



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

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ENERGY AND MINERALS
DIVISION

JANUARY 17, 1979

B-164052

See form #115 for title

The Honorable James R. Schlesinger
The Secretary of Energy

Dear Mr. Secretary:

We are reviewing the Department of Energy's long- and short-term disposition plans for dealing with its highly contaminated nuclear sites. Although our review is not completed, we have identified a project at one site which we believe is premature and should be postponed. This project involves the decontamination, decommissioning, and dismantling of a shutdown reactor and related facilities at the Hanford site near Richland, Washington. A description of the project and our reasons for questioning its justification at this time are summarized below.

PROJECT DESCRIPTION

The Department of Energy's Richland Operations Office is preparing to decontaminate, decommission, and dismantle the 100-F reactor area at Hanford, Washington. This area covers about 50 acres and includes the retired 100-F reactor and related facilities. The 100-F reactor is one of nine reactors at Hanford that produced plutonium for the Nation's nuclear weapons program. Only one--the "N" Reactor--is currently operating.

The project, which will begin in fiscal year 1979, is estimated to cost about \$22 million by the time it is completed in 1985. DOE's fiscal year 1979 budget includes about \$1.5 million for the project, primarily for planning purposes. Budget support documents state that the project's objective is to clean up the area to such an extent that (1) controlled industrial or public use of the site can be permitted in the near term and (2) eventually the site can be released for unrestricted use. According to Department officials, an equally important objective is to develop and



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demonstrate technology and techniques for decontaminating and decommissioning the remaining reactors located at the Hanford site. The project calls for:

- Preparation of a detailed plan to direct and control the decontamination and decommissioning work.
- Dismantlement and removal of all structures, including the 100-F reactor, and relocation of the associated radioactive material and waste to another area at the Hanford site.
- Installation of a "bio-barrier" 1/ over all ground disposal sites in the area containing radioactive material with half-lives 2/ less than 30 years.

Richland Operations Office officials believe this project is the highest priority decontamination and decommissioning project at the Hanford site. They said that the 100-F Area is vulnerable to trespassers who could intrude into the facilities and be exposed to radiation or carry off contaminated material and equipment. These officials said an equally important reason for accomplishing the project is to establish credibility with the public. They said that they have been assuring the public for years that retired Hanford facilities can and will be decontaminated and this project will prove that they intend to do so.

REASONS WHY THE PROJECT
IS PREMATURE

In a June 1977 report to the Congress entitled "Cleaning Up the Remains of Nuclear Facilities--A Multi-Billion Dollar Problem" (EMD-77-46, June 16, 1977) we recommended that a Department of Energy predecessor--the Energy Research and Development Administration--expand and accelerate a program to decommission nuclear facilities excess to its needs. We

1/A below ground barrier consisting of alternating layers of rock and top soil to prevent the biological invasion of radioactive waste by plant and animal life.

2/The time required for one-half the nuclei of a particular nuclide to disintegrate spontaneously to another nuclear form.

stated, however, that the Energy Research and Development Administration did not at that time have the necessary information to plan the cleanup of its sites.

Although more data has been collected on the facilities at the Hanford site than any other Department of Energy nuclear site, certain key information is still needed to make logical decisions about excess facilities such as the 100-F reactor. For example:

- The final disposition of the entire Hanford site has not been decided.
- The level of radioactive contamination which can be left at a site before it can be released for unrestricted use has not been determined.
- The impact on the environment of dismantling a recently shutdown facility is not known.
- The need for the site to be made available for unrestricted use is not evident.

Final disposition of Hanford site not decided

The Richland Operations Office plans to relocate remains of the 100-F reactor and other structures to another area on the Hanford site. While Hanford has been designated as a permanent burial ground for low-level solid radioactive waste, the Department has not yet decided if it can or should be used as a permanent repository or disposal site for high-level, transuranic, or other long-lived highly radioactive nuclear wastes. Therefore, the 100-F contaminated remains will be buried in a manner which will permit them to be retrieved and moved to another location if the Department decides that Hanford will not be a permanent repository or disposal site.

An August 1975 report by an Energy Research and Development Administration contractor questioned whether such temporary relocations should be made. The report stated that until ultimate disposal sites are selected, the excavation and removal of solid wastes from existing burial grounds would simply transfer the ultimate disposal problem from one location to another. This reasoning appears to be equally applicable to contaminated remains of the 100-F reactor and other structures.

As yet, ultimate disposal sites have not been selected. When they are, it is quite possible that some areas at Hanford will become permanent disposal sites for nuclear materials. Studies are now underway to determine the acceptability of the Hanford geology as a permanent disposal medium for a high-level nuclear and transuranic waste repository, but the results of these studies will not be available until 1981.

Also, a decision as to whether other than low-level solid nuclear wastes can be permanently disposed of or stored at the Hanford site requires the preparation of an environmental impact statement covering management options for such wastes. Such a statement is being prepared and is expected to be issued for public comment in March 1979 and in final about 6 months later.

Level of permissible site
contamination not yet
determined

The Richland Operations Office plans to decontaminate the 100-F reactor area to such an extent that it eventually can be released for unrestricted use. This would permit the surface of the land to be used for residential, industrial, recreational, farming, or other purposes. Richland Operations Office officials told us, however, that criteria for the level of radioactive contamination allowable at an unrestricted site has not yet been determined. An effort was underway to determine this criteria, but it was suspended by the Department pending the development of the criteria by the Environmental Protection Agency.

Even if the proposed decontamination and decommissioning efforts were accomplished, restrictions might have to be placed on the use of the land because buried radioactive material, covered by a bio-barrier, would remain at the site. Irrigated agriculture may not be permitted, water might not be obtainable from wells on the site, and excavation might not be permitted near the bio-barrier. Such sub-surface activities could require removal of the bio-barrier and the radioactive material it covered.

Therefore, until acceptable criteria are developed, there is no way to determine the extent of decontamination which must take place to make the site safe for unrestricted use. The criteria being developed may require removal of all radioactive material. This would be much more difficult and costly than leaving the sub-surface radiation and covering it with a barrier.

Environmental impact statement
not prepared

An official in the Department's Environmental Control Technology Division told us that the Department has not decided whether an environmental impact statement would be prepared for the dismantlement project. He did not believe one was needed and the Richland Operations Office has recommended that one not be prepared.

On the other hand, a 1975 study by the Battelle Pacific Northwest Laboratory 1/ described several negative environmental impacts of dismantling radioactively contaminated facilities. They were

- the large volumes of contaminated wastes requiring transport and storage or disposal;
- the potential exposure of employees working in high radiation fields and transporting wastes; and
- the potential releases of radionuclides to the environment during the dismantling operation.

The Battelle Pacific Northwest Laboratory reported that these impacts could be greatly reduced for the Hanford reactors by postponing their dismantlement for about 75 years. This delay would reduce radiation to a negligible level and should simplify dismantling operations significantly.

Likewise, the Atomic Industrial Forum has recommended postponing dismantlement of commercial power reactors for 65 to 110 years. The Forum reported that immediate dismantlement presents serious occupational radiation hazards to personnel doing the dismantling, as well as having a greater environmental impact. Other nuclear energy authorities have concurred with those recommendations.

There also appears to be no urgent need to remove the radioactive material from the area for safety reasons. It now costs about \$43,000 a year to secure and maintain the area. Richland Operations Office officials told us,

1/The Department's contractor responsible for establishing methods, costs, and priorities for the decontamination and decommissioning of retired contaminated facilities at Hanford.

however, that the contaminated structures in the 100-F Area are deteriorating and about \$200,000 would be needed to repair the structures if they are not dismantled.

No apparent need for 100-F Area
land for other uses

While potential uses of the 100-F decontaminated land have not been specifically identified, Richland Operations Office officials told us that it probably would be used for recreation or industrial purposes. While the land may be desirable for these purposes, there does not appear to be a shortage of uncontaminated land suitable for recreation and industry elsewhere in the West. For example, an environmental impact statement for Hanford's total waste management operations stated that Hanford land cannot be considered to have rare characteristics that result in a premium value, such as for residential or industrial uses, because there are tens of thousands of acres of similar desert land available throughout the western United States. There are also hundreds of millions of acres of public land available for recreation in the West.

CONCLUSIONS AND RECOMMENDATIONS

Decontamination and decommissioning of the 100-F Area does not appear justified at this time. We, therefore, recommend that the project be postponed until

- studies are completed and decisions are made on the future of Hanford either as a site for a nuclear waste repository or a site that will forever be dedicated to nuclear activities;
- criteria is developed for the cleanup and return of nuclear sites to unrestricted use; and
- the environmental impact of the 100-F project has been adequately assessed.

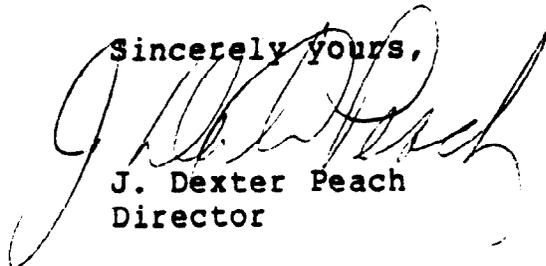
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We would appreciate receiving your comments on this matter within 30 days. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations 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.

We are sending copies of this report to the Director, Office of Management and Budget; the House Committees on Appropriations and Government Operations; and the Senate Committees on Appropriations and Governmental Affairs.

Sincerely yours,

A large, stylized handwritten signature in dark ink, appearing to read 'J. Dexter Peach', is written over the typed name and title.

J. Dexter Peach
Director