



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D C. 20548

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ENERGY AND MINERALS
DIVISION

SEPTEMBER 6, 1979

B-159687

The Honorable Charles W. Duncan, Jr.
The Secretary of Energy

Dear Mr. Secretary:

Subject: [Cost to retire uranium enrichment
facilities should be included in
current uranium enrichment charges]
(EMD-79-94)

As you know, uranium enrichment revenues are an important part of the Department of Energy's budget. The Department currently estimates that it will receive about \$1.3 billion from foreign and domestic customers for its uranium enrichment services during fiscal year 1979 and another \$1.3 billion during fiscal year 1980. These funds are used to offset the Department's appropriations for operating its enrichment facilities. #GC 00912

Because these revenues are substantial, the General Accounting Office has kept abreast of the Department's policies and procedures in the uranium enrichment area. In fact, we have issued six reports since 1970 on the subject of uranium enrichment pricing and numerous other reports discussing the Government's uranium enrichment program.

As a result of our continuing interest in the area, we are now bringing another aspect of enrichment pricing practices to your attention. It has an impact on the price of enriched uranium.

A BACKGROUND ON URANIUM
ENRICHMENT

The Department of Energy is the sole supplier of enriched uranium in the United States. It has three enrichment plants which currently produce about 20 million

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separative work units $\frac{1}{2}$ each year. These plants, which were originally built in the late 1940s and early 1950s for the Nation's nuclear weapon's program, are located at Oak Ridge, Tennessee; near Paducah, Kentucky; and near Portsmouth, Ohio. The Department has been authorized to build an additional enrichment plant at Portsmouth, Ohio. The plant is expected to begin operation in the late 1980s.

Charging for enrichment services

The Atomic Energy Act of 1954, as amended (42 U.S.C. 2011), is the legal basis for the Department to enter into contracts for the sale of its uranium enrichment services. This act requires the Department to establish criteria for the charges it sets for these services. The act and the criteria require the Department to recover the Government's costs over a reasonable period of time. The Department's current price--about \$89 per unit--includes factors for depreciation of the costs; research and development costs; administrative costs; and imputed interest on plant investment, working capital, and inventories.

THE COST OF DECONTAMINATING AND DECOMMISSIONING THE DEPARTMENT'S ENRICHMENT PLANTS IS NOT BEING RECOVERED

The Department of Energy has not yet begun to recover the costs it must eventually incur to fully retire its uranium enrichment plants.

As with every industry, nuclear facilities and equipment may be shut down, replaced, or become obsolete. Cleaning up the remains of nuclear activities, however, presents special problems because of the radioactivity and contamination which can endanger public health and safety.

Any materials, equipment, or facilities that come into contact with a nuclear reaction or radioactive material could become contaminated or radioactive. They cannot be abandoned or reused unless the radiation has been removed or reduced to acceptable levels. This cleanup process usually consists of decontamination and/or decommissioning. Decontamination is

$\frac{1}{2}$ /A separative work unit is not a quantity of material, but a measure of the effort spent to separate a given quantity of uranium into two streams, one having a higher concentration of uranium-235.

the process of cleaning up surface contamination--a process that often consists of scrubbing and washing. Decommissioning is the closing or shutting down of a facility with some actions taken to prevent--at least temporarily--health and safety problems; and, in some cases, returning land to its original uses.

Retirement of the Energy
Department's enrichment
plants

Eventually, the Department of Energy will retire its uranium enrichment facilities. When and how these plants will be decommissioned and decontaminated, however, is not certain because not enough study has been done. However, according to the former Energy Research and Development Administration 1/, the following procedures could be used to decommission the Department's enrichment plants.

- First, all systems in the process could be shut down.
- These systems and the plant could then be decontaminated.
- All nuclear materials could be removed from the site to recover reusable materials and to dispose of radioactive wastes in accordance with existing requirements.
- The buildings could be sealed by welding and bolting plates over all openings.
- All gaseous and liquid waste systems could be dismantled.
- Necessary security and fire systems could be maintained in an operable state.
- The facilities could be completely dismantled.

The Energy Research and Development Administration estimated that if the plant areas are restored to their

1/Pursuant to the Department of Energy Organization Act (Public Law 95-91) the Energy Research and Development Administration's responsibilities were transferred to the Department of Energy on October 1, 1977.

original conditions, the present worth of the future costs involved is between 1 and 2 percent of the original construction costs. However, preliminary studies of the Oak Ridge gaseous diffusion plant indicate that this cost could be up to 5 percent of the capital investment in the plant. Using this estimate, the complete retirement cost of the three operating plants and the fourth now under construction could cost about \$570 million. This would add about \$1.50 per unit to the price of enriching services while increasing the average cost of electricity to consumers by 3 mills 1/ per kilowatt-hour.

The Department has no firm estimates available concerning the future cost of decontaminating and decommissioning its uranium enrichment facilities. Further, the Department has indicated that, given the current capital improvement program at existing facilities, it does not expect to evaluate these costs any time in the foreseeable future. It is important to note, however, that the Department is depreciating the three existing enrichment plants through the year 2000, implying that their useful life could end as of that year.

CONCLUSIONS AND RECOMMENDATIONS

Although the future cost of decommissioning and decontaminating the Nation's uranium enrichment facilities could be significant, the Department of Energy does not include any factor for this cost in its current uranium enrichment charge. We believe that this should be corrected. In our view, recovering from commercial customers an appropriate share of these future costs in the enrichment charge as soon as possible would

- * --rightly place the burden of the cost of decommissioning and decontaminating the enrichment plants on the current users of nuclear energy and not on future generations;
- more equitably spread the cost of decommissioning to all enrichment customers, not just those having contracts when the plants are retired;

1/A mill is one-tenth of one cent.

- provide the impetus for the Department of Energy to carefully study and plan for the retirement of these large plants; and
- serve as an example to the nuclear industry to set aside funds for the eventual decommissioning and decontamination of privately-owned nuclear facilities.

Therefore, we believe that the Secretary of Energy should take the steps necessary to see that commercial customers' share of the estimate cost of retiring the Nation's uranium enrichment facilities is recovered in the Department's current charge for uranium enrichment services. We believe this could be done by adding a reasonable charge to its current enrichment service prices, and then periodically modifying the charge as decommissioning and decontamination experience indicates is appropriate.

Specifically, we recommend that the Secretary, Department of Energy

- prepare detailed estimates of the future cost of decommissioning and decontaminating the Nation's uranium enrichment facilities;
- modify the Department's criteria for enrichment services charges to include a charge for enrichment plant decommissioning and decontamination costs; and
- request any legislative authority needed to permit the Department of Energy to include future uranium enrichment plant decommissioning and decontamination costs in its present charges for uranium enrichment services.

DEPARTMENT OF ENERGY STAFF
COMMENTS AND OUR EVALUATION

In a July 13, 1979, letter the Director, Office of Uranium Resources and Enrichment, Department of Energy, said the Department should not begin recovering uranium enrichment decommissioning costs now because

- it is unknown when the decommissioning costs will be incurred because there are no plans to close the enrichment plants;
- the amount of the decommissioning costs is not beyond the Department's ability to recover in the time period of occurrence; and

--later recovery of decommissioning costs is consistent with recovery of other Government costs, such as depreciation of plants and equipment and inventory costs.

The Director pointed out that the Department computes enrichment services charges based on projected costs and sales over a future 10-year period. Therefore, he believes it is appropriate to begin recovering the cost of decommissioning each enrichment plant only after the Department closes a plant and the projected decommissioning costs fall within a future 10-year period.

We do not agree for two reasons. First, in view of the uncertainties associated with nuclear power--not the least of which is the Department's decision to permit current enrichment customers to convert their existing enrichment contracts to a new type of contract--it does not appear prudent to wait until one or more enrichment plants are shut down before beginning to recover decommissioning costs. Under this procedure, the entire burden of paying for decommissioning costs would be borne by those customers purchasing enrichment services during the 10-year period in which the decommissioning costs are to be incurred.

Second is the question of equity. All enrichment services customers, and the electricity consumers they serve, should share enrichment plant decommissioning costs in the same way that all customers share other enrichment services costs.

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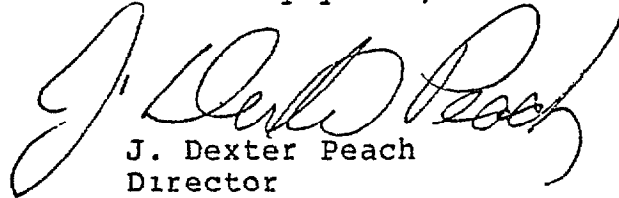
We are sending copies of this report to the Director, Office of Management and Budget; the Chairmen, House and Senate Committees on Appropriations; the Chairman, Subcommittee on Energy and Power, House Committee on Interstate and Foreign Commerce; the Chairman, Subcommittee on Energy Research and Development, Senate Committee on Energy and Natural Resources; the Chairmen, House Committee on Government Operations and Senate Committee on Governmental Affairs; and other interested parties. We will also make the report available to others upon request.

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 House Committee on Government Affairs not later than 60 days after

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the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made not more than 60 days after the date of the report.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "J. Dexter Peach".

J. Dexter Peach
Director