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Fair Value Enrichment Pricing: Is It Fair? EMD-78-66; B-159687. April 19, 1978. 6 pp. + 4 enclosures (20 pp.).

Report to Rep. John D. Dingell, Chairman, House Committee on Interstate and Foreign Commerce: Energy and Power Subcommittee; by Elmer B. Staats, Comptroller General.

Issue Area: Energy: Effect of Federal Financial Incentives, Tax Policies, and Regulatory Policies on Energy Supply (1610).
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Authority: Atomic Energy Act of 1954, as amended (P.L. 83-702). Private Ownership of Special Nuclear Materials Act of 1964 (P.L. 88-489). H.R. 11392 (95th Cong.). 38 Fed. Reg. 89.

The Atomic Energy Act of 1954, as amended, requires the Department of Energy (DOE) to recover all costs for its enrichment activities over a reasonable period of time. Title V of the fiscal year 1979 DOE authorization bill would allow DOE to recover its costs plus a percentage of these costs representing certain other expenses which would be reflected in prices charged by private operators. Findings/Conclusions: Advantages of using this "fair value" pricing include: eliminating a subsidy to the nuclear industry, generating sizable revenues and enhancing the U.S. balance of payments position, and eliminating a possible barrier to eventual private ownership of future enrichment capacity by permitting more business-like pricing. It may also help to reduce the demand for electricity because of price increases, but DOE does not believe that the impact on demand will be significant. Disadvantages include a potentially negative impact on nuclear nonproliferation goals and the effect of high prices on foreign competition. These effects can be avoided through carefully formulated criteria. In general, the advantages of changing the basis for pricing outweigh the disadvantages. Proposed revisions to uranium enrichment services criteria should be strengthened. Recommendations: If DOE proposes new criteria that are identical to the draft proposed criteria, the Subcommittee on Energy and Power should amend it to: require that charges be those in effect at the time of actual, not "constructive," delivery; specify the bases for establishing reasonable time periods for recovery of costs and for determining the frequency of review of prices; require periodic calculation of the interest rate and return on equity used in calculating prices to reflect changes in the financial marketplace; require DOE to establish the basis

for its charge for State and local taxes and insurance and make the charge applicable to all taxable and insurable assets; and eliminate the 30% "fair value" percentage ceiling and instead establish requirements for notifying the Congress if the percentage is exceeded. (HIW)

1978

REPORT BY THE

Comptroller General

OF THE UNITED STATES

Fair Value Enrichment Pricing: Is It Fair?

On April 7, 1978, the Chairman of the Subcommittee on Energy and Power, House Committee on Interstate and Foreign Commerce, asked GAO for its views on (1) provision in the proposed legislation authorizing appropriations for the Department of Energy (H. R. 11392), which would change the basis by which uranium enrichment charges are set and (2) draft proposed revisions to the Department's uranium enrichment services criteria that would implement the proposed legislation, if enacted.

GAO weighed the advantages and disadvantages of changing the basis by which uranium enrichment charges are set, and recommends that the basic concept of the new pricing basis in the proposed legislation be endorsed. GAO suggests several areas, however, where the draft proposed criteria can be strengthened.

EMD-78-66
APRIL 19, 1978

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-159687

The Honorable John D. Dingell
Chairman, Subcommittee on Energy and
Power
Committee on Interstate and Foreign
Commerce
House of Representatives

Dear Mr. Chairman:

On Friday, April 7, 1978, you asked the General Accounting Office (GAO) for its views on a number of provisions in the proposed fiscal year 1979 authorization bill for the Department of Energy (H. R. 11392). While these provisions pertain mainly to the Department's uranium enrichment activities, you were particularly interested in our views on Title V which, if enacted, would allow the Department to change its basis for establishing prices for its uranium enrichment services. This report is limited to our views on Title V and the draft proposed revisions to the criteria to implement the proposed legislation.

The attached enclosures I and II discuss our findings and conclusions in more detail. Enclosures III and IV contain copies of Title V of the proposed legislation and the draft proposed uranium enrichment services criteria, respectively.

COMMENTS ON THE PROPOSED LEGISLATION

The Atomic Energy Act of 1954, as amended (Public Law 83-702), requires the Department of Energy to recover all costs for its enrichment activities over a reasonable period of time. The proposed legislation would allow the Department to recover its costs plus a percentage of these costs. This added percentage would represent the normal and ordinary business expenses, taxes and return on equity which would otherwise be reflected in the prices charged by private operators providing similar services. This new basis for pricing enrichment services is commonly called "fair value" pricing.

GAO believes that six major factors need to be considered in determining whether the legislation should be adopted:

--What effect will the legislation have on the prices paid by ultimate consumers of electricity?

--Will the increase in price resulting from the legislation help promote the establishment of a private uranium enrichment industry?

--How will the price increase impact on the administration's nuclear non-proliferation goals?

--What additional revenues will be generated from domestic and foreign customers?

--Should the United States continue to perpetuate a subsidy to the U. S. nuclear industry?

--What effect, if any, will the new price have on the U. S. supply and demand situation for energy?

GAO believes that when the six factors identified above are considered, the advantages of changing the basis by which the Government charges for its uranium enrichment services outweigh the disadvantages.

Advantages include (1) eliminating a subsidy to the nuclear industry, (2) generating sizable revenues for the U. S. Government and enhancing the U. S. balance of payments position, and (3) eliminating a possible barrier to eventual private ownership of future enrichment capacity by permitting U. S. enrichment pricing to be on a more business-like basis.

A possible additional effect is that this proposed legislation will lead to price increases which could help meet the Nation's energy conservation goals under the assumption that any increased price will cause a reduced demand for the commodity or service. This depends, of course, on the elasticity of demand for electric energy. In this regard, the Department projects that the impact of this price increase on the ultimate consumer of electricity will be small and, accordingly, its effect on energy demand may be negligible.

With regard to the disadvantages of the proposed legislation, we also recognize that such increases could potentially have negative impacts on the administration's nuclear non-proliferation goals. Establishment of an excessively high price, with little or no consideration of the prices charged

by foreign competitors, could encourage foreign customers to seek services elsewhere or to perhaps construct their own enrichment plants. We believe, however, that such impacts can be avoided through carefully formulated criteria for implementing the proposed legislation and close monitoring of these impacts by the Congress and the administration.

COMMENTS ON THE DRAFT PROPOSED CRITERIA

The Private Ownership of Special Nuclear Materials Act of 1964 (Public Law 88-489) requires the Department of Energy to establish criteria setting forth the terms and conditions under which the Government makes its enrichment services available to the public. The current uranium enrichment services criteria (Federal Register Vol. 38, No. 89) have been in effect since mid-1973.

Now that the Department has proposed legislation that would establish a new basis for uranium enrichment prices, new criteria will be necessary. The Department has prepared a draft of its proposed revisions to the uranium enrichment services criteria explaining how the proposed legislation, if enacted, will be implemented.

GAO reviewed these criteria primarily from the standpoint of our ongoing and previous involvement in the uranium enrichment area. We did not conduct a comprehensive review of the criteria, or any supporting documentation, because we were limited by the time requirements imposed by the Subcommittee's request for our views. We generally reviewed the proposed criteria with the following factors in mind:

--Will the proposed criteria accomplish the objective of putting the Nation's uranium enrichment operations on a more business-like basis?

--Will the proposed criteria assure that all reasonable costs are recovered and the public's interest is adequately protected?

Since several of the assumptions contained in the proposed criteria are judgmental, such as the basis for calculating components for Federal taxes and the additional cost of money, it is difficult, if not impossible, to conclude that they are the most reasonable assumptions.

Regardless of whether they are the most reasonable, there are a number of areas in the proposed criteria that we believe could be strengthened. These areas are:

--The criteria state that applicable charges for enrichment and related charges are to be those in effect at the time of delivery; however, it is not clear whether "delivery" means the actual delivery date or something else. The Department has used a practice of making "constructive deliveries"; i.e., predetermined contract delivery dates, as opposed to when actual physical transfer takes place.

--The criteria need to (1) set forth the bases for establishing the "reasonable periods of time" over which the Department must recover all of its costs, and (2) specify the frequency with which the Department will periodically review and revise its prices.

--The assumptions used in the criteria to derive amounts for Federal income taxes and the additional cost of money that a private operator providing similar services would incur and recover in its prices will not fully reflect changes in the financial marketplace.

--The assumptions used to compute an amount for State and local taxes and insurance are not fully set forth in the criteria and it is not clear whether such amounts will be applied to all of the assets that could be "taxed and insured."

--The criteria establish a ceiling on the percentage derived from calculating the "fair value" factors. Such a ceiling runs counter to the objectives of the proposed fair value pricing legislation.

These areas are discussed in more detail in enclosure II.

MATTERS FOR CONSIDERATION BY THE SUBCOMMITTEE ON ENERGY AND POWER

For years, we have been making recommendations that would put the Government's uranium enrichment operations on a more business-like basis. Allowing the Department of Energy to change the basis by which it establishes uranium enrichment prices would be a step in the direction of making the Government's enrichment operations more business-like. Therefore, we recommend that the Subcommittee on Energy and Power endorse the basic concept of "fair value" pricing in the proposed legislation to establish new charges for uranium enrichment services.

If the Department of Energy eventually proposes new uranium enrichment services criteria that are identical to the draft proposed criteria we reviewed, we recommend that the Subcommittee amend it to:

--require that the applicable charges for enrichment and related services be those in effect at the time of actual, not "constructive" delivery;

--specify the bases for (1) establishing the reasonable periods of time that the Department will use for recovering all Government costs, and (2) determining the frequency by which the Department will periodically review and revise its prices;

--require periodic calculation of the interest rate and return on equity, which are used to calculate major components in the proposed price, to reflect changes in the financial marketplace. The basis for these periodic calculations should be identified in the criteria. This would allow the Department a more business-like basis for determining the interest on debt and return on equity it would use if it were a private enricher.

--require the Department to (1) establish the basis for its charge--as opposed to a precise percentage--for State and local taxes and insurance, and (2) make such a charge applicable to the average gross book value of all of its taxable and insurable assets--i.e., those that would be taxed and insured if owned by a private enricher; and

--eliminate the 30 percent "fair value" percentage ceiling and instead establish a mechanism whereby the Department would be required to notify the Congress if the so-called "fair value" percentage exceeds 30 percent.

In the event the proposed legislation is not adopted by the Congress, we recommend that the Subcommittee take steps to insure that the existing uranium enrichment criteria are amended to require that the cost of imputed interest on uranium feed material is recovered by the Department.

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We are also transmitting two recent reports that should be helpful to the Subcommittee in evaluating the Department's uranium enrichment activities. The first report, entitled

"Uranium Enrichment Policies and Operations: Status and Future Needs" (EMD-77-64, November 18, 1977) was directed toward evaluating several specific aspects concerning the problems with, and opportunities for, providing an adequate supply of uranium enrichment services. The second report, entitled "Centrifuge Enrichment: Benefits and Risks" (EMD-78-46, March 7, 1978) addresses the appropriateness of substituting the new centrifuge enrichment technology instead of the proven diffusion technology for the Nation's fourth enrichment plant to be built at Portsmouth, Ohio. Both of these reports should be helpful to the Subcommittee in evaluating section 402(3) of the proposed legislation which authorizes about $1.4 billion for the functions assigned to the Department's Assistant Secretary for Resource Applications.

As agreed with your office, we plan to send copies of this report to interested parties and make copies available to others upon request.

Sincerely yours,

Comptroller General
of the United States

(990515)

Contents

ABBREVIATIONS

DOE	Department of Energy
GAO	General Accounting Office

COMMENTS ON THE PROPOSED LEGISLATION TO CHANGE THE BASIS BY WHICH THE DEPARTMENT OF ENERGY ESTABLISHES CHARGES FOR ITS URANIUM ENRICHMENT SERVICES

The General Accounting Office (GAO) has been extensively involved in evaluating the uranium enrichment area for a number of years. We have issued four reports since 1970 on the subject of uranium enrichment pricing, 1/ and numerous reports discussing the Government's uranium enrichment program. We also have two assignments in process looking at selected aspects of the enrichment program.

A BACKGROUND ON URANIUM ENRICHMENT PRICING

Since 1969 the Federal Government has been offering services to enrich privately-owned uranium. The Department of Energy (DOE)--the sole U. S. supplier of uranium enrichment services--expects to spend about $1.4 billion for its uranium enrichment activities in fiscal year 1979--an increase of $69 million over fiscal year 1978.

DOE also earns sizable revenues for its uranium enrichment services. In fiscal year 1979, DOE expects to receive $1.2 billion from domestic and foreign customers, an increase of $343 million over fiscal year 1978 revenues. If Title V is adopted by the Congress, DOE currently estimates that another $217 million in revenues will be earned in fiscal year 1979 as a result of the change in pricing basis.

The basis used by DOE to establish prices for its enriching services has been changed once before. On December 19, 1970, Public Law 91-560 became effective changing the basis used to establish prices from "reasonable compensation to the Government" to "recovery of the Government's costs over a reasonable period of time."

1/"Comments on Proposed Uranium Enrichment Pricing Legislation" (EMD-77-73, September 27, 1977), "Comments on Proposed Legislation to Change Basis for Government Charge for Uranium Enrichment Services" (RED-76-30, September 22, 1975), "Proposed Revisions to the Criteria and Contracts for Uranium Enrichment Services" (B-159687, March 5, 1973), and "Review of Proposed Revisions to the Price and Criteria for Uranium Enrichment Services" (B-159687, July 17, 1970).

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DOE has again proposed to change the pricing basis. Twice before, it had sought a change to implement the so-called "fair value" price--a price that would allow DOE to include components in its charge for a return on equity and other costs that a private uranium enricher would charge, if private industry were to own and operate uranium enrichment facilities in the United States.

Although the current proposed legislation is not identical to the two previous proposals, it is similar in its basic thrust. The proposed legislation, which could raise the current enrichment price from about $75 to about $100 per unit of enrichment service, would allow DOE to recover its costs over a reasonable time plus a percentage of these costs. This increment, which should increase as DOE's costs increase, is intended to represent the normal and ordinary busines expenses, taxes, and return on equity which would otherwise be reflected in the prices charged by a private operator providing similar services. Enclosure III contains Title V of the proposed legislation.

SHOULD THE CONGRESS ADOPT THE PROPOSED LEGISLATION CHANGING THE BASIS BY WHICH URANIUM ENRICHMENT CHARGES ARE SET?

There are a number of advantages and disadvantages that need to be considered before the Congress decides on whether to allow DOE to change the basis by which its uranium enrichment charges are set. In our view, the following factors should be considered by the Congress and its responsible committees before allowing the proposed change:

--What effect will the legislation have on the ultimate consumer of electricity?

--Will the increase in price resulting from the legislation help promote the establishment of a private uranium enrichment industry?

--How will the price increase impact on the administration's nuclear non-proliferation goals?

--What additional revenues will be generated for the U. S. Government from domestic and foreign customers?

--Should the United States continue to perpetuate a subsidy to the U. S. nuclear industry?

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--What effect, if any, will the new price have on the U. S. supply and demand situation for energy?

The effect on the ultimate consumer of electricity

In our view, one of the most important questions to be answered is the effect of the new price resulting from the proposed legislation on the ultimate consumer of electricity. Obviously, if the cost of enrichment services increases, the cost of electricity generated by nuclear power will be more. Even though electric power companies pay for enrichment services--and these can be very sizable costs to a utility--the company generally passes these cost increases on to the consumer.

According to DOE, a fair value price for enrichment services could result in an average increase in the cost of nuclear power of about 0.61 mills per kilowatt hour for those electric utilities which procure their enrichment services from DOE. DOE also estimated that, when this new cost is averaged over all electric generation, the price would amount to a 0.08 and 0.19 percent increase in the cost of electric power to the ultimate consumer in fiscal years 1979 and 1983, respectively. While we did not conduct an in-depth examination into the bases for DOE's estimates, it appears to us that the impact on the average consumer of electricity resulting from such increases would be quite small.

Promoting the development of a private uranium enrichment industry

It is no longer clear whether the Congress or the administration is in favor of creating a private uranium enrichment industry. The Government now intends to build and own the fourth U. S. enrichment plant--thereby continuing to leave uranium enrichment the only step in the existing nuclear fuel cycle in the sole possession of the Government. Industry continues to participate in various aspects of DOE's research and development program, however.

The present enrichment price does not contain factors for many of the cost components for which a private enrichment enterprise would have to pay. For example, factors for a return on equity, taxes and insurance are not included in the enrichment price. If industry were to build and own enrichment plants, their price for related enrichment services would be higher than the Government's present price. Further, if the Government had unused capacity, it might be in

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competition with industry, and in all likelihood, utility customers would select the Government with its cheaper prices and proven sales record.

We believe that the new pricing basis is one of the more acceptable mechanisms for lowering potential barriers to private industry's entry into the uranium enrichment industry. The former Energy Research and Development Administration had submitted legislation 1/ to the Congress to provide sizable assistance to private groups wishing to build, own, and operate enrichment capacity beyond the Government's three plants. We provided two reports to the Congress which were critical of the provisions of that legislation. 2/ The bill was never enacted.

Nuclear non-proliferation and enrichment pricing

Uranium enrichment has two major nuclear proliferation implications. First, the enrichment process can be used, not only to produce fuel for nuclear powerplants for commercial electricity, but also to produce the material that can be used to make a nuclear weapon. Second, because the United States is a major source of enrichment services, with three of the largest enrichment plants in the world, it can, according to the administration, use its position as a means to help influence other nations to not seek a nuclear weapons capability; i.e., nations that do not accept our nuclear non-proliferation objectives can, theoretically, be convinced to do otherwise if the United States suggested that it would no longer supply them with nuclear fuel.

Customers generally seek two major guarantees when purchasing any specified commodity or service such as uranium enrichment--a competitive price and a timely, reliable supply. It is reasonable to assume that as long as the United States provides its enrichment services at less cost than its competitors, it should retain a major share of the

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1/The proposed Nuclear Fuel Assurance Act of 1975 (S. 2035, 94th Congress).

2/"An Evaluation of the Administration's Proposal for Government Assistance to Private Uranium Enrichment Groups" (RED-76-36, October 31, 1975), and "Comments on Selected Aspects of the Administration's Proposal for Government Assistance to Private Uranium Enrichment Groups" (RED-76-110, May 10, 1976).

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foreign market. Establishment of an excessively high price, however, with little or no consideration of the prices charged by foreign competitors, could encourage foreign customers to seek services elsewhere or to perhaps construct their own enrichment plants. Thus, care must be taken to monitor price increases and their impact on the administration's non-proliferation goals.

DOE officials previously indicated to us that (1) under the fair value pricing concept U. S. enrichment prices are expected to be lower than prices charged by essentially all foreign suppliers, and (2) other terms and conditions for the supply of enrichment services play an important role in customers' perceptions of the relative attractiveness of various suppliers.

Additional revenues to the U. S. Government

An obvious, and important, advantage to the Federal Government is the sizable amount of dollars that could be generated for the Federal Government as a result of the proposed legislation. The following table, supplied by DOE, shows the additional money to be paid to the Government by both domestic and foreign customers.

Additional revenues to the U. S. Government as a result of the price increase

Fiscal year	Source	
	Domestic	Foreign
	(millions of dollars)	
1979	$106	$111
1980	113	113
1981	185	139
1982	178	149
1983	245	185
Total	$827	$697

The estimated $697 million in additional revenues from foreign customers could aid the United States' balance of payments position.

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Subsidizing the nuclear industry

Under current and foreseeable cost and other conditions, little oil or gas will be used in the future for baseload generation of electricity. 1/ Hydroelectric sites are less plentiful and geothermal generation is likely to be important --if at all--only in California. Hence, for the next 2 decades the contest for baseload generation; i.e., what energy source an electric utility will select for its major powerplants, appears to be primarily between coal-fired and nuclear-powered plants.

Although a number of factors determine whether nuclear or coal will be selected, utilities generally attempt to choose the least costly method of generating electricity. At this time, however, there are many uncertainties which tend to cloud comparative economic analyses of the alternatives, including the impact of Federal financial and non-financial subsidies given to each energy source. For example, in the case of the nuclear industry, the Federal Government's current subsidy consists of the sizable research and development efforts, indemnity and insurance limitations, and uranium enrichment.

The subsidy for uranium enrichment, although indirect, is found in the current pricing mechanism; i.e., the current price is lower than what it would be if the service were available in the commercial market. If industry were able to provide enrichment services, the price would have to include such components as a return on equity, insurance and taxes--items which the Federal Government does not include in its current charge. These components, however, would be included in the "fair value" price. For fiscal year 1979, the enrichment subsidy could be about $217 million, if the "fair value" pricing legislation is not enacted.

Effect on energy supply/demand

The administration's energy plan sets forth a number of proposals to reduce U. S. dependence on foreign oil and to make the transition, for the long-term, to renewable and essentially inexhaustible sources of energy.

1/New England may be an exception. In addition, delays in construction and operation of coal or nuclear plants may necessitate greater use of oil or gas in other areas, including the southwestern, gas-producing States.

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The principal strategy used to meet the first objective is to encourage energy conservation. This is being done by increasing the price of energy to reduce consumer demand--the obvious principle being that as the price of any good or service increases some consumers will decide to reduce purchases of it. This, of course, depends on the elasticity of demand.

Will the increase in price for enrichment services cause the consumer to conserve? Since DOE's projected price increase is not designed to do this and because it is negligible to the ultimate consumer--an increase of about 0.61 mills per kilowatt hour in the average total cost of elctricity by nuclear power--it is doubtful that any sizable impact on conservation will be achieved as a result of changing the enrichment pricing basis.

CONCLUSIONS

The proposed legislation, if enacted, would change the basis by which DOE establishes its charges for uranium enrichment services. The queston now before the Congress and its responsible committees is whether the proposed legislation should be adopted, modified, or rejected.

GAO believes that when the six factors identified in this report are considered, the advantages of changing the basis by which the Government charges for its uranium enrichment services outweigh the disadvantages.

Advantages include (1) eliminating a subsidy to the nuclear industry, (2) generating sizable revenues for the U. S. Government from domestic and foreign customers, and (3) eliminating a barrier to eventual private ownership of future enrichment capacity.

A possible additional effect is that this proposed legislation will lead to price increases which could help meet the Nation's energy conservation goals under the theory that any increased price will cause a reduced demand for the commodity or service. This, of course, depends on the elasticity of demand for electric energy. In this regard, DOE projects that the impact of this price increase on the ultimate consumer of electricity would be small and, accordingly, its effect on energy demand may be negligible.

We also recognize that such increases could potentially have negative impacts on the administration's nuclear nonproliferation goals. Establishment of an excessivily high price, with little or no consideration of the prices charged

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by foreign competitors, could encourage foreign customers to seek services elsewhere or to perhaps construct their own enrichment plants. We believe, however, that such impacts can be avoided through carefully formulated criteria for implementing the proposed legislation and close monitoring of these impacts by the Congress and the administration.

MATTER FOR CONSIDERATION BY THE SUBCOMMITTEE ON ENERGY AND POWER

For years, we have been making recommendations that would put the Government's uranium enrichment operations on a more business-like basis. Allowing DOE to change the basis by which it establishes uranium enrichment prices would be a step in the direction of making the Government's enrichment operations more business-like. Therefore, we recommend that the Subcommittee on Energy and Power endorse the basic concept of "fair value" pricing in the proposed legislation to establish new charges for uranium enrichment services.

ENCLOSURE II

COMMENTS ON THE DRAFT PROPOSED REVISIONS TO THE URANIUM ENRICHMENT SERVICES CRITERIA

The Private Ownership of Special Nuclear Materials Act of 1964 (P. L. 88-489) requires DOE to establish criteria setting forth the terms and conditions under which the Government makes its enrichment services available to the public. The current uranium enrichment services criteria (Federal Register Vol. 38, No. 89) have been in effect since mid-1973.

Now that DOE has proposed legislation that would establish a new basis for uranium enrichment prices, new criteria will be necessary. DOE has prepared draft proposed revisions to the uranium enrichment services criteria. (See encl. IV.) We understand that DOE will eventually submit to appropriate congressional committees its final proposed revisions to the criteria if the legislation is enacted.

We reviewed these criteria primarily from the standpoint of our ongoing and previous involvement in the uranium enrichment area. We did not conduct a comprehensive review of the criteria, or any supporting documentation, because we were limited by the time requirements imposed by the Subcommittee's request for our views. We generally reviewed the proposed criteria with the following factors in mind:

--Will the proposed criteria accomplish the objective of putting the Nation's uranium enrichment operations on a more business-like basis?

--Will the proposed criteria assure that all reasonable costs are recovered and the public's interest is adequately protected?

Since DOE's assumptions contained in the draft proposed criteria are judgmental, such as the basis for calculating components for Federal taxes and the additional cost of money, it is difficult, if not impossible, to conclude that they are the most reasonable assumptions.

Regardless of whether they are the most reasonable, there are a number of weaknesses in the proposed criteria, as discussed below.

ENCLOSURE II

THE TIMING OF ENRICHMENT CHARGES

The proposed criteria state that applicable charges for enrichment and related services will be those in effect at the time of delivery of enriched uranium as (a) published in the Federal Register or (b) in the absence of such publication, determined in accordance with DOE's pricing policy.

DOE's general practice is to charge its customers the price in effect at contract delivery dates, regardless of when actual physical transfer of the material takes place. This is called "constructive delivery." This practice, however, is subject to manipulation for purposes of short-term budgetary expediency and can result in millions of dollars in lost revenues to the U. S. Government. For example, in 1972 the former Atomic Energy Commission sold 10 million units of enrichment services to several Japanese utilities and made "constructive delivery" of these units during fiscal years 1972 and 1973. The total amount received for these units was $320 million which was based on a then-published delivery price of $32 a unit. Actual physical delivery of these units, however, did not begin until several years later and is currently not scheduled to be completed until the mid- to late-1980s. As of January 1978, more than 8 million of these units had still not been delivered.

Several price increases have already taken effect since "constructive delivery" of this material and at today's prices this material is worth considerably more than its value at the time of "constructive delivery," even after allowing for inflation. Had the enrichment services been sold on the basis of prices in effect at the time of physical delivery, this transaction could have resulted in the U. S. Government obtaining millions of dollars in additional revenues.

We recognize that there may have been considerations other than short-term budgetary expediency surrounding this transaction, such as the need to enhance the then-U. S. balance of payments position. We do not intend to take a position on the reasonableness or merits of such situations, but rather to highlight the consequences of following DOE's practice of applying prices based on constructive deliveries. We believe the criteria should be tightened to preclude DOE from following this practice and to establish a more business-like basis for charging its customers. This could be accomplished by requiring that prices be those in effect at the time of actual physical delivery of the material to DOE's customers or their agents.

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RECOVERY OF COSTS OVER A REASONABLE PERIOD OF TIME

The proposed criteria state that the cost recovery component of the new uranium enrichment price will be established on a basis that will assure the recovery of appropriate Government costs "over a reasonable period of time." What constitutes a reasonable time period, however, is not defined.

GAO recognizes that different Government costs will be recovered over different time periods; i.e., capital investment will not be recovered during the same period as ordinary operating expenses, but will be amortized over a much longer period. However, we also believe that the bases for these periods of time for major cost components should be clearly stated in the criteria so that (1) the Congress, DOE's customers, and the public will have full cognizance of the method DOE uses to calculate these periods; (2) the language cannot be subject to various interpretations in the future; and (3) DOE will not be able to indiscriminately change these periods, and thus change the price it charges, without first alerting the Congress through proposed revisions to the criteria.

We also noted that the criteria do not specify when DOE will announce new prices that reflect periodic changes in the costs it incurs. We believe it would be desirable to have a mechanism in the criteria whereby DOE would be required to frequently review and revise its prices as necessary to insure that such prices currently reflect periodic changes in the marketplace.

THE FAIR VALUE PERCENTAGE

The draft proposed criteria state that once the amounts for the additional cost of money, taxes and insurance are computed, they will be added together. The resulting amount, less an amount to account for uncertainties in the projected costs and sales base, will then be divided by all of the costs DOE is to recover (the so-called cost recovery component in subsection 3 of the draft proposed criteria). This calculation will yield the so-called "fair value" percentage, which the criteria defines as the maximum percentage by which the cost recovery component may be increased to obtain the price to be charged for enriching services.

GAO noted a number of areas in the assumptions used to compute the so-called "fair value" percentage that need to be strengthened, as discussed below.

The additional cost of money

One of the major sections of the draft proposed criteria states that DOE will compute an amount to reflect the additional cost of money that a private operator providing similar services would incur and recover in its prices. This additional cost of money is composed of interest on debt and return on equity.

The proposed criteria specify that the amount will be derived by applying an interest rate to (1) DOE's investment in plant and equipment, (2) working capital, (3) the cost of the enrichment services contained in the working inventories and enriched uranium preproduced stockpile at the DOE enrichment plants, and (4) the cost of the natural uranium contained in the inventories at DOE's enrichment plants. The interest rate is to be equal to the difference between a fixed 10.25 percent and the rate used to impute interest for the Government's costs. This latter rate is the average interest rate payable by the U. S. Treasury on its total marketable public obligations.

Our concern about this method is that it is too inflexible. The 10.25 percent figure was calculated by assuming an 8.3 percent interest rate on a 50 percent initial investment in debt, and a 12.2 percent return on a 50 percent initial investment in equity. These assumptions are judgmental. Further, DOE should recognize that the cost of money, like the Treasury's average interest rate payable on its total marketable public obligations, changes over time depending mainly on the supply and demand for money. For example, in 1972 the Treasury's average rate was 5.242 percent. In 1973 it rose to 5.600 percent and in 1974 it rose to 6.782 percent--an increase of 1.5 percent in 2 years.

We believe that DOE could more accurately implement the fair value pricing concept if it periodically calculated the amount for the additional cost of money to more fully reflect changes, up or down, in the financial marketplace. We believe it would be more appropriate for the criteria to state when DOE will periodically calculate this rate, and on what it is based.

Provision for Federal income taxes

DOE is also required to compute an amount for Federal income taxes that a private enricher would incur and recover in its prices. The proposed criteria state that this amount will be determined by computing a theoretical tax under

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applicable Federal income tax laws and regulations. Among the assumptions made by DOE are

--an 8.3 percent interest rate on debt, and

--a 12.2 percent return on equity.

As with the preceding section, the 8.3 and 12.2 percent figures are judgmental and static. They do not account for major changes in the marketplace that a private enricher would have to reflect in its prices. For example, the median return on stockholders' equity for large chemical corporations, to which the enrichment process can be compared, was 11.6 percent in 1973 and 15.6 percent in 1974--a 33 percent change in only one year.

GAO agrees that Federal tax components should be based on applicable tax laws. Major changes to the laws, if any, can be periodically reflected in the prices. This idea, however, should be extended to DOE's assumptions for the return on equity and the interest rate on debt--assumptions for which its tax component is calculated. The criteria should state that this component will be periodically adjusted to reflect changes in the financial marketplace affecting interest rates and return on equity.

State and local taxes and insurance

The proposed legislation, if enacted, will require DOE to include a component for State and local taxes and insurance in the enrichment price. The proposed criteria state that the amount for State and local taxes and insurance will be derived by applying 1 percent to the average gross book value of DOE's enrichment plant complex. This is essentially the same concept that the Energy Research and Development Administration proposed in 1975.

At that time we stated that the adequacy of this component cannot be determined because State and local taxes and insurance could vary appreciably from location to location, and exact localities of potential private enrichers are not known. In other words, the 1 percent figure used to calculate this component was judgmental.

This is still true. Further, we are also concerned that the "DOE enrichment plant complex" referred to may be limited to DOE's enrichment plants only, and not include its other assets that are integral components of the enrichment process, such as its inventories of enriched uranium.

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We believe that DOE should not automatically use the 1 percent figure to calculate these taxes and insurance. It would be more appropriate for the criteria to show the basis for this figure, such as by stating that it will be calculated by surveying a representative number of tax districts and insurance companies and compiling a composite figure. We also believe that the criteria should recognize that all of DOE's theoretically "taxable and insurable" assets related to its enrichment activities, not just the "enrichment plant complex" are included in the calculation. These "taxable and insurable" assets would be defined as those which would be insured and/or taxed if owned by a private operator.

The fair value ceiling

The criteria state that DOE will not use a fair value percentage in excess of 30 percent. This is a percentage ceiling on the amount that can be charged by DOE for the cost components representing the extra costs that a private operator would incur and recover in its price.

We do not agree that this 30 percent ceiling is necessary. It violates the basic "fair value" pricing concept which states that DOE should charge a price analogous to that of a private enricher. Private business is not subject, at the present, to such price controls. Further, the 30 percent ceiling might be viewed as a future indirect subsidy to the nuclear industry.

We believe the criteria should be amended to eliminate the ceiling so as to allow the price to be based more on fluctuating marketplace considerations as intended under the proposed legislation. Should the Congress, however, wish to remain fully cognizant of the size of future "fair value" pricing factors, and their impact on the ultimate consumer, then the Congress could simply require that DOE notify it if the "fair value" percentage exceeds 30 percent.

RECOVERY OF ALL DIRECT AND INDIRECT COSTS

The draft proposed criteria indicate that the cost of enrichment services to be recovered will include all direct and indirect costs of operating the enrichment plants, including electric power, appropriate depreciation of said plants, process development, DOE administration, and other Government support functions.

We agree that the charge for enrichment services should include a provision for the recovery of all direct and

indirect costs of operating the enrichment plants. This has always been required under exising legislation and criteria for uranium enrichment pricing. However, DOE traditionally has not included certain costs in its enrichment services charge.

DOE currently does not recover enough interest on its investment in enrichment activities. Like operating expenses, research and development costs, and plant and capital equipment acquisitions, interest is a bonafide cost that should be included in the uranium enrichment price. It is generally applicable to all Federal expenditures.

The concept that interest is a cost is based on the fact that the Government's disbursements are made from a single pool of funds in the Treasury. If such funds had not been so disbursed, they could have been applied to repay or reduce Government borrowings, with a consequent savings in interest costs.

DOE generally recognizes this concept. Since 1969 enrichment services prices have included amounts to recover interest on enrichment operations. According to published financial statements, the interest cost associated with these operations during fiscal year 1976 amounted to nearly $135 million. DOE, however, does not recover enough interest on its investment, specifically for its sizable investment in the uranium material that has been or will be processed through the enrichment plants. As of October 1, 1977, DOE had about 97,000 tons of this material, commonly called feed.

DOE should be charging interest on this investment in order to comply with the requirement to recover the costs. It does not. If it did, it would have earned more than $100 million in fiscal year 1976, assuming that the calculation is based on the 6.644 percent average interest rate payable by the Treasury on its total marketable public obligations. This amount would be higher if interest were accrued and compounded starting with the initial procurement of the material.

On July 26, 1977, we asked the Controller, former Energy Research and Development Administration, why the Administration did not recover these costs during the period they were incurred. DOE officials told us that the criteria setting forth the terms and conditions under which the Government makes enrichment services available to the public, which DOE submits to the Congress for approval, do not specify that interest on Government investment should include interest on feed. We reviewed the criteria and noted that they

specify that DOE should charge for imputed interest on "investment in plant and working capital." However, we also noted that the agency is inconsistent in meeting these criteria because it charges its customers for interest on separative work inventory and some feed produced from tails recycle, as well as plant and working capital, but not on all feed material.

We are pleased to see that, as we suggested, DOE's proposed criteria would allow for a recovery of the imputed interest on feed material. The problem, of course, is that if the legislation is not approved, then the new criteria will also not be approved. Even if the current legislation does not pass, it might be practical for the Congress to have DOE amend the current criteria to assure that these costs are recovered.

CONCLUSIONS AND MATTERS FOR CONSIDERATION BY THE SUBCOMMITTEE ON ENERGY AND POWER

DOE has prepared a draft of its proposed revisions to the uranium enrichment services criteria explaining how the proposed legislation, if enacted, would be implemented.

Since several of the assumptions contained in the draft proposed criteria are judgmental, such as the basis for calculating components for Federal taxes and the additional cost of money, it is difficult, if not impossible, to conclude that they are the most reasonable assumptions. Regardless of whether they are the most reasonable, there are a number of areas in the draft proposed criteria that we believe need to be strengthened. If DOE eventually proposes new uranium enrichment services criteria that are identical to the draft proposed criteria we reviewed, we recommend that the Subcommittee amend it to:

--require applicable charges for enrichment and related services to be those in effect at the time of actual, not constructive delivery;

--specify the bases for (1) establishing the reasonable periods of time that DOE will use for recovering all Government costs, and (2) determining the frequency by which DOE will periodically review and revise its prices;

--to periodically calculate the interest rate and the return on equity, which are used to calculate major components in the proposed price, to reflect changes in the financial marketplace. The basis for these

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periodic calculation should be identified in the criteria. This would allow DOE a more business-like basis for determining the interest on debt and return on equity it would use if it were a private enricher.

--require DOE to (1) establish the basis for its charge--as opposed to a precise percentage--for State and local taxes and insurance and (2) make such a charge applicable to the average gross book value of all of its taxable and insurable assets--i.e., those that would be taxed and insured if owned by a private enricher; and

--eliminate the 30 percent "fair value" percentage ceiling and, instead establish a mechanism whereby DOE would be required to notify the Congress if the so-called "fair value" percentage exceeds 30 percent.

In the event the proposed legislation is not adopted by the Congress, we recommend that the Subcommittee take steps to assure that the existing uranium enrichment criteria are amended to require that the cost of imputed interest on uranium feed material is recovered by DOE.

ENCLOSURE III

H. R. 11392

TITLE V--CHARGE FOR URANIUM ENRICHMENT SERVICES

BASIS FOR GOVERNMENT CHARGE FOR URANIUM ENRICHMENT SERVICES

Sec. 501, Subsection v. of section 161 of the Atomic Energy Act of 1954, as amended, is amended--

(1) by striking out "Commission" each time it appears and inserting in lieu thereof "Secretary of Energy" or "Department of Energy", as appropriate;

(2) by striking out clause (iii) in the first proviso of such subsection and inserting in lieu thereof the following: "(iii) any prices established under this subsection shall be on such a basis as will assure the recovery of not less than the Government's costs over a reasonable period of time, and when combined with a percentage of such costs, will result in the recovery of revenues no greater than the sum of all Government costs and the normal and ordinary business expenses, taxes, and return on equity which would otherwise be reflected in the prices charged by a private operator providing similar services:"; and

(3) by striking out the third proviso in such subsection and inserting in lieu thereof the following: "PROVIDED, That before the Secretary establishes such criteria, the Secretary shall transmit the proposed criteria to the appropriate committees of the Congress and allow a period of forty-five days to elapse (not including any day in which either House or Congress is not in session because of adjournment of more than 3 days), unless before the expiration of such period each such committee has transmitted to the Secretary written notice stating in substance that such committee has no objection to the proposed action.".

ENCLOSURE IV

DRAFT PROPOSED REVISION TO THE URANIUM ENRICHMENT SERVICES CRITERIA

SECTION 5--GENERAL FEATURES OF STANDARD DOMESTIC CONTRACTS

Para. (c) Charges for Enriching Services

(1) The charges for enriching services, in accordance with the act, will be established on a nondiscriminatory basis and on a basis which will assure the recovery of not less than the Government's costs over a reasonable period of time and when combined with a percentage of such costs will result in the recovery of revenues no greater than the sum of all Government costs and the normal and ordinary business expenses, taxes, and return on equity which would otherwise be reflected in the prices charged by a private operator providing similar services. Applicable charges for enriching services and related services will be those in effect at the time of delivery of enriched uranium to the customers as (i) published in the Federal Register, or (ii) in the absence of such publication, determined in accordance with DOE's pricing policy. The Secretary of Energy may impose an appropriate surcharge representing additional costs, if any, to DOE for providing enriching services on short notice.

(2) Projections of supply and demand over a reasonable time period will be used in establishing a plan for enrichment plant operations. This plan will be a basis for establishing average charges for separative work over the period involved and the charges will be kept as stable as possible as operating plans are periodically updated. Under such operating plans, DOE will at times be preproducing enriched uranium.

(3) The Cost Recovery component of the price charged for enriching services will be established on a basis that will assure the recovery of appropriate Government costs projected over a reasonable period of time. The cost of separative work includes all direct and indirect costs of operating the enrichmert plants including electric power, appropriate depreciation of said plants, process development, DOE administration and other Government support functions. The cost also includes an imputed interest on (i) investment in plant and equipment, (ii) working capital, (iii) the cost of the separative work component in the working inventories and enriched uranium preproduced stockpile at the DOE enrichment plants, and (iv) the cost of natural uranium contained in the inventories at the DOE enrichment plants needed to provide enriching services.

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(4) DOE, in order to determine the normal and ordinary business expenses, taxes, and return on equity which would otherwise be reflected in the price charged by a private operator providing similar services will compute the following amounts.

(a) An amount derived by applying an interest rate to items (i), (ii), (iii) and (iv) in subsection (3) above that is equivalent to the difference between 10.25 percent and the rate used to impute interest for the Cost Recovery component. This greater interest rate reflects the additional cost of money (composed of interest on debt and return on equity) that a private operator providing similar services would incur and recover in the prices it charged.

(b) An amount for Federal income taxes. This component is determined by computing a theoretical tax under applicable Federal Income Tax laws and regulation using the items delineated in subsection (3), the projected sales and corresponding revenues over the pricing period, and the following financial assumptions: (1) a 50/50 debt/equity ratio, (2) an 8.3 percent interest rate on debt, and (3) a 12.2 percent return on equity.

(c) An amount for State and local taxes and insurance. This component is derived by applying 1 percent to the average gross book value of the DOE enrichment plant complex over the pricing time period.

(5) The sum of the components computed in subsections 4(a), 4(b), and 4(c), less any contingency DOE has found to be appropriate to account for uncertainties in the projected costs and sales base of the Cost Recovery component, will be divided by the cost of separative work determined in accordance with subsection (3) to arrive at a Fair Value Percentage, which shall be the maximum percentage by which the Cost Recovery component may be increased to obtain the price to be charged for enriching services.

(6) Notwithstanding the provisions of subsection (5), DOE will not use a Fair Value Percentage in excess of 30 percent to determine the price for enrichment services without first revising these criteria.