREX/UO3 that contained detailed estimates of surveillance and maintenance and deactivation costs for the project. Using the PUREX/UO3 as a model, DOE issued a similar plan in November 1994 with detailed cost estimates for the deactivation of FFTF. NMFS program officials are also preparing guidance for headquarters and field staff that defines key decision points and information needed for managing other large deactivation projects and encourages DOE officials to compare cost estimates with potential savings.

NMFS program officials have also started to discuss with EM management general information on and strategies for reducing costs. For example, during the fiscal year 1996 budget process, NMFS program managers for the first time compared projects by assigning points to them on the basis of, among other things, the projects' potential for reducing the program's future costs. The program's fiscal year 1996 effort to consider potential savings in budget decisions did not require that program managers use discounted net savings estimates to compare projects and assigned 1 out of a maximum of 25 points to each project that might reduce future costs.

During March 1995, NMFS program officials also briefed EM's Assistant Secretary on a strategy for reducing future surveillance and maintenance costs by quickly deactivating large surplus facilities. As a part of this effort, program officials have determined the approximate net savings and return on investment for several ongoing and planned deactivation projects at EM sites. However, program officials acknowledged that EM sites do not consistently report data for deactivation projects. Without consistent cost information, savings calculations for projects are not always comparable.

NMFS program officials also acknowledge that they have not developed a process to ensure that project managers consistently estimate the complete savings from each deactivation project. In his February 1995 guidelines for developing EM's fiscal year 1997 program, EM's Assistant Secretary emphasized the importance of achieving cost savings and stated that one of EM's guiding principles should be to fund projects that significantly reduce future costs. Despite this, the program's new guidance on project management does not (1) define how program officials are to estimate net savings during deactivation and the years between deactivation and decontamination and decommissioning or (2) require that program officials use net savings estimates during the budget process.

Conclusions

If the NMFS program completes them on schedule, the 11 fiscal year 1995 projects that we analyzed could reduce the program's net costs by \$458 million over the next 10 to 30 years. However, the potential savings from individual projects vary widely. The range of savings reflects inherent differences in the size and condition of facilities and the cost for surveillance and maintenance at these facilities before and after deactivation.

Partly because the program is relatively new, DOE does not have a process in place to consistently determine the relative savings among projects. However, as the program grows, DOE is likely to face future budget constraints that will make it necessary to choose between competing deactivation projects. Knowledge of the potential savings that may accrue from each deactivation project, coupled with an assessment of other factors such as health and safety risks, would help the Department target its funds more effectively in deactivating surplus facilities.

The Assistant Secretary's guidelines and the program's recent efforts to improve its awareness of cost-saving opportunities are steps in the right

direction. However, these efforts do not specifically address, for deactivation projects, the development of reliable net savings estimates that will help managers compare the relative benefits of alternative projects. Because different methods of estimating savings can produce different results, issuing guidance that explains how to consistently prepare and compare net savings estimates for future deactivation projects would improve the quality of information available to help NMFS program managers allocate funds among competing projects.

Recommendations

To improve the reliability of DOE's estimates of potential net savings from deactivation projects and the quality of information that DOE managers consider when setting priorities for these projects, we recommend that the Secretary of Energy

- issue guidance that defines how to prepare reliable and complete estimates of potential net savings from deactivation projects and
- require EM officials to use estimates of projects' potential net savings, in addition to other information such as health and safety risks, to determine priorities for deactivating facilities.

Agency Comments


In written comments on a draft of this report, DOE stated that the report was comprehensive and accurately described the status of the NMFS program's cost estimating for deactivation projects. DOE also commented that the report's conclusions and recommendations will enhance its ability to estimate and document the program's potential cost savings. The Department's comments and suggestions to clarify technical matters discussed in the report are presented in appendix V. We have incorporated these suggested changes into the report.

We performed our work from June 1994 through June 1995 in accordance with generally accepted government auditing standards. Appendix IV provides detailed information on our scope and methodology.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies of this report to the appropriate congressional committees; the Secretary of Energy; and the Director, Office of Management and Budget. We will also make copies available to others upon request.

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

Sincerely yours,

A handwritten signature in black ink, appearing to read "Victor S. Rezendes". The signature is written in a cursive style with a large, stylized initial "V".

Victor S. Rezendes,
Director, Energy and
Science Issues

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Abbreviations

| | |
|-----------|---|
| ADS | Activity Data Sheet |
| DOE | Department of Energy |
| EM | Office of Environmental Management |
| FFTF | Fast Flux Test Facility |
| GAO | General Accounting Office |
| NMFS | Nuclear Material and Facility Stabilization (program) |
| PUREX/UO3 | Plutonium-Uranium Extraction/Uranium Trioxide Plants |

Funding for NMFS Program, Fiscal Year 1995

Table I.1: NMFS Program's Fiscal Year 1995 Available Funding by Site and Budget Function

Dollars in millions

| Budget function | Idaho Falls | Hanford | Rocky Flats | Three-site subtotal ^a | Other locations | NMFS total ^a |
|------------------------------|----------------|----------------|----------------|----------------------------------|-----------------|-------------------------|
| Deactivation | \$8.1 | \$41.4 | \$84.3 | \$133.8 | \$3.4 | \$137.1 |
| Surveillance and maintenance | 30.0 | 139.2 | 138.5 | 307.6 | 5.7 | 313.3 |
| Landlord | 75.2 | 45.4 | 99.1 | 219.7 | 0.0 | 219.7 |
| Program management | 31.1 | 73.5 | 19.8 | 124.4 | 18.2 | 142.6 |
| Total^a | \$144.4 | \$299.4 | \$341.8 | \$785.5 | \$27.3 | \$812.8 |

Legend

NMFS = Nuclear Material and Facility Stabilization (program).

^aTotals may not add because of rounding.

Table I.2: Percentage of NMFS Program's Fiscal Year 1995 Available Funding by Site and Budget Function

| Budget function | Idaho Falls | Hanford | Rocky Flats | Three-site subtotal ^a | Other locations | NMFS total ^a |
|------------------------------|-------------|-------------|-------------|----------------------------------|-----------------|-------------------------|
| Deactivation | 1.0 | 5.1 | 10.4 | 16.5 | 0.4 | 16.9 |
| Surveillance and maintenance | 3.7 | 17.1 | 17.0 | 37.8 | 0.7 | 38.6 |
| Landlord | 9.3 | 5.6 | 12.2 | 27.0 | 0.0 | 27.0 |
| Program management | 3.8 | 9.0 | 2.4 | 15.3 | 2.2 | 17.5 |
| Total^a | 17.8 | 36.8 | 42.0 | 96.6 | 3.4 | 100.0 |

Legend

NMFS = Nuclear Material and Facility Stabilization (program).

^aTotals may not add because of rounding.

Source for tables I.1 and I.2: GAO's analysis of DOE's data.

Percentage of NMFS Program's Available Fiscal Year 1995 Funding and Number of Projects That Could Reduce Future Costs

| Budget function | Percentage of funding at major sites | | | Percentage of funding at other locations ^a | Program totals ^b |
|---------------------------------------|---|--|--|---|-----------------------------|
| | For projects with savings partially estimated | For projects with savings to be determined | For projects without estimated savings | | |
| Deactivation | 2.9 | 5.2 | 8.4 | 0.4 | 16.9 |
| Surveillance and maintenance | 12.1 | 6.1 | 19.6 | 0.7 | 38.6 |
| Landlord | 2.0 | 2.2 | 22.8 | 0.0 | 27.0 |
| Program management | 0.1 | 0.1 | 15.1 | 2.2 | 17.5 |
| Total^b | 17.1 | 13.6 | 66.0 | 3.4 | 100.0 |
| Number of projects^c | 11 | 13 | 47 | 10 | 81 |

Legend

NMFS = Nuclear Material and Facility Stabilization (program).

^aIncludes funding for projects at headquarters and sites other than Hanford, Idaho Falls, and Rocky Flats. We did not evaluate potential savings at these locations because the locations account for only 3.4 percent of the program's fiscal year 1995 budget.

^bTotals may not add because of rounding.

^cAs discussed in the report, we defined an NMFS project to be any activity or collection of activities that the NMFS program manages using a single Office of Environmental Management Activity Data Sheet.

Source: GAO's analysis of DOE's data.

NMFS Program's Fiscal Year 1995 Projects That May Reduce Future Costs

Dollars in millions

| Project | Site | Project data discounted to 1994 dollars | | | | | |
|---|-------------|---|------|---------------------------|---|---------------------------------|---|
| | | Fiscal year funding | | Project cost ^a | Total cost reduction (savings) ^b | Net cost (savings) ^c | Total cost reduction to project cost ratio ^d |
| | | Begins | Ends | | | | |
| Deactivation projects | | | | | | | |
| Building 308 shutdown | Hanford | 1994 | 1998 | \$2.5 | \$(37.5) | \$(35.0) | 14.8 |
| Separations and Fuel Dissolution Process Facilities | Idaho Falls | 1993 | 1995 | 8.7 | (66.2) | (57.5) | 7.6 |
| Plutonium-Uranium Extraction/Uranium Trioxide Plants (PUREX/UO3) shutdown | Hanford | 1994 | 1997 | 44.7 | (243.9) | (199.2) | 5.5 |
| Fast Flux Test Facility (FFTF) | Hanford | 1994 | 2001 | 104.0 | (297.3) | (193.3) | 2.9 |
| 300 Area Fuel Supply Facilities shutdown | Hanford | 1994 | 2000 | 35.1 | (28.7) | 6.4 | 0.8 |
| Surveillance and maintenance projects | | | | | | | |
| Surveillance procedures update | Rocky Flats | 1995 | 1995 | 1.0 | (11.2) | (10.2) | 11.2 |
| Landlord projects | | | | | | | |
| North Firing Range roof construction | Rocky Flats | 1994 | 1995 | 1.3 | (4.6) | (3.3) | 3.6 |
| Transportation Complex | Idaho Falls | 1992 ^e | 1995 | 14.7 | (21.3) | (6.6) | 1.5 |
| Security Facilities upgrade and consolidation | Idaho Falls | 1993 ^e | 1999 | 19.4 | (21.9) | (2.5) | 1.1 |
| Electrical system upgrades | Rocky Flats | 1994 | 1997 | 7.4 | (8.2) | (0.8) | 1.1 |
| Electrical and utility systems upgrades | Idaho Falls | 1993 | 2002 | 67.4 | (22.9) | 44.4 | 0.3 |
| Total^f | | | | \$306.2 | \$(763.9) | \$(457.7) | 2.5 |

Legend

NMFS = Nuclear Material and Facility Stabilization (program).

^aProject costs include the cost of deactivation activities and do not include surveillance and maintenance costs.

^bTotal cost reduction (savings) includes reduction in surveillance and maintenance costs or landlord service (e.g., electricity) costs.

^cNet cost may not equal total savings less project cost because of rounding.

^dRatios in this column were calculated before project data shown in the table were rounded.

^eYear that ongoing project was transferred to the NMFS program.

^fTotals may not add because of rounding.

Source: GAO's analysis of DOE's data.

Scope and Methodology

To determine the proportion of the Nuclear Material and Facility Stabilization (NMFS) program's available fiscal year 1995 budget allocated to projects that will reduce the future cost of managing the Department of Energy's (DOE) inactive facilities,¹ we discussed fiscal year 1995 efforts to fund cost-saving projects with the program's Associate Deputy Assistant Secretary and the Director of the Office of Integration and Assessment. At the NMFS program's headquarters, we also interviewed the office directors and program managers who helped set the fiscal year 1995 budget priorities for the program's three major sites—Hanford, Washington; Idaho Falls, Idaho; and Rocky Flats, Colorado. We asked NMFS program managers to identify the fiscal year 1995 projects that they expected would reduce the program's operational costs. We excluded from our analysis savings expected from productivity improvements, changes in the scope of projects, or improvements in the program's management efficiency. Using information provided by NMFS program managers, we assigned projects to one of three categories that represented our understanding of each project's savings potential. The categories included projects for which DOE (1) either had prepared at least partial estimates of savings or could provide sufficient data for us to compute estimated savings; (2) expected savings but had not yet developed savings estimates; and (3) did not expect significant savings or projects for which DOE did not plan to estimate savings. To better understand why projects belonged in specific categories, we visited the program's three major sites and interviewed DOE field and contractor officials concerning each project's potential for reducing future costs. After we determined the savings potential of each project, we asked program managers at DOE headquarters to verify that we had allocated projects to the correct savings category.

We used the Office of Environmental Management's (EM) system of Activity Data Sheets (ADSS), which represents EM's basic structure for managing projects, to count the number of NMFS projects and the proportion of fiscal year 1995 funding allocated to projects within each of our categories. For example, DOE classified the Fast Flux Test Facility (FFTF) project within our first savings category and funded the facility's deactivation, surveillance and maintenance, and project management under one ADS. We counted the FFTF activities as one project and included the project's total funding within our first savings category. We then calculated the proportion of funds that could generate future cost savings by summing the fiscal year 1995 funding for projects in each category.

¹When it was created in July 1992, the Nuclear Material and Facility Stabilization program was called the Facility Transition and Management program.

We made two exceptions to this approach. First, DOE uses one ADS to fund deactivation work at Idaho's Chemical Processing Plant, although the effort includes three related facilities that are being deactivated—the Separations and Fuel Dissolution Process Facilities, the Rover Dry Process, and the Old Waste Calcine Facility. We counted the three efforts as separate projects because DOE has prepared or is preparing separate implementation plans, cost estimates, and schedules for each. Second, Rocky Flats funds all of the site's surveillance and maintenance activities under one ADS. Although we counted Rocky Flats' total surveillance and maintenance effort as one project, we separated the funding into two portions. The first portion of about \$1 million is allocated to the savings estimated category and is related to efforts to review and update procedures that produce a net savings in surveillance and maintenance costs at the site. The second portion of about \$137 million is not directly associated with an identifiable savings effort and is allocated to the no savings expected category.

To obtain information for estimating the potential cost reduction or savings from specific projects, we (1) reviewed DOE's project plans, briefing documents, and budget support documents; (2) interviewed NMFS program headquarters and field managers; and (3) observed projects at the three key sites that DOE believes will generate future cost savings. We also interviewed DOE and contractor officials concerning DOE's timetable for decontaminating and decommissioning these facilities. These officials informed us that DOE could wait a minimum of 10 years to decontaminate and decommission facilities that the NMFS program has deactivated and confirmed that savings in surveillance and maintenance costs would continue during this waiting period. We used this information as the basis for our assumption that DOE would continue to accrue savings from deactivating facilities during a 10-year holding period after deactivation.

We asked program managers at DOE headquarters to review the accuracy of our data on each project's costs and savings and the reasonableness of our assumptions. Using the verified data, we discounted each project's annual costs and reductions in surveillance and maintenance or landford costs to 1994 dollars and computed discounted net savings. We used the discounted data to compute a total-savings-to-cost ratio for individual projects to illustrate an approach for identifying which projects provide the greatest amount of estimated savings in relation to the project's costs.

To assess the general reliability of the NMFS program's process for estimating savings from major deactivation projects, we interviewed NMFS

Appendix IV
Scope and Methodology

program headquarters and field officials to determine (1) how DOE prepares savings estimates for deactivation projects and (2) how NMFS program officials could use savings estimates in the budget process to choose between competing projects. We also reviewed DOE's internal guidance on managing and estimating the costs of major projects and discussed DOE's initiatives to revise this guidance with officials in the NMFS program's Office of Integration and Assessment and DOE's Office of Field Management.

Comments From the Department of Energy



Department of Energy
Washington, DC 20585

JUN 02 1995

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

Dear Mr. Rezendes:

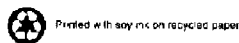
We have reviewed a copy of your draft report entitled: Department of Energy: Savings From Deactivating Facilities Can Be Better Estimated. The report is comprehensive in nature and accurately describes the status of cost estimating for deactivation activities in the Nuclear Material and Facility Stabilization Program.

The conclusions and recommendations included in the report are insightful and will be helpful in our ongoing efforts to enhance our ability to estimate and document the potential cost savings related to our work. The only specific comments we have on the report are editorial in nature and are offered to provide additional clarity to some of the technical discussions. These comments appear as an enclosure to this letter.

Thank you for the opportunity to review and comment on this draft report.

Eugene C. Schmitt
for Willis W. Bixby
Deputy Assistant Secretary for
Nuclear Material and Facility Stabilization
Office of Environmental Management

Enclosure



Appendix V
Comments From the Department of Energy

Enclosure

Comments on GAO Draft Report Department of Energy: Savings From
Deactivating Facilities Can Be Better Estimated

Now on p. 2.

p.2 para. 2 It is not clear that the budget being discussed is only that of the Office of Nuclear Material and Facility Stabilization (EM-60). Suggest inserting "Nuclear Material and Facilities Stabilization" prior to "program's available . . ."

p.3. para. 1 Suggest adding the qualifier "consistently applied" between "DOE has not developed a" and "process for estimating . . ." We have determined approximate net savings and return on investment calculations for several ongoing and planned deactivation projects at various EM-60 sites. However, the cost data from one site are not always directly comparable to those from another site due to inconsistent reporting mechanisms.

Now on p. 2.

p.3. para. 1 "DOE officials expect that the number of facilities managed by the program will increase from 1,560 to 5,900 facilities -- an increase of 278 percent -- by October 1997 . . ." It would be more accurate to state that "DOE officials expect that the number of facilities managed by the program will increase from the known value of 1,560 facilities in mid-1994 to an estimated 5,900 by October 1997; an increase of 278 percent . . ."

Now on p. 4.

p.5. para. 1 Suggested rewording of last sentence: "Much of the reduction in future costs is accomplished through activities that focus on health and safety concerns . . ." As now written, it sounds as if there are activities that reduce the mortgage and other separate activities that address the risks. In most cases, the same activities accomplish both goals.

Now on p. 11.

p.12 para. 2 In addition to the discussion ending ". . . comparing projects' savings could alter DOE's funding decisions", it is important to note that cost savings is not the sole reason that deactivation projects are funded. Risk reduction associated with projects that do not have large positive cost savings is often of such magnitude that completion of those projects is crucial regardless of the cost figures.

Now on p. 10.

p.13. para. 1 Suggested rewording starting with second full sentence: "However, during early 1995, the program accepted management responsibility for more than 3,000 facilities including buildings at Rocky Flats and the Savannah River Site. Anticipated transfers of facilities from smaller sites in Florida and Ohio later in 1995 are expected to

Appendix V
Comments From the Department of Energy

Now on p. 11.

p. 13 para. 2

result in a total 1995 growth in the program's inventory of approximately 218%. Program officials expect as many as 940 additional facilities to be proposed for transfer during fiscal years 1996 and 1997."

Suggested rewording of last sentence: "Program officials . . . except perhaps to accommodate transfers of additional facilities. Indications are that the program's budget will actually decrease over the next few years, with the relatively small amounts of resources transferring with surplus facilities only partially offsetting the increase in scope."

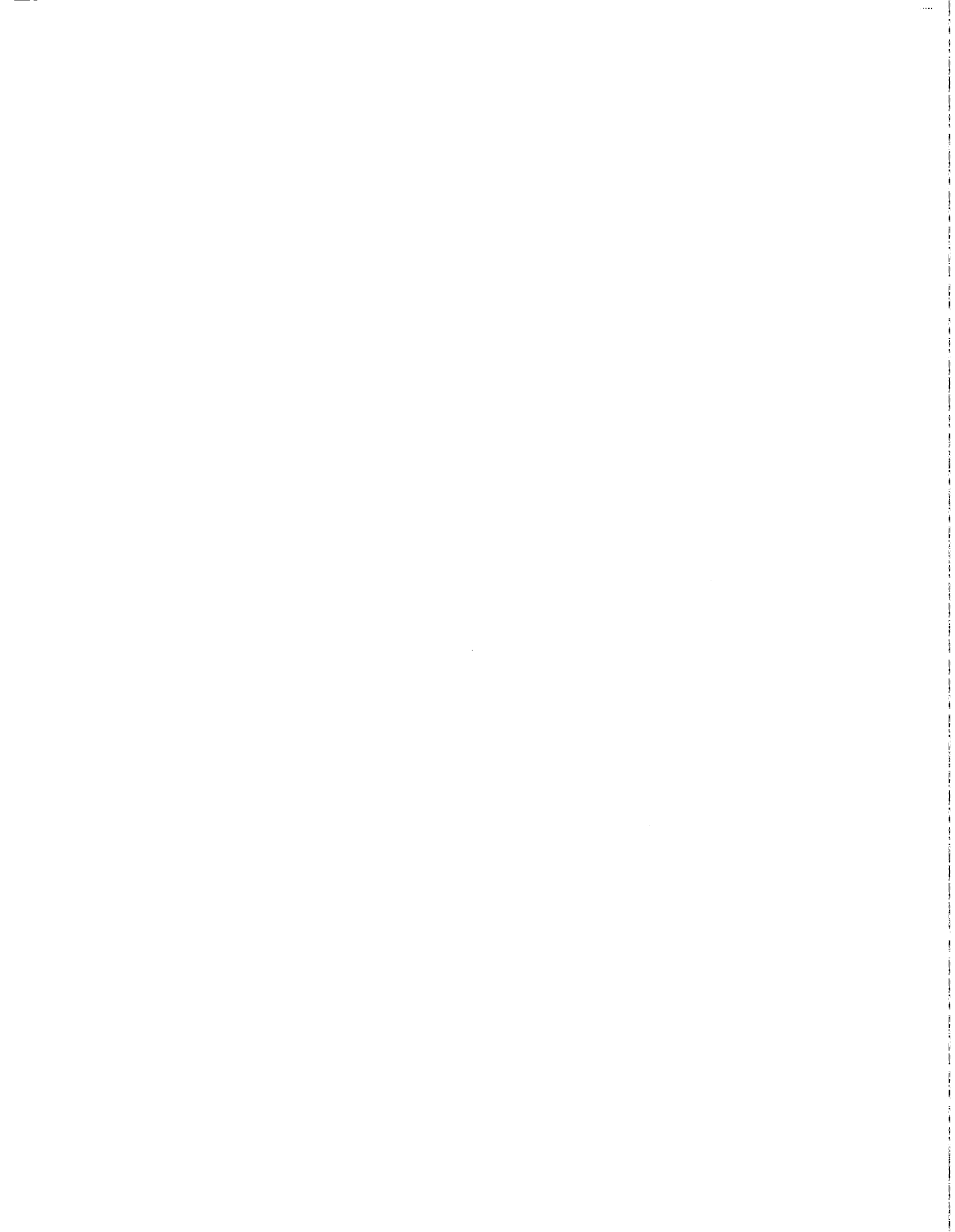
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