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REPORT TO THE JOINT COMMITTEE ON ATOMIC ENERGY
CONGRESS OF THE UNITED STATES

RELEASED

Review Of Proposed Revisions To The Price And Criteria For Uranium Enrichment Services B-159687

Atomic Energy Commission

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

JULY 17, 1970

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

B-159687

Dear Mr. Chairman:

The General Accounting Office has made a review of the proposed revisions to the price and criteria for uranium enrichment services, Atomic Energy Commission. In addition we reviewed the increase in price of separative work together with the specific assumptions upon which the new price is based. The review was made in accordance with your request dated June 15, 1970.

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Our principal observations are summarized in the digest which appears at the beginning of the report. This report is being sent today to the Vice Chairman of your Committee. The Commission's comments on the facts have been incorporated in the report. Due to time limitations, however, the Commission has not commented on our conclusions nor on the matters for consideration by the Joint Committee.

We plan to make no further distribution of this report unless copies are specifically requested, and then we shall make distribution only after your agreement has been obtained or public announcement has been made by you concerning the contents of the report.

Sincerely yours,

Elmer B. Staats
Comptroller General
of the United States

The Honorable Chet Holifield, Chairman
Joint Committee on Atomic Energy
Congress of the United States

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ABBREVIATIONS

AEC	Atomic Energy Commission
GAO	General Accounting Office

COMPTROLLER GENERAL'S REPORT TO
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Atomic Energy Commission
B-159687

D I G E S T

WHY THE REVIEW WAS MADE

At the request of the Joint Committee on Atomic Energy, the General Accounting Office (GAO) has made a review of certain factors relating to the proposals of the Atomic Energy Commission (AEC) to amend its Uranium Enrichment Services Criteria and to increase its price for separating the isotopes of uranium in its gaseous diffusion plants.

The proposed amendment to the criteria would change the basis for computing the charge for separative work from a basis of cost recovery by the AEC to a basis which would be more closely comparable to a commercial operation. The proposed price--an increase from $26 to $28.70 a unit of separative work--is based upon the new criteria and is intended to represent the price a commercial enterprise would charge on the basis of a conceptual plant. (See p. 16.)

The proposed change in the criteria is being made to implement the President's announced policy of November 10, 1969, that the uranium enrichment facilities be operated as a separate organizational entity in a manner which approaches more closely a commercial enterprise. (See p. 13.) The facilities are at Paducah, Kentucky; Portsmouth, Ohio; and Oak Ridge, Tennessee.

FINDINGS AND CONCLUSIONS

The proposed change in the criteria, which would require that the enriching charge be based on commercial criteria, raises the question of the need for and the applicability of the new basis.

Based upon GAO's interpretation of the legislative history, the language of 161v of the Atomic Energy Act of 1954, as amended, and the statements from the 1966 hearings on Uranium Enrichment Services Criteria, GAO believes that a conclusion that the term "reasonable compensation" as used in subsection 161v permits including a profit over a period of time does not appear to be consistent with the intention of the Congress. Thus, in GAO's opinion, there is doubt that the revised criteria proposed by the Atomic Energy Commission, which admittedly contemplates more than recovery of full costs over a period of time, is authorized. In these circumstances, GAO does not believe that such criteria should be adopted without further action by the Congress. (See p. 7.)

Because the proposed criteria relate only to the pricing method, it appears that AEC will in large part continue to depend upon the existing plants for operating experience and costs. It is GAO's view, therefore, that the type of data which will be generated under the revised criteria can be accumulated with equal facility under the existing criteria. Thus the objective of obtaining commercial operating experience will not be enhanced by the proposed criteria.

AEC's proposed new unit price for enrichment services was computed on the basis of a conceptual plant and financial ground rules involving a capital structure of 50-percent debt and 50-percent equity, an interest rate of 7 percent on debt, and a rate of return on equity of 12 percent after taxes.

There is a degree of uncertainty in the existing criteria because of assumptions used in projecting costs of operating the existing plants for long periods of time. On the other hand, there are assumptions that are subject to change in the commercial criteria, such as the debt-equity ratios, return on investment, and estimates of plant values, that are in addition to those in the existing criteria. GAO does not believe, therefore, that a charge for enriching services established under the proposed criteria provides the same degree of price stability within the ceiling price as that provided in a charge based on projected costs of operating the existing AEC plants.

Also, AEC has not established a policy to ensure that the periodic reviews of the enriching charge are based on reasonably consistent and uniform procedures. The proposed criteria require periodic reviews of economic trends and allow the flexibility to change the basis for developing return on investment percentages, debt-equity ratios, and estimates of plant value. Each of these factors can significantly impact the outcome of the calculations. (See p. 22.)

AEC's price of $26 a unit of separative work was established on a basis that would ensure recovery of appropriate Government costs projected over a number of years. GAO believes that, because of cost escalation and operating levels lower than anticipated, a price increase may be warranted. It appears that the costs related to providing enriching services, based on the existing criteria, will approach and possibly exceed the anticipated revenues from the units produced during the period 1966-75. (See p. 31.)

MATTERS FOR CONSIDERATION BY THE JOINT COMMITTEE

Because of the questionable need for, and applicability of, the proposed criteria and GAO's doubts as to its clear authorization, GAO does not believe the proposed criteria should be adopted without further action by the Congress. The Joint Committee, therefore, may wish to consider whether the proposed amendments to the criteria are needed to accomplish the objectives of obtaining commercial operating experience.

After consideration of the proposed amendments, if in the judgment of the Joint Committee it is deemed advisable to adopt the proposed criteria, GAO believes the criteria should require a consistent and uniform method of selecting variables and assumptions to provide a degree of stability required for future long-term commitments.

CHAPTER 1

INTRODUCTION

The General Accounting Office has made a review of the Atomic Energy Commission's proposed amendment to the Uranium Enrichment Services Criteria and the proposed increase in the price charged for enrichment services. The review was made in response to a request dated June 15, 1970, by the Chairman, Joint Committee on Atomic Energy, Congress of the United States. A copy of the Joint Committee's request is included as appendix I. The scope of our review is described on page 37.

The criteria set forth the terms and conditions under which AEC offers, subject to available capability, to provide uranium enrichment services.[1] The proposed amendment, announced by AEC in a letter to the Joint Committee dated June 10, 1970 (see app. II), would change the basis for computing the charge for enriching services from a cost-recovery basis to a commercial basis. Also, AEC announced that the price for each unit of separative work based on the revised criteria would be $28.70--an increase of $2.70 from the existing price of $26.

The Joint Committee on Atomic Energy held public hearings on June 16 and 17, 1970, during which representatives of AEC and GAO testified regarding the proposed amendment to the criteria and the proposed increase in price of separative work.

In the last several years, there has been an enormous growth in the size and number of nuclear power plants being constructed and operated for the production of electrical energy. This development has been accompanied by a corresponding growth in the need for enriched uranium which is

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[1]The work devoted to separating a quantity of uranium (feed material) into two fractions--one a product fraction containing a higher concentration of the isotope U-235 than the feed and the other a tails fraction containing a lower concentration of U-235.

produced in AEC's gaseous diffusion plants. Government requirements for enriched uranium during the 1970's are currently projected by AEC to be less than 15 percent of the existing plant capacity. On the other hand, requirements for enriched uranium for civilian nuclear power plants during the 1970's are expected to increase at a rate that will necessitate major capital investments for increasing the capacity of existing plants and for constructing additional plants. The increasing requirements for civilian nuclear power have generated considerable interest in the possible transfer of the diffusion plants to private industry.

The existing Uranium Enrichment Services Criteria (see app. X) represent an implementation of the Private Ownership of Special Nuclear Materials Act (Public Law 88-489) which provided for (1) the termination of mandatory Government ownership of special nuclear materials and (2) the eventual mandatory private ownership of power reactor fuels. Private ownership avoids the necessity for a major buildup of the Government's investment in nuclear material inventories for commercial power reactors. AEC estimated that, if mandatory Government ownership of nuclear fuel had continued, the Government's investment in nuclear fuels in the possession of private firms for civilan power applications could possibly have reached $3 billion to $4 billion by 1980.

Section 161v of the Atomic Energy Act of 1954, which was added by Public Law 88-489, required AEC to establish written criteria, to be submitted to the Joint Committee on Atomic Energy, setting forth the terms and conditions under which AEC would provide uranium enrichment services to domestic and foreign customers.

On July 1, 1966, AEC submitted the existing criteria to the Joint Committee. At the Joint Committee's request, we reviewed the criteria and the proposed contracts for uranium enrichment services, and, in a report to the Chairman (B-159687, August 1, 1966), we stated that the provisions having an effect on pricing afforded a reasonable basis for recovering, over a long term of operation, the Government's cost of furnishing enrichment services and that the proposed ceiling charge ($30 a unit of separative work, subject to upward escalation for the cost of electric power and labor) would be adequate to permit recovery of appropriate

Government costs projected over a number of years. The criteria became effective on December 23, 1966, and has been the basis upon which AEC has offered to provide uranium enrichment services to its customers.

On September 21, 1967, AEC announced that the actual charge for uranium enrichment services would be $26 a unit of separative work based on 0.2-percent tails assay. At the Joint Committee's request, we reviewed the basis used by AEC in establishing the amount to be charged and, in a report to the Chairman (B-159687, September 25, 1967), we stated that the charge was adequate to permit recovery of appropriate Government costs projected over a number of years and was consistent with the criteria.

Since 1967 we have reported to the Joint Committee on Atomic Energy on two other matters relating to the gaseous diffusion plants. These reports were entitled (1) "Possible Transfer of the Atomic Energy Commission's Gaseous Diffusion Plants to Private Ownership" (B-159687, May 20, 1969) and (2) "Issues Relating to the Possible Establishment of a Government Uranium Enrichment Enterprise" (B-159687, October 17, 1969). Both reports suggested a number of matters for consideration by the Committee regarding the future operation of the gaseous diffusion plants.

CHAPTER 2

LEGALITY OF THE PROPOSED CHANGE IN BASIS FOR COMPUTING URANIUM ENRICHING CHARGE

This chapter presents our views regarding the legal validity of the new criteria which AEC has proposed for the establishment of enrichment charges and has transmitted to the Joint Committee for its consideration as provided by section 161v of the Atomic Energy Act, as amended, 42 U.S.C. 2201v.

Section 161v provides in part that prices for enrichment services be established on a basis which will provide reasonable compensation to the Government. The subsection also requires that AEC establish criteria in writing setting forth the terms and conditions under which services provided under this subsection shall be made available and that, before AEC establishes such criteria, the proposed criteria be submitted to the Joint Committee for a 45-day period unless the Joint Committee by resolution in writing waives the conditions of, or all or any portion of, such 45-day period.

The criteria now proposed by AEC provide that the charge for enrichment services be established at a level estimated to be equivalent to the charge for work performed in new uranium enrichment facilities designed, constructed, and operated primarily to serve commercial markets, using debt-equity ratios, rates of return on investment, and appropriate allowances for Federal, State, and local taxes and insurance deemed by AEC to be appropriate for a private industrial enriching enterprise.

In view of the provisions of section 161v, there is for consideration the question whether prices established pursuant to such criteria would be established "on a basis which will provide reasonable compensation to the Government."

The term "reasonable compensation" is not defined in the Atomic Energy Act, but it has been held that what

constitutes reasonable compensation is dependent upon the facts and circumstances arising in each case. (See Chapman v. A. H. Averill Machinery Co., 152 P. 573.) Consequently, it is necessary to resort to the legislative history of this provision to determine the congressional intent.

Paragraph v was added to section 161 by section 16 of Public Law 88-849 approved August 26, 1964. In the report of the Joint Committee on Atomic Energy, which accompanied the proposed legislation subsequently enacted as Public Law 88-849 (S. Rept. 1325 and H. Rept. 1702, 88th Cong.), the Committee expressed the view that:

> "The purchaser would pay the Commission's charge for enriching services--a charge based generally upon the cost of doing necessary processing or 'separative work' in the Government's diffusion plants." (See p. 2.)

However, later in the report (p. 17 and 18) the Committee expressed its concern that a possible cutback in the production of special nuclear materials as a result of virtual or complete elimination of weapons requirements, prior to the development of a large power-reactor demand for such materials, might so increase the unit cost of separative work as to impede the development of atomic power if prices were established on the basis of full-cost recovery.

Relative to this matter it is stated in the House report (p. 18) that:

> "It is too early to predict with certainty the precise dimensions of this problem or the best method of solution. However, the statement in new subsection 161v, that charges for enrichment services shall be established on a basis which will provide 'reasonable compensation to the Government' is flexible. In arriving at this determination the Commission will have to consider not only the Government's costs in providing enrichment services but also the national interest in the development and utilization of nuclear power."

The legislative history of this subsection 161v shows an intent to fix a charge based generally upon the recovery of the Government's costs as stated on page 2 of House Report 1702. The only concern of the Joint Committee on Atomic Energy was that the reduction or possible elimination of military needs for enriched uranium might cause the prices required to recover costs to increase so significantly that the development of atomic power would be impeded. The statements on page 18 of the House report with respect to flexibility and consideration of the national interest are directed specifically and solely to this particular problem.

In our opinion, the statements concerning flexibility and national interest would indicate that they relate only to the recovery of less-than-full costs and merely create one exception to the earlier positive statement on page 2 of the report that the charge for enriching uranium will be "based generally upon the cost of doing necessary processing or separative work in the Government's diffusion plants." We think the statement on page 2 reasonably could be interpreted as reflecting an intent to preclude the setting of prices so as to recover more than the Government's full costs over a period of time. This interpretation of intent would avoid an apparent inconsistency between the statement on page 2 and the statements on pages 17 and 18 of the Joint Committee's report.

The opinion of the General Counsel of the Atomic Energy Commission dated July 2, 1970, which was furnished to us at our request, admits that the statements on pages 17 and 18 of the report of the Joint Committee on flexibility and national interests "were made with specific reference to a possible need for the charge for enriching services to be lower than the Government's full costs" but states further that "there is nothing in the report or in statements made at the hearings which would preclude the possibility of setting prices higher than the Government's full costs if this appeared to be in the national interest in the development and utilization of nuclear power." We do not believe that this last statement of the General Counsel gives sufficient effect to the statement on page 2 of the Joint Committee's report that the charge will be based generally on recovery of the Government's costs.

We agree with the General Counsel of AEC that the term "reasonable compensation" is broad and could include a profit but cannot agree that there is nothing in the legislative history to suggest that the recovery of a profit is precluded. We agree also that the Government does recover a profit under various other laws, some of which use the term "reasonable compensation," but believe this to be irrelevant. As indicated above, the term "reasonable compensation" has to be construed in accordance with the legislative history of each statutory provision.

Also, we note that, under subsection 161m relating to certain services other than enrichment services, the law not only provides for "reasonable compensation to the Government for such material or services" but further provides that such compensation "will not discourage the development of sources of supply independent of the Commission." The latter phrase does not appear in 161v. Initially, the AEC proposed amending subsection 161m merely by adding the words "producing or enriching of special nuclear material." The Congress did not accept this recommendation but rather established the enrichment authority separately in a new subsection 161v specifically providing that the prices therefor "shall be on a basis which will provide reasonable compensation to the Government."

Additionally, concerning "reasonable compensation" and "profit," the following statements by Dr. Seaborg, Chairman of the Atomic Energy Commission, appear on pages 29 and 112, respectively, of the 1966 hearings before the Joint Committee on Atomic Energy relating to Uranium Enrichment Services Criteria and Related Matters.

> "REPRESENTATIVE PRICE. Dr. Seaborg, what is the basis for choosing the $30 per kilogram unit of separative work as a ceiling charge?
>
> "DR. SEABORG. This is the result of detailed studies as to what would be a reasonable price that <u>would cover the cost that would return reasonable compensation</u> to the Government but also would be fair to the industry and <u>not include profit</u> to the Government." (Underscoring supplied.)

* * * * *

"REPRESENTATIVE PRICE. What is the Commission's view concerning the desirability of operating the gaseous diffusion plants at a profit?

"DR. SEABORG. The Commission's basic policy is one of full cost recovery and the criteria identify the various costs that the AEC will recover in the charge. As I indicated, the AEC also intends to average its costs over a reasonable period in setting its charge in the interest of price stability. Also, recognizing the nature of our obligations under our contractual arrangements and the uncertainties and risks therewith, we include a certain contingency in our charge. (Underscoring supplied.)

"This contingency will be periodically assessed and adjusted as appropriate in the light of experience. We also recognize in setting our charges the possibility of a future commerical enriching service and the prices that might be associated with such a service. However, as a basic policy the AEC does not believe it appropriate to seek a profit in view of its monopoly position. So we are operating within these guidelines, but, of course, there is considerable area of managerial judgment involved in establishing an appropriate charge." (Underscoring supplied.)

On page 176 of those same hearings the Joint Committee Chairman, Chet Holifield, stated:

"I think the words reasonable compensation to the Government do have a definite meaning. You cannot pin it down to the penny, but the going rate of compensation for services rendered can apply to the Government as well as to private industry and should cover appropriate Government costs over a reasonable period of time.

"I think this is necessary phraseology where you cannot pin it down definitely and you have to leave those matters to some judgment.

"Applicable costs of process development, appropriate depreciation--all of those matters are matters of judgment and reasonable application and are so recognized in our tax laws and any other contact that industry has with Government."

Based upon our interpretation of the legislative history as indicated above, the new language of 161v, and the statements from the 1966 hearings, it does not appear to be consistent with the intention of the Congress to conclude that the term "reasonable compensation" as used in subsection 161v of the Atomic Energy Act of 1954, as amended, permits including a profit over a period of time. Thus, in our opinion there is doubt that the revised criteria proposed by the Atomic Energy Commission which admittedly contemplates more than recovery of full costs over a period of time is authorized. We do not believe that, in these circumstances, such criteria should be adopted without further action by the Congress.

The full text of the opinion of the General Counsel, AEC, and the letter from Dr. Glenn T. Seaborg, Chairman, AEC, transmitting the opinion to us are included as appendix III.

CHAPTER 3

EFFECT OF PROPOSED CHANGE IN URANIUM ENRICHMENT SERVICES CRITERIA

AEC's proposed change in the Uranium Enrichment Services Criteria provide for computing the price of uranium enrichment services on the basis of a commercial enterprise rather than on the basis of recovering appropriate Government costs. The proposed change is intended to implement the President's announced policy of operating the uranium enrichment facilities in a manner which approaches more closely a commercial enterprise to facilitate the anticipated future transfer of enriching activities to private industry.

The basic policy issue of changing the criteria to provide a price based on commercial criteria raises the question of the need for and the applicability of the new basis. The estimates made were based on judgments and assumptions projected over long periods of time.

AEC stated that the change in criteria would provide experience in operating the uranium-enriching activities in a manner which approaches a commercial enterprise. In our opinion the proposed commercial basis has greater uncertainties and is more vulnerable to change than the existing basis, and we believe that data concerning the projected operation of a conceptual plant can be accumulated with equal facility under either criteria to provide operating and cost experience indicative of a commercial operation.

REASON FOR PROPOSED CHANGE IN CRITERIA

On November 10, 1969, the President announced that he had asked AEC to operate its uranium enrichment facilities as a separate organizational entity in "a manner which approaches more closely a commercial enterprise." (See app. IV.) The President's decision was based on his belief that the Government's responsibility for uranium enrichment as the owner-operator of the Nation's only enrichment facilities eventually should be ended and that these facilities

should be transferred to private industry. Also this announcement stated that the management of plant operations would be businesslike and that separate accounts would be established to reflect commercial criteria for financial accounting. On the basis of the November 10, 1969, announcement, AEC reexamined its charge for enrichment services to determine the changes needed to establish the charge on a commercial basis.

The Chairman, Joint Committee on Atomic Energy, responded to the President's and AEC's actions and stated:

> "One of the most serious deficiencies in both the Administration's announcement and the AEC's is the lack of specific information concerning the magnitude of any price change for the enrichment services. I believe the failure to mention present limitations on changes in prices could have an unsettling effect on this important industry. Present pricing criteria, established pursuant to law, contain a guaranteed ceiling charge subject to upward escalation for the cost of electric power and labor. That ceiling charge was established at $30 per kilogram unit of separative work. Any change in these pricing criteria very definitely would have to be submitted to and lie before the Joint Committee for a 45-day review period while Congress is in session before they could possibly become effective.*** In any event, the AEC will be requested to furnish the Committee the results of its reexamination of enrichment service charges when the review is completed."

After the President's announcement, AEC undertook a study of (1) the changes in enrichment costs and other factors which had occurred after the $26 price was established in 1967 and (2) what the charge for separative work would be under the present criteria and under the proposed criteria reflecting commercial pricing methods.

AEC determined that the most appropriate basis for setting an enriching charge in the future to meet the criterion of comparability to a commercial operation would be to establish a price on the basis of the estimated cost of

separative work from a conceptual enriching plant utilizing advanced technology and designed and operated primarily for meeting civilian nuclear power requirements. Accordingly, by letter dated June 10, 1970, AEC advised the Joint Committee that it was amending the criteria to incorporate this new basis for computing the enriching charge. In addition, AEC announced that the charge for enriching services on the basis of the proposed commercial criteria would be $28.70 a unit of separative work.

Although the President's announcement anticipated future transfer of enriching activities to private industry, there has been no affirmative decision regarding timing of such a transfer. We believe that, with respect to the new criteria providing for operating and cost experience on a commercial basis that will assist private industry in making decisions regarding the possible transfer to private industry of enrichment activities, data concerning the projected operation of a conceptual plant can be accumulated with equal facility under either criteria.

COMPARISON OF EXISTING CRITERIA
WITH PROPOSED CRITERIA

The proposed amendments to the criteria would change subparagraphs (2) and (3) of section 5, paragraph (c). The amendments provide for changing the basis for computing the charge for enriching services from a cost-recovery basis to a commercial basis.

1. The existing criteria state:

"(2) The Act requires that such charges provide reasonable compensation to the Government. AEC's charge 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 electric power and all other costs, direct and indirect, of operating the gaseous diffusion plants; appropriate depreciation of said plants; and a factor to cover applicable costs of process development, AEC administration and other Government support functions, and imputed interest on investment in plant and working capital. During the early period of growth of nuclear power, there will be only a small civilian demand on the large AEC diffusion plants. These plants were originally constructed for national security purposes, but will be utilized in meeting future civilian requirements. In this interim period of low plant utilization, the Commission has determined that the costs to be charged to the separative work produced for civilian customers will exclude those portions of the costs attributable to depreciation and interest on plant investment which are properly allocable to plant in standby and to excess capacity.

"(3) Projections of supply and demand over a reasonable time period will be used in establishing a plan for diffusion plant operations. This plan will be the basis for establishing an average charge for separative work over the

period involved, which charge will be kept as stable as possible as operating plans are periodically updated. Under such operating plans, AEC will at times be preproducing enriched uranium. Interest on the separative work costs of any such preproduced inventories will be factored into the average separative work charges."

2. Criteria proposed by AEC's letter of June 10, 1970, stated:

"Subpara. (2) - The Act requires that such charges provide reasonable compensation to the Government. In recognition of the commercial nature of the primary market to be served, and of the fact that the existing facilities were constructed primarily for non-commercial markets, AEC's charge for enriching services will be established at the level estimated to be equivalent to the charge for separative work performed in new uranium enrichment facilities designed, constructed and operated primarily to meet commercial markets, using debt-equity ratios, rates of return on investment, and appropriate allowances for Federal Corporate income taxes, state and local taxes and insurance deemed by the Commission to be appropriate for a private industrial enriching enterprise.

"Subpara. (3) - AEC will review periodically the charge for enriching services on the basis of: (a) updated projections of the cost of separative work produced in a new enriching plant, and (b) the cost of money in the private sector of the economy. As a result of such reviews, AEC will make any appropriate revisions in the charge for enriching services in accordance with subparagraph 5. (c)(2), but within the limitations of subparagraph 5(d)."

The limitations of subparagraph 5(d) referred to above are the ceiling on charges for enriching services of $30 a unit, subject to upward escalation for electric power and

labor. This provision is not being changed by the proposed amendment.

AEC implemented the existing language in subparagraph (2) by establishing six cost components in arriving at its charge for enriching services.

1. Electric power.
2. Direct and indirect operating costs.
3. Appropriate depreciation of existing plants.
4. An added factor to cover imputed interest on investment and all other applicable costs.
5. Interest on preproduced inventory.
6. Appropriate contingency.

We believe that, in contrast with subparagraph (2) of the existing criteria, AEC's proposed criteria provide for less certainty and a charge determined on this basis is more vulnerable to change than is provided for by the existing criteria. There is a degree of uncertainty in the existing criteria because of assumptions used in projecting costs of operating the existing plants and the requirements for separative work for long periods of time. There are additional assumptions, however, that are subject to change in the proposed commercial criteria, such as the debt-equity ratio and return on investment. Also, estimates of conceptual plant values are subject to change with the passage of time. Some assumptions are more likely to change than others as discussed in chapter 4.

AEC used a conceptual plant as the basis for determining the charge, rather than the existing plants, because:

--The existing plants were designed to provide highly enriched uranium for national defense requirements, whereas AEC expects that any new diffusion plant would be tailored to a slightly enriched uranium product.

--The existing plants were being operated at about 40 percent of their capacity.

--Operating schedules for the existing plants had to date been developed to approach the optimum on the basis of incremental costs and costs of money to the Government.

AEC believes that, because of these factors, there can be honest differences in opinions as to appropriate charges for depreciation and interest when the plants are operating below capacity and as to the costs of preproduction. AEC believes also that certain decisions made on the basis of Government operations may be detrimental to operations under commercial financing. On the other hand, a conceptual plant has the inherent disadvantage of not having a fixed value because it is subject to change with the passage of time.

Subparagraph (3) of the existing criteria provides for projecting the future supply and demand for enriching services to establish a plan to provide a basis for an average charge over the period involved and requires that the charge be kept as stable as possible. The language with respect to stability is not included in the proposed criteria.

Also, AEC has not established a policy to provide for appropriate controls over the selection of assumptions periodically to ensure consistent and uniform procedures that would lead to price stability within the ceiling price. For example, the proposed criteria require periodic reviews of economic trends and allow flexibility to change assumptions on factors such as return on investment from the proposed 12 percent as being representative of a return realized by manufacturing concerns.

The ceiling price of $30 a unit of separative work, subject to escalation for electric power and labor, was established to provide a degree of long-term assurance to domestic and foreign nuclear industries that enriching services would be available from the U.S. Government within a specified ceiling price. If the amendment is adopted, the criteria would contain a charge based on commercial criteria but would not change the ceiling charge established as part of the existing criteria.

Due to cost escalation, the ceiling charge was estimated by AEC in June 1970 to be $32.85, an increase of $2.85 from the time it was established in December 1966. This means that any increases in price as a result of increases in the cost of separative work could not exceed $32.85--at the present time.

The new criteria provide that AEC periodically review and make appropriate revisions to the charge for enriching services on the basis of:

--updated projections of the cost of separative work produced in a new enriching plant and

--the cost of money in the private sector of the economy.

In a letter dated July 1, 1970, the Chairman, AEC, advised us that, because of changed circumstances, if the price determined under the new criteria were not adequate to recover the Government's projected costs, AEC would consider whether it would be appropriate to revise the criteria. (See app. III.)

MATTERS FOR CONSIDERATION BY THE JOINT COMMITTEE

In our opinion, data on projected financial results of conceptual operations can be calculated with equal facility regardless of whether the existing criteria are retained or whether the proposed criteria are adopted. Also, in our opinion the proposed criteria would provide for less certainty in that a charge determined on the basis thereof would be more vulnerable to change than one determined on the basis of the existing criteria. Moreover, our opinion as stated in chapter 2 expresses doubt as to whether the proposed criteria is authorized.

Because of the questionable need for and applicability of the proposed criteria and our doubts as to its clear authorization, we do not believe the proposed criteria should be adopted without further action by the Congress. The Joint Committee, therefore, may wish to consider whether the proposed amendments to the criteria are needed to accomplish the objectives of obtaining commercial operating experience.

After consideration of the proposed amendments, if in the judgment of the Joint Committee it is deemed advisable to adopt the proposed criteria, we believe the criteria should require a consistent and uniform method of selecting variables and assumptions in order to provide the degree of stability required for future long-term commitments.

CHAPTER 4

AEC'S ASSUMPTIONS IN ARRIVING AT THE PROPOSED PRICE OF $28.70

AEC's proposed criteria has led to the development of a new charge for enrichment services of $28.70--an increase of $2.70--a unit of separative work. The proposed new unit price was computed on the basis of a conceptual plant and assuming a capital structure of 50-percent debt and 50-percent equity with an interest rate on debt of 7 percent, and a posttax return on equity of 12 percent.

The current charge of separative work--$26 a unit--represents about 8 percent of the total cost of nuclear power, or 0.5 mills a kilowatt hour. According to AEC, the proposed charge of $28.70--an increase of about 10 percent over the current charge--results in an increase of 0.05 mills a kilowatt hour, which is less than 1 percent of the total cost of nuclear power.

The assumptions used in AEC's computation of the price for separative work are significant because a change in any one of a number of the assumptions could result in a significantly different unit price. For example, a change in the debt-equity ratio from 50-50 to 70-30 with all other assumptions remaining the same would result in a price of separative work of $26.10, or $2.60 below the proposed price. A debt-equity ratio of 30-70 would increase the price by $2.90 to $31.60. (See apps. V and VI for the range in prices which can be obtained depending on the commercial financial structure used.)

The unit price of separative work is more sensitive to some of the assumptions than others. Also, the stability of some of the items is affected by economic conditions and trends much more than others.

A comparison of the cost components of the original $26 unit price, a possible price of $28 based on existing criteria, and the proposed $28.70 price based on the proposed criteria follows.

	Existing unit price of $26 (note a)	Possible price of $28 on existing criteria (note b)	Unit price of $28.70 under proposed criteria (note c)
Power	$10.91	$12.35	$10.82
All other operating costs	3.86	3.90	1.82
Depreciation	3.65	4.80	4.02
Interest on debt at 7%	-	-	2.18
Carrying charge on uranium inventory	-	-	.80
Government interest on investment	4.08	3.35	-
State and local taxes, etc.	-	-	1.60
Allowance for Federal income taxes	-	-	3.73
Return on equity at 12%	-	-	3.73
Contingency	3.50	3.60	-
Total	$26.00	$28.00	$28.70

[a]Based on projected Government costs in existing plants over a campaign of FY 1966 through FY 1975; interest on investment including preproduction inventories at 5%; plus a 15% contingency.

[b]Based on 1970 projected Government costs on existing plants over a campaign of FY 1971 through FY 1980; interest on investment including preproduction inventories at 5%; plus a 15% contingency.

[c]Based on estimates of average costs in a new plant with an 8,750,000 separative work unit capacity; a 25-year plant life; and assuming commercial operations with 50-50 debt-equity financing; 7% interest on debt; 12% return on equity; and payments of Federal, State, and local taxes.

FINANCIAL GROUND RULES

In an attempt to implement the President's announcement of operating the uranium enrichment facilities in a manner which approaches more closely a commercial enterprise, AEC developed a set of financial ground rules to establish a basis for determining a unit price for separative work. The assumptions which, in our opinion, are the most critical in terms of sensitivity and stability are discussed below.

Debt-equity ratios

AEC used a ratio of 50-percent debt and 50-percent equity as reasonable for the conceptual plant. Since the enriching enterprise is not directly comparable to any particular segment of commercial industry, substantial judgment is involved in establishing an acceptable and reasonable ratio.

Although it is important that the ratio bear a close proximity to reality because of the significant impact on the price of separative work, we did not attempt to debate which segment of industry--and accordingly, which debt-equity ratio--may be most appropriate. Rather we examined into a range of ratios to determine the sensitivity of the unit price to a change in the ratio.

The table below shows the range of prices which can be obtained by changing the debt-equity ratio and leaving all other assumptions the same.

Debt-equity ratio	Price per unit of separative work
90-10	$24.60
70-30	26.10
60-40	27.40
50-50	28.70
30-70	31.60

As demonstrated by the table, a variation in the debt-equity ratios, i.e., 50-50 to 70-30, results in a unit price change of $2.60, or almost 10 percent less than the $28.70 unit price, and 50-50 to 30-70 would increase the price by $2.90 to $31.60.

Posttax return on equity and interest on debt

AEC used a rate of return on equity of 12 percent after taxes and an interest rate of 7 percent on debt in its calculation of the unit price of $28.70 for separative work. These rates, respectively, were based on the average rate of return on equity for all manufacturing corporations for calendar years 1968 and 1969 and on the average yield experienced on long-term commercial borrowings during 1968 and 1969 for high-grade bonds.

We do not question the appropriateness of the bases or of the assumptions used; however, to illustrate the ease with which different bases could have been used and, in our opinion, equally as justifiable as the bases AEC has used, we obtained the following information.

We found that, for return on equity, the median return on invested capital for large chemical companies for 1968 and 1969 was 9.7 percent and 9.9 percent, respectively. The median return on invested capital of the 500 largest industrial corporations for 1968 and 1969 was 11.7 percent and 11.3 percent, respectively, and the industry medians ranged from 8.3 percent for textile companies to 17.9 percent for pharmaceutical companies in 1968 and from 7.9 percent to 19.1 percent in 1969. (See app. VII.) Similarly, the average rate of return for the top 50 public utilities (in terms of amounts of assets) for 1969 was 10 percent. (See app. VIII.)

With respect to interest on debt, we determined the monthly debt yields on certain triple A bonds since January 1968. Since that time the yield has ranged from a low of 5.97 percent in September 1968 to a high of 8.11 percent in May 1970.

We believe it important to recognize the effect that a change in these assumptions could have on the unit price. The tables below illustrate the variations in the unit price of separative work that would result by a change in the rate of return on equity or interest on debt with all other assumptions remaining constant.

Effect of a Change in Rate of Return

Rate of return	Price per unit of separative work
10	$27.10
12	28.70
13	29.60

Effect of a Change in Interest on Debt

Interest rate	Price per unit of separative work
6	$28.30
7	28.70
8	29.20

CONCEPTUAL PLANT

In calculating a unit price of $28.70 for separative work, AEC used as the conceptual plant a new gaseous diffusion plant, which would be separate from the three existing plants and would incorporate technology anticipated to be available in 1975. Other assumptions used for the plant were:

Annual capacity--8,750,000 units of separative work.
Capital investment--$880 million (in 1970 dollars).
Power usage, annually--2,400 megawatt hours.
Power cost--4.5 mills per kilowatt hour.
Operation and maintenance (excluding power), research and development and process support--$16 million annually.
Amortization period--25 years.

During public hearings before the Joint Committee on Atomic Energy on June 16, 1970, AEC set forth its reasons for establishing a charge for enriching services based on a new plant.

"The concept of a new plant was selected as the basis for the charge rather than the operation of the existing plants. There are several reasons for preferring the new plant method. The existing diffusion plants were designed and constructed to meet national defense requirements which involve highly enriched uranium 235. The requirements of the civilian nuclear power industry, however, are primarily for uranium enriched to only a few percent in the U-235 isotope. Since military requirements and stockpiles have largely been satisfied, the bulk of future production will be the low assay uranium to be used in the light water reactors now being constructed and operated in large numbers for civilian power purposes. We would expect, therefore, that any new diffusion plant built to provide needed additional capacity would, accordingly, be tailored to slightly enriched uranium as its product. By basing our enrichment charge on such a new plant, we can better provide assurance of comparability with the

estimated charge for enrichment from such new plants as they may be constructed in the future. Secondly, the existing plants are now being operated at about 40 percent of their nominal capacity as a result of the substantial reductions in defense requirements. On the other hand, if enrichment capacity had been constructed to meet only the civilian market, it would be installed in accordance with the growth in demand, such that a high utilization of the investment would be achieved. In considering how to use the existing plant and its costs in the development of a charge, there can be honest differences of opinion as to appropriate charges to be included for depreciation and interest when it is operating well below capacity. Thirdly, operating schedules for the existing plants have to date been developed to approach the optimum on the basis of incremental costs and the cost of money to the Government. They involve the programming of substantial amounts of preproduction in the interest of minimizing long-term costs. Conversion to a mode of operation more representative of commercial industry would introduce a number of questions concerning how best to treat the costs of preproduction. For example, decisions made in the past, on the basis of the Government costs of money, for the procurement of electric power could penalize the financial performance of the enterprise since different decisions would have been reached if commercial financing rates had been assumed. These various complications can be avoided by basing the charge on a new enrichment plant rather than the existing one."

The unit price to be charged for separative work in a conceptual gaseous diffusion plant will be affected by the level of technology incorporated in the plants, as well as other assumptions regarding the capacity, amortization period, capital cost, and operating costs. These latter assumptions and their effect on the unit price of separative work are discussed below.

Annual capacity and amortization period

AEC assumed the annual capacity of the conceptual plant to be 8,750,000 units of separative work and based the estimated price for separative work on this capacity. In addition, AEC assumed that the conceptual plant should be amortized over a 25-year period. The effect of both of the assumptions on the price of separative work is shown in the following table.

Amortization period--years	Unit price for separative work: 8,750,000 units a year plant	Unit price for separative work: 17,500,000 units a year plant
15	$30.78	$26.48
20	29.40	25.40[a]
25	28.70	24.90

[a]Interpolated.

AEC assumed that the conceptual plant would operate at 100 percent capacity all of the time. While AEC has had an excellent record of operating the existing plants under Government ownership, the following table illustrates the effect a change in the percentage of operating capacity would have on the unit price of separative work.

Percentage of capacity	Unit price for separative work
100	$28.70
90	30.50
80	32.99
60	40.04

We believe it important to note that in fiscal year 1969 AEC estimated that expansion of the existing gaseous diffusion plant at Paducah, Kentucky, to provide additional capacity of 8,750,000 separative work units would require a capital outlay of about $570 million (comparable new plant capital costs at that time were $780 million). Also, such an expansion of the existing plant would result in a unit cost of separative work of $3 less than the estimated unit cost of separative work from a new gaseous diffusion plant.

Both alternatives--expansion and new construction--were based on the use of projected 1975 technology and identical financial ground rules.

With respect to the amortization period of 25 years, there is little question as to the capability of the plant to last 25 years on the basis of AEC's experience to date. A composite life of 33 years is used for depreciating the existing plants. There appears to be some question, however, as to whether the demand by domestic and foreign sources on the existing diffusion plants will remain high enough for the next 25 years to fully support the existing diffusion plants as well as any new diffusion plants. The reasons for the questionable future demand for such enriching services are (1) development of breeder reactors--AEC's target date is the mid-1980's, (2) possible development of an alternate process, such as gas centrifuge for enriching uranium, (3) achievement of plutonium recycle, and (4) the possibility of foreign enrichment plants being built.

Operating costs and capital investment

AEC assumed that power costs, which represent about 75 percent of the out-of-pocket costs of operating the diffusion plants, would be 4.5 mills per kilowatt hour and that the capital investment in a new plant (in 1970 dollars) would be $880 million. A change in the cost of electric power has a relatively significant impact on the price of a unit of separative work. A change of one-half mill in the cost would change the unit price of $28.70 as shown below.

Power cost (mills per kilowatt hour)	Price per unit of separative work
4.0	$27.29
4.5	28.70
5.0	29.62

The 4.5 mills per kilowatt hour is roughly equivalent to the average power cost presently being incurred at the existing diffusion plants. The cost of power from the major suppliers for the existing gaseous diffusion plants during the first half of fiscal year 1969 ranged from 3.966 mills per kilowatt hour to 4.295 mills. We have been

advised that by 1979 costs of power from one supplier could be reduced to 3.5 mills per kilowatt hour and from another supplier could be as high as 4.5 mills.

AEC estimated that the capital investment in a new plant would be $880 million (in 1970 dollars). Significant changes in the estimated cost of a new plant could have an impact on the unit cost of separative work. In a report dated March 1969, AEC estimated that the capital investment for an 8,750,000 unit plant using 1975 technology would be $780 million in 1968 dollars. AEC's calculation of an $880 million investment for the conceptual plant is based on escalating the 1968 total of $780 million at a rate of 6 percent a year.

The table below illustrates the effect an increase in the estimated capital investment in a new plant would have on the unit price of separative work.

Capital investment (millions)	Unit price for separative work
$880	$28.70
933	29.66
989	30.62

CHAPTER 5

COSTS OF PROVIDING ENRICHING SERVICES

AEC's price of $26 a unit of separative work was established in 1967 on a basis that would ensure recovery of appropriate Government costs projected over a number of years. Because of cost escalation and lower operating levels than anticipated, it now appears that the $26 price will not be adequate to recover Government costs over the 10-year period through fiscal year 1975; therefore, we believe that a price increase is needed to ensure recovery of appropriate Government costs.

On September 21, 1967, AEC announced that the actual charge for enriching services should be $26 a unit of separative work. The $26 charge was based on the results of studies which projected operations at various levels of production into future periods. These studies were made using a set of basic assumptions to determine the effect that changes and refinements would have on the cost of operating the diffusion plants.

At the request of the Joint Committee, we made a review of the bases used to establish the $26 price, and, in a report to the Chairman dated September 25, 1967 (B-159687), we stated that:

> "We believe that, on the basis of our selective review of the Commission's studies in which we accepted the Commission's projections as being reasonably realistic, the charge of $26 per unit of separative work based on the 0.2 percent tails assay is adequate to permit recovery of appropriate Government costs projected over a number of years and is consistent with the Commission's criteria published in the Federal Register on December 23, 1966. Further, considering that the charge also provides a margin for contingencies, we do not see a basis for asserting that a subsidy is being provided to the domestic or foreign nuclear industries, or any portion thereof."

"Pursuant to the provisions of the criteria, the Commission has reserved the right to revise the actual charge, within the guaranteed ceiling charge, upon 6 months' prior notice. The Commission has stated that it intends to periodically update its projections and operational planning and will consider such changes as may be indicated by actual production and marketing experience. Therefore, should a material change develop in future years, which would have a consequential effect on the reasonableness of the then applicable charge, we believe that the Commission should make any necessary adjustments to its charge within the established ceiling charge to give effect to changing circumstances."

As of June 1970 escalation of electric power and labor costs had increased the ceiling charge by $2.85. Production levels have been lower than forecasted by AEC during fiscal years 1968-70, which also contributed to increasing the average unit cost for separative work.

INCREASE IN COST OF SEPARATIVE WORK

AEC initiated the commercial enrichment program in 1966 when it began preproduction of enriched uranium for nuclear power reactors. Under provisions of the Atomic Energy Act of 1954, AEC could not provide uranium enrichment services commercially prior to January 1, 1969; however, it was authorized to and did execute contracts with domestic licensees and foreign entities prior to that date. AEC anticipates that, through the early 1970's, its annual production will exceed sales of enriched uranium and thereby increase the inventory of preproduced uranium and that, from about 1975 to 1980, sales are expected to exceed production. During this period the preproduced inventory along with improvements in plant capacity will be required to meet the increased demand for enriched uranium.

A comparision of AEC's original forecast of production rates and cost with the actual production rates and cost for fiscal years 1967-69 and with the current forecast of these factors for fiscal years 1970-75 shows that the total number of units of separative work produced and currently

forecast to be produced is expected to be less than AEC's original forecast. As a result of the lower production rates, AEC expects that the average unit cost will be higher than forecasted.

Fixed costs, such as depreciation and interest on plant investment, are a significant part of the total cost of providing enriching services. Accordingly, fixed costs have a greater impact on average unit costs at lower production levels, which, together with increased cost of electricity and labor, account for the higher unit costs of producing separative work. Also, according to AEC, operating costs of the diffusion plants are less per unit of separative work when operating at full capacity of about 17 million separative work units than at the current level of about 6 million units annually.

Escalation of costs is an important element in determining the unit cost of separative work--particularly for electric power which represents about 75 percent of the out-of-pocket costs of operating the gaseous diffusion plants. The criteria provide, however, for increases in the ceiling charge for escalation of electric power and labor costs.

The change in production and costs is depicted in the following table which shows operating experience during the period July 1, 1967, to March 31, 1970. The average costs shown do not include interest on preproduction inventories.

	Fiscal year 1968	Fiscal year 1969	First 3 quarters of fiscal year 1970
Operating costs:			
Power	$11.21	$11.55	$11.96
Other	3.56	5.08	6.10
Depreciation	3.95	3.95	3.94
Added factor (note a)	5.24	6.50	6.82
Full cost	$23.96	$27.08	$28.82
Megawatt hours of electricity used	23.6 million	18.6 million	11.9 million
Separative work units produced	8.9 million	7.0 million	4.6 million

[a]Includes interest, administration, and research and development costs.

The average unit cost for the above 33-month period excluding interest on the preproduction inventories was $26.12. The table does not include cost figures for fiscal years 1966 and 1967 because they are classified.

The increase in unit costs of production was due to escalation of costs as well as to decreases in the level of production. Beginning in fiscal year 1971, AEC began to increase its power levels and will thereby increase its production of separative work. AEC expects that, as power levels continue to increase, the average unit cost of separative work will decrease because of resulting increases in production levels. On the basis of the current forecast, however, it does not appear that such decreases will be sufficient to fully offset cost increases caused by escalation.

In the original study supporting the unit price of $26, AEC estimated that, for the 10-year period from fiscal year 1966 through fiscal year 1975, the accumulated amount in the reserve for contingency would total more than $300 million. AEC's actual experience to date, together with its current forecast through 1975, indicates that the cost for the 10-year period will exceed revenues by about $160 million. If a longer period were used, say 15 years, to 1980, revenues would exceed costs by about $90 million because of the anticipated increased production and sales.

In the original study supporting the $26 price AEC used a 5-percent interest rate in its computations. At our request AEC recomputed the estimated costs of production for the period 1966-75 using its current forecast and the following varying interest rates:

Interest on investment--2.7 percent (based on the average Government rate in effect during the period the diffusion plants were built, 1949-55).

Interest on preproduction, 1966-70--4.7 percent.

Interest on preproduction, 1971-75--7 percent.

These rates were selected by us as being representative of the cost of the Government's investment. Using these rates, the costs of separative work would be about $200 million less than under AEC's original study for the 1966-75 period.

Following is a comparison of AEC's original cost estimates with (1) its current estimate and (2) the estimated cost using the varying interest rates shown above.

Fiscal year	Average unit cost: Original estimates 5% interest	Average unit cost: Current estimates 5% interest	Average unit cost: Varying interest rates
1968	$23.76	$24.84[a]	$22.88
1969	24.56	28.58[a]	25.37
1970	25.73	30.94	27.98
1971	23.04	29.32	26.07
1972	22.93	27.42	24.55
1973	21.38	26.71	24.23
1974	20.70	26.87	24.17
1975	20.22	26.05	23.40

[a]Actual

Projecting the production costs over longer time periods, such as through 1980, would show further decreases in unit costs. For example, through 1980 the case in the enclosure to AEC's letter to the Joint Committee dated June 10, 1970, (see p. 8 of app. II) shows an average unit cost of $24.40, excluding the $3.60 contingency, for the period 1971-80, using a 5 percent interest rate. The projections take into consideration the estimated benefits during 1975 to 1980 from the cascade improvement and cascade power uprating programs and anticipated increases in the demand for separative work. It should be noted that, although it is important to consider the possible effects of long-range forecasts of production rates and costs, the precision of projection decreases with longer periods of time resulting in greater uncertainties involved in such projections.

We believe that, because costs for the 10-year period ending in 1975 are estimated to exceed revenues by about $160 million, a price increase is needed to ensure recovery of appropriate Government costs over the original period.

The proposed price increase of $2.70 a unit would be expected to result in additional revenues totaling about 80 to 85 percent of the amount projected as a loss under the $26 price through 1975. For the period 1970-80, the $28.70 price is estimated to result in sufficient revenues to provide for recovering Government costs including an estimated amount for contingencies.

CHAPTER 6

SCOPE OF REVIEW

Our review was performed at AEC Headquarters in Germantown, Maryland, and was directed toward (1) ascertaining the legality of the proposed amendment to the criteria, (2) comparing the existing criteria with the proposed criteria, (3) evaluating the increase in price of a unit of separative work, and (4) analyzing the specific assumptions upon which the new price is based.

We reviewed the legislative history of the Private Ownership of Special Nuclear Materials Act (Public Law 88-489). In addition, we obtained the views of various AEC personnel knowledgeable of, and responsible for, operation of the diffusion plants.

At the request of the Joint Committee on Atomic Energy, and as part of our review, we requested AEC to perform certain studies to determine the sensitivity of some of the assumptions used in arriving at a new price for separative work. The studies we requested are listed in appendix VI and depict the range in prices which can be obtained depending on the commercial financial structure used.

APPENDIXES

Congress of the United States

JOINT COMMITTEE ON ATOMIC ENERGY

WASHINGTON, D.C. 20510

June 15, 1970

Honorable Elmer B. Staats
Comptroller General of the
United States
Washington, D. C.

Dear Mr. Staats:

By letter dated June 10, 1970, the AEC submitted to the Joint Committee on Atomic Energy in accordance with section 161 v. of the Atomic Energy Act of 1954, as amended, proposed amendments to the Uranium Enrichment Services Criteria. The Act requires, in general, that such amendments lie before the Joint Committee for 45 days while Congress is in session before becoming effective. The AEC also advised the Committee that, pursuant to the amended criteria, the charge for uranium enrichment services would be increased from $26.00 to $28.70 per unit of separative work.

On June 12, the Joint Committee announced a public hearing to be held on June 16 on these proposed amendments and the increase in the price of separative work resulting therefrom. These matters are of major importance to the entire nuclear power industry and to the public at large. Accordingly, the Committee would like the General Accounting Office to review the proposed amendments, the increased price, and the specific assumptions upon which the new price is based in detail and to furnish us with a report thereon.

The staffs of the Joint Committee and the General Accounting Office have already met informally to review in general the AEC proposal. We have asked your office to appear at the June 16 hearing to present preliminary views on those aspects of the proposal which are

deemed worthy of specific inquiry and analysis. It is our hope that such testimony will assist in delineating the major issues involved in order to assist the Committee, the industry, and the public. It may be necessary for our staffs to meet again informally in order to reach more definite conclusions concerning the scope of your review.

To be of maximum benefit to the Committee, it is requested that your report be made available by July 17, 1970. In this connection, I would be agreeable to a departure from your usual procedure of including the AEC comments in your report if you believe such action would facilitate submission of your report to the Committee by the requested date.

Your assistance in this important matter is greatly appreciated.

Sincerely yours,

Chet Holifield

Chet Holifield
Chairman

COPY

UNITED STATES

ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

JUN 10 1970

Honorable Chet Holifield
Chairman
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Holifield:

You are familiar with the decision of the President, announced on November 10, 1969, that the Atomic Energy Commission is to operate its uranium enrichment facilities in a manner which approaches more closely a commercial enterprise. Pursuant to this request, the Commission has been studying possible bases upon which the enrichment service charge could be established which would best meet the criterion of comparability to a commercial operation. As an outcome of these studies, it has been determined that the most appropriate basis for setting the enriching charge in the future and meeting this criterion is the estimated cost of separative work from a new enriching plant utilizing advanced technology and designed and operated for the primary purpose of meeting civilian nuclear power requirements.

This change in the basis for the establishment of an enriching charge by the Commission requires amendment to the Uranium Enrichment Services Criteria, at Section 5, paragraph (c). Attachment "A" is the amendment to the Criteria which has been developed to effectuate this change. This amendment to the Criteria is herewith submitted to the Joint Committee on Atomic Energy for its review pursuant to Section 161.v of the Atomic Energy Act of 1954, as amended.

While the basis for the enriching charge is to be changed under the revised Criteria, we are making no change in the

Honorable Chet Holifield

present ceiling charge for enrichment services. You will recall that this ceiling was established at $30 per kilogram unit of separative work, subject to upward escalation for the cost of electric power and labor. By maintaining the current ceiling charge provisions, our domestic and foreign customers can continue to have the same assurances as to price in their long-term enrichment services contracts.

It has further been determined that the charge for enriching services on the basis of the amended Criteria will be set at $28.70 per kilogram unit of separative work. The specific financial basis for this charge is presented in Attachment "B". Upon establishment of the amended Criteria, the Commission will announce this charge by publication in the Federal Register. The new charge will go into effect 180 days after such publication, in accordance with paragraph 5.(j) of the Criteria.

The majority of the Commissioners support this change in the Criteria and the new enrichment charge of $28.70 per kilogram unit of separative work. The separate views of Commissioner Ramey are explained in Attachment "C".

We would be pleased to provide any further information in this connection as the Committee may require.

Cordially,

/s/
Chairman

Attachment "A"

REVISION OF URANIUM ENRICHMENT SERVICES CRITERIA

Section 5 - General Features of

Standard Domestic Contracts

Para. (c) - Charge for Enriching Services:

Subpara. (1) - No change.

Subpara. (2) - The Act requires that such charges provide reasonable compensation to the Government. In recognition of the commercial nature of the primary market to be served, and of the fact that the existing facilities were constructed primarily for non-commercial markets, AEC's charge for enriching services will be established at the level estimated to be equivalent to the charge for separative work performed in new uranium enrichment facilities designed, constructed and operated primarily to meet commercial markets, using debt-equity ratios, rates of return on investment, and appropriate allowances for Federal Corporate income taxes, state and local taxes and insurance deemed by the Commission to be appropriate for a private industrial enriching enterprise.

Subpara. (3) - AEC will review periodically the charge for enriching services on the basis of: (a) updated projections of the cost of separative work produced in a new enriching plant, and (b) the cost of money in the private sector of the economy. As a result of such reviews, AEC will make any appropriate revisions in the charge for enriching services in accordance

with subparagraph 5.(c)(2), but within the limitations of subparagraph 5(d).

Attachment "B"

Assumptions Used as Basis

for Enrichment Charge of $28.70

Plant - A new gaseous diffusion plant, constructed at a separate site and incorporating technology anticipated to be available in 1975.

Capacity	- 8.75 million kg. S.W./yr.
Investment	- $880 million (1970 dollars)
Power Usage	- 2400 MW
Power Cost	- 4.5 mills/Kwhr.
Operation & Maintenance (excluding power); R&D and Process Support	- $16 million/yr.

Financial

Debt/Equity Ratio	- 50/50
Post-tax Return on Equity	- 12%
Interest Rate on Debt	- 7%
Amortization Period	- 25 years

Attachment "C"

UNITED STATES

ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

JUN 10 1970

W. B. McCool, Secretary

COMMENTS ON PROPOSED AMENDMENT OF
URANIUM ENRICHMENT CRITERIA

AEC 459/117, which was approved at Commission Meeting 2422 on Wednesday, June 10, 1970, revises the Criteria upon which the Commission establishes the charge for separative work and establishes a new charge based on the revised Criteria. (The original charge of $26/SWU was formalized at a Commission Meeting on April 26, 1967 on the basis of the Criteria which were formally established on December 23, 1966.) This revision to the Criteria requires that the charge for separative work be developed under assumptions of privately financing the construction and operation of a new uranium enrichment plant, as might be appropriate for a private industrial enterprise, and results in an increase in the current $26/SWU charge to $28.70. This approach was tentatively approved by the Commission at Information Meeting 1030 on May 22, 1970. In this memorandum for the record, I am setting forth my reasons for dissenting from the Commission's tentative approval on May 22 and final approval on June 10, 1970, of these changes.

While I recognize that the Commission worked diligently to achieve an accommodation of various objectives and factors, I cannot agree with the new Criteria and charges for the following reasons:

a. I believe the provision in the existing Criteria to "assure recovery of appropriate Government costs over a reasonable period of time" is a better basis for establishing the charge

for separative work than hypothetical commercial criteria. Since the gaseous diffusion plants were built with Government money to supply Government needs and will continue to be operated by the Government for the foreseeable future, it does not seem to me appropriate to amend the Criteria to reflect hypothetical non-Governmental factors. Such a change would negate the flexibility now available under Section 161.v of the Act, and unnecessarily prematurely head us in the direction of disposition of the diffusion plant facilities. While I believe we should in good faith keep the prospect of disposition in mind, I believe we should remain flexible during this period.

The new Criteria could necessitate even higher prices for uranium enrichment in future years and thus could impede the growth of the nuclear power industry during this period of tight money, high interest rates and growing shortages of electrical power reserves.

In addition, it seems rather incongruous to set up these hypothetical commercial criteria against which AEC will be measured and held responsible when, despite such a revision, AEC will still lack the authority to budget and operate like a corporation in obtaining and using funds from revenues and issuing bonds.

I would be agreeable to maintaining separate uranium enrichment accounts, based on Government costs, for use in reporting the financial condition and the results of toll enriching operations, and the use of supplemental statistical tables as indicators of the probable financial results under assumptions of private financing.

b. My preference is to maintain the charge for separative work at the present $26/SWU under the existing Criteria. Staff analyses indicate

that a charge of $26/SWU, including a 15% contingency, can be maintained if costs for the existing plants are averaged over a 15-year period. Attachment I provides the details of this calculation.

The original 10-year period of FY 1966-1975 and a 10-year period from 1970 to 1980 cover periods of low utilization of these facilities and the 1970 to 1980 period would also reflect the effects of high interest rates. A 15-year period on the other hand would be characterized by a more advantageous period of full power utilization and hopefully more reasonable interest rates.

Looking at the demand for U-235, it appears there will certainly be a need for these facilities for 15 years and their useful life will probably extend for such a period.

c. As I indicated during Commission consideration of this matter, I would be agreeable to establishing an enrichment charge of $28/SWU - if it were developed under the existing Criteria utilizing the shorter time period, i.e., 10 years, and recognizing the lesser amount of separative work produced during the period. This calculation is also illustrated in Attachment I. Such a charge could also be supported based on projected costs over the FY 1971-1980 period excluding a specific contingency allowance but including interest at 9%, a rate well above the very high rates currently being experienced and near the BOB specified 10% median rate to be used in AEC analyses. A charge in the $28 range could be related to commercial financial criteria in the supplemental statistical table mentioned in a. above.

d. If it is determined that the Criteria must be amended to provide a commercial basis, I recommend that a high debt to equity financial

structure, looking to disposition to one or more private and publicly owned utility consortia as suggested by Mr. Philip Sporn, be considered as the basis for determining the charge for separative work.

/s/
James T. Ramey
Commissioner

Attachment:
Projected Unit Charge for
Separative Work - $/SWU

Attachment I

June 4, 1970

PROJECTED UNIT CHARGE FOR SEPARATIVE WORK - $/SWU
(5% Government Financing)

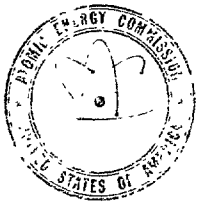
	Cost Averaging Campaign Period[1]	
	1971 - 1980	1971 - 1985
Power[2]	$11.90	$10.80
All Other Operating	3.10	2.60
CIP-CUP[3]	2.00	3.00
Depreciation[4]	3.60	3.20
Added Factor[4]	3.80	3.30
Base Unit Cost	$24.40	$22.90
Contingency	3.60	3.10
Unit Charge	$28	$26
Separative Work (MTSWU)	178,000	312,000

1/ Cost components of base unit cost individually include the interest on preproduction.

2/ For existing plant, unimproved, at 4.37 m/kwh. See also note 3.

3/ Separative work produced from cascade improvements is charged in at $13.70/SWU which recovers all costs associated with cascade improvements (including CUP power at 4.5 m/kwh) by 1990.

4/ Adjusted by the Conway formula.



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

JUL 1 1970

Mr. Paul G. Dembling
General Counsel
U.S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Dembling:

This is in response to your letter of June 19, 1970, which discusses: (1) the revision of our Uranium Enrichment Services Criteria which the Commission intends to establish and which, in accordance with Section 161 v. of the Atomic Energy Act of 1954, as amended, has been submitted for review by the Joint Committee on Atomic Energy (JCAE); and (2) the charge which the Commission intends to establish pursuant to this revision. You have requested our views on the legality of the proposed charge and any comments we may wish to offer regarding this matter.

The enclosed Opinion of our General Counsel concludes that the revision of the Uranium Enrichment Services Criteria and the associated charge will, upon establishment, be legally valid under Section 161 v. of the Atomic Energy Act of 1954, as amended. It further concludes that the Criteria need not contain specific references to the intent stated in the JCAE Reports: that the Commission "consider not only the Government's cost in providing enrichment services but also the national interest in the development and utilization of nuclear power." Rather, the Opinion considers that these are guidelines which were intended to be considered in any event by the Commission in establishing charges that provide reasonable compensation, regardless of whether they are repeated in the Criteria.

Your letter states that the charge for enrichment services which the Commission intends to establish appears not to be based on the cost to the Government of providing such services. Neither the Act itself, nor the Congressional intent, requires

that the charge be based solely on the Government's cost. Rather, they provide flexibility as to the basis for the charge, requiring only reasonable compensation and the consideration of two guidelines, the Government's cost in providing enrichment services and the national interest in the development and utilization of nuclear power, in arriving at a charge.

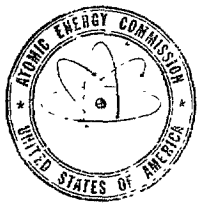
The Commission utilized these guidelines in the formulation of the present and the revised Criteria and will continue to consider them in its implementation of the Criteria. On the basis of our analysis, we consider that application of the revised Criteria will recover the Government's projected costs in providing enrichment services. Should the revised Criteria because of changed circumstances present the possibility that their application would not afford full recovery of the Government's projected costs, the Commission would consider whether it would be appropriate to revise the Criteria or whether it is in the national interest in the development and utilization of nuclear power to retain them even though full cost recovery might not be achieved.

Finally, it is our view that reasonable compensation may be based on "value" as well as cost, and a logical basis for determining the "value" of enrichment services from the present plants is the cost of similar services in new facilities established on a commercial basis.

We shall be pleased to provide any further assistance you may require.

Sincerely,

Chairman



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D C 20545

July 2, 1970

LEGAL VALIDITY OF REVISED
URANIUM ENRICHMENT SERVICES CRITERIA
AND CHARGES

On June 11, 1970, the Commission submitted to the Congressional Joint Committee on Atomic Energy under section 161v. of the Atomic Energy Act of 1954, as amended (hereinafter the "Act") its proposed revision of that part of the uranium enrichment services criteria previously established in 1966 having to do with the basis for the charge for the enriching service. The revised criteria provided for establishment of the enrichment charge as that estimated for separative work performed in new uranium enrichment facilities designed, constructed, and operated primarily to meet commercial markets and postulating debt-equity ratios, rates of return on investment, and allowances for taxes and insurance as deemed by the Commission to be appropriate for a private industrial enriching service. In my opinion the proposed revision to the criteria and the charge proposed to be established in accordance therewith would be legally valid under section 161v. of the Act.

Section 1 of the Act declares it "to be the policy of the United States that--

* * *

> "b. the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise." (emphasis added)

Consistent with the above declaration of purpose, the Commission's letter of March 15, 1963, forwarding its draft private ownership of special nuclear materials legislation (which, with certain changes made by the Joint Committee on Atomic Energy after hearings, was enacted into law as the Private Ownership of Special Nuclear Materials Act of 1964, Public Law 88-489), contained the following statement as one of the major intended effects of the proposed legislation:

> "2. It would allow and eventually require electric utilities to obtain nuclear fuel under more nearly the same economic conditions that apply to coal, oil, and natural gas and would thus permit a more realistic comparison of commercial aspects of nuclear and conventional power. Competitive nuclear power cannot really be demonstrated until normal economic factors relating to ownership and use of nuclear fuels exist."1/

During the testimony on July 30, 1963, at the hearings on this proposed legislation Commissioner Robert E. Wilson stated that a major advantage of the legislation would be that:

> "It would allow, and eventually require, electric utilities to obtain nuclear fuel under conditions comparable to those for other fuels, and would thus permit a more realistic comparison of the true competitive aspects of nuclear and conventional power."2/

In its report recommending passage of the proposed private ownership amendment (Senate Report No. 1325 and House Report No. 1702, 88th Congress, 2nd Session, August 5, 1964) the Joint Committee stated at p. 9:

> "Private ownership legislation can thus assist in encouraging long-term planning for the development of nuclear power under conditions similar to those which obtain in the case of alternate sources of energy."

Among the amendments to the Act effected by the Private Ownership of Special Nuclear Materials Act was the addition of Subsection 161v. providing long-term contracting authority and specifying certain conditions under which the Commission would produce or enrich for others special nuclear materials in its facilities. The subsection specifies that prices for such services shall be "established on a nondiscriminatory basis" and "on a basis which will provide reasonable compensation to the Government." The subsection also requires that the

1/ Hearings on Private Ownership of Special Nuclear Materials Before the Subcommittee on Legislation of the Joint Committee on Atomic Energy, 88th Cong., 1st Sess. 189 (Comm. Print 1963).
2/ Ibid. p. 4.

Commission establish criteria in writing setting forth the terms and conditions under which services provided under this subsection shall be made available and that before the Commission establishes such criteria, the proposed criteria shall be submitted to the Joint Committee for a 45-day period unless the Joint Committee by resolution in writing waives the conditions of, or all or any portion of, such 45-day period.

In its report cited above, the Joint Committee, after mentioning on page 2 that the Commission's charge would be "based generally upon the cost of doing necessary processing or 'separative' work in the Government's diffusion plants", discussed in some detail on pp. 17-18 its concern with a possible situation in which a virtual or complete elimination of weapons requirements for enriched uranium, prior to the development of a large power reactor demand for such materials, might unduly increase the unit cost of separative work. It was concerned that such increased unit cost might impede the development of atomic power if prices were to be tied directly to full cost recovery. This point had been discussed during the 1963 hearings and came up repeatedly during the 1964 hearings on the proposed private ownership legislation. On page 18 of the report the Committee stated:

> "It is too early to predict with certainty the precise dimensions of this problem or the best method of solution. However, the statement in new subsection 161v., that charges for enrichment services shall be established on a basis which will provide 'reasonable compensation to the Government' is flexible. In arriving at this determination the Commission will have to consider not only the Government's costs in providing enrichment services but also the national interest in the development and utilization of nuclear power."

Although it is true that the above statements were made with specific reference to a possible need for the charge for enriching services to be lower than the Government's full costs, there is nothing in the report or in statements made at the hearings which would preclude the possibility of setting prices higher than the Government's full costs if this appeared to be in the national interest in the development and utilization of nuclear power. Indeed, in view of the above mentioned statement of purpose in section 1b. of the Act and of the other statements as to reasons for and advantages of the legislation all as set forth at the beginning of this opinion, it would seem fair to conclude that the Joint Committee provided a flexible pricing charter which could be adapted to fit whatever changing situation might develop.

The phrase "reasonable compensation" as used in subsection 161v. would, by the ordinary dictionary meaning of these words, clearly include the concept of charging more than full cost as well as less. The standard dictionaries include as alternate definitions of the word "compensation" the concept of "something that constitutes an equivalent" as well as "payment for value received or services rendered." The first of these alternate concepts can be eliminated since the language of the report clearly shows an intention that something less than cost to the Government might be established as a price. Also if "compensation" were used in the sense of equivalent or full cost recovery the word "reasonable" would not seem necessary or appropriate.

The second concept has been articulated by some courts in terms of a quid pro quo for services rendered.3/ Others have expressly distinguished "compensation" from "cost," holding that "'compensation' is a term of larger scope than 'cost,' and especially than 'actual cost'"4/ and that reasonable compensation includes a suitable return upon the capital invested.5/ Still other courts in a quantum meruit context have expressed that a recovery in quantum meruit is synonymous with a recovery of reasonable compensation for unjust enrichment6/ and that such an action includes a recovery of profits.7/

3/ Bingler v. Johnson, 394 U.S. 741, 757-8 (1969); Wilson v. United States, 135 F.2d 1005, 1009 (3d Cir. 1943).

4/ Mayor, etc. of City of Newton v. Boston & A.R. Co. et al., 172 Mass. 5, 51 N.E. 183 (1898)

5/ Boston and Worcester Railroad Corp. v. Western Railroad Corp., 80 Mass. 253 (1859); Metropolitan Railroad Co. v. Quincy Railroad Co., 94 Mass. 262 (1866); Metropolitan Railroad Co. v. Highland Street Railway Co., 118 Mass. 290 (1875); Cambridge Railroad Company v. Charles River Street Railway Co., 139 Mass. 454, 1 N.E. 925 (1885). All involve construction of statutes requiring railroads with interconnecting lines to render service to each other in return for reasonable compensation, Stats. 1845, c. 191, §2, amended by Stats. 1864, c. 229 and Stats. 1871, c. 381.

6/ Hillyer v. Pan American Petroleum Corp., 225 F. Supp. 425, 434 (N.D. Okla. 1963).

7/ Ferber Co. v. Ondrick, 310 F.2d 462 (1st Cir. 1962), cert. den. 373 U.S. 911; Central Steel Erection Co. v. Will, 304 F.2d 548 (9th Cir. 1962); Bignold v. King County, 399 P.2d (Wash.) 611, 617 (1965).

Under 39 USCA 6203(b) a railroad is "...entitled to receive fair and reasonable compensation..." for mail transportation service. We have been informally advised by the Interstate Commerce Commission that there have been no judicial decisions involving this section but that the Commission as a matter of long standing practice includes profit or return on investments in determining "fair and reasonable compensation" under this statute.

The above interpretation of the term "reasonable compensation" as it appears in Subsection 161v. is consistent with the basic statute defining Government-wide pricing policy, 31 USCA 483a, which imposes no "full cost recovery" limitation. On the contrary, it specifically prescribes "value to the recipient" as one of the factors (in addition to "direct and indirect cost to the Government" "public policy or interest served" and "other pertinent facts") for consideration by a Federal agency in establishing prices for services or other things of value. The statute provides in pertinent part:

> "It is the sense of the Congress that any work, service, publication, report, document, benefit, privilege, authority, use, franchise, license, permit, certificate, registration, or similar thing of value or utility performed, furnished, provided, granted, prepared, or issued by any Federal agency (including wholly owned Government corporations as defined in the Government Corporation Control Act of 1945) to or for any person (including groups, associations, organizations, partnerships, corporations, or businesses), except those engaged in the transaction of official business of the Government, shall be self-sustaining to the full extent possible, and the head of each Federal agency is authorized by regulation (which, in the case of agencies in the executive branch, shall be as uniform as practicable and subject to such policies as the President may prescribe) to prescribe therefor such fee, charge, or price, if any, as he shall determine, in case none exists, or redetermine, in case of an existing one, to be fair and equitable taking into consideration direct and indirect cost to the Government, value to the recipient, public policy or interest served, and other pertinent facts,... (emphasis added)8/

8/ Moreover, Congress has on occasion directed a federal agency to establish prices which would provide revenues in excess of costs. See 16 USCA 831 m. providing in pertinent part as follows:
(continued on page 6)

Bureau of the Budget Circular No. A-25 (re-issued September 23, 1959, superseding earlier versions), in prescribing Presidential policies for implementation of this statute by agencies in the executive branch, contains the following instruction in paragraph 3:

> "b. Lease or sale. Where federally owned resources or property are leased or sold, a fair market value should be obtained. Charges are to be determined by the application of sound business management principles, and so far as practicable and feasible in accordance with comparable commercial practices. Charges need not be limited to the recovery of costs; they may produce net revenues to the Government."

This officially promulgated, long-standing directive clearly evidences a statutory Government-wide pricing policy favoring, under appropriate circumstances, establishment of prices on a commercial basis so as to

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8/ (continued from page 5)

> ". . . It is declared to be the policy of this chapter that, in order, as soon as practicable, to make the power projects self-supporting and self-liquidating, the surplus power shall be sold at rates which, in the opinion of the Board, when applied to the normal capacity of the Authority's [TVA] power facilities, will produce gross revenues in excess of the cost of production of said power . . ."

See also 16 USCA 831 n-4(f) which provides in pertinent part as follows:

> "The Corporation shall charge rates for power which will produce gross revenues sufficient to provide funds for operation, maintenance, and administration of its power system . . . payments to the Treasury as a return on the appropriation investment pursuant to subsection (e) of this section . . . and such additional margin as the Board may consider desirable for investment in power system assets . . . and other purposes connected with the Corporation's power business, having due regard for the primary objectives of the chapter, including the objective that power shall be sold at rates as low as are feasible . . . ."

As of December 1969, the Tennessee Valley Authority had accumulated $643,911,000 in retained earnings from its power operations. Budget of the United States Government, 1971--Appendix, page 974.

produce net revenues to the Government over and above costs. Although B.O.B. Circular No. A-25 also enunciates a full cost recovery policy with respect to charges for Government-furnished "special services," this would impose no legal restriction on establishment of enriching charges by the Atomic Energy Commission under Subsection 161v. of its own organic statute.

Even as a matter of Executive Branch policy, the Circular A-25 cost limitation on charges for services does not appear inconsistent with the Commission's proposed amended criteria and charges for enriching services, since the type of services contemplated by A-25 (as illustrated by the ten examples specified therein) are entirely different in nature from enriching uranium, which involves a manufacturing process and delivery of an end product to the customer. The legislative history of the private ownership amendment and the actual facts of an enrichment transaction demonstrate that there was a legislative choice of treating the enrichment transaction as the furnishing of a service or the exchange of one product and a sum of money for another more valuable further processed product. The reasons favoring treatment of the function as a service appeared weightier and prevailed.

Under the authority of 31 USCA 483a (discussed above) and of the Atomic Energy Act of 1954, as amended, the Commission adopted in 1955 its uniform pricing policy (AECM, Chapter 1701) which starts out with the following general policy statement (AECM 1701-01):

> "Materials and services furnished by the AEC to others shall be priced at the higher of full-cost recovery or current commercial prices so long as these prices (a) will not discourage the use of such materials and services or the development of sources of supply of such materials or services for which the AEC is now the sole or main source, and (b) will not discourage research and development and the use of commercial products in the field of atomic energy application."

Under this uniform pricing policy, the Commission has established prices on bases other than full cost recovery, such as charging the commercial equivalent for the use of Government-owned facilities or equipment in performance by contractors of private, commercial work, in charging less or more than cost with respect to various radioisotopes, and in establishing prices for chemical processing of irradiated fuels on the basis of a conceptual plant. In connection with the latter, Congressman Saylor stated in floor debate on the Private Ownership of Special Nuclear Materials Bill:

"Mr. Saylor. * * *

"...The members of the Joint Committee on Atomic Energy have reported to us legislation which will eventually get rid of several of the subsidies involved in this program, after a transition period of several years. I want to compliment the Joint Committee on this action. It shows a determination to preserve fair competition, which is the cornerstone of the free enterprise system that has made America so strong. My congratulations, gentlemen.

* * *

"Mr. Speaker, one of the principal subsidies remaining in the atomic energy program, after enactment of the legislation now before us, involves the low price charged by AEC for enriching natural uranium...

"I am pleased to note, on page 18 of the Joint Committee's report on this bill, that the Joint Committee intends to follow this matter very closely in the years ahead. I believe that action should be taken in the near future to establish a realistic price which would be equivalent to that which would be charged if these plants were owned and operated by private enterprise. There is precedent for such procedure--precedent established by the AEC itself in establishing prices for fuel reprocessing on the basis of a 'conceptual plant.'" 110 Cong. Rec. 19518 (daily ed. Aug. 18, 1964).

I do not consider it necessary that the criteria contain specific reference to the legislative intent stated in the Joint Committee Reports that the Commission "consider not only the Government's cost in providing enrichment services but also the national interest in the development and utilization of nuclear power," since these are guidelines which were intended to be observed by the Commission in establishing charges that provide reasonable compensation whether or not they are repeated in the criteria. In this regard, it should be noted that while the criteria now in effect refer to the recovery of appropriate cost, they do not refer to the "national interest in the development and utilization of nuclear power." In formulating the present and the revised criteria, the Commission in fact did consider the Government's cost in providing enrichment services and the

national interest in the development and utilization of nuclear power. In its implementation of the criteria the Commission will have to continue to consider these guidelines and, in the unlikely event the application of the revised criteria because of changed circumstances present the possibility that their application would not afford full recovery of the Government's projected costs the Commission would have to consider whether it would be appropriate to revise the criteria or whether it is in the national interest in the development and utilization of nuclear power to retain them even though full cost recovery might not be achieved.

For the above reasons, it is my opinion that the amendments to the criteria submitted by AEC to the Joint Committee afford a basis which will provide reasonable compensation to the Government and the charges established in accordance therewith are legally valid.

Joseph F. Hennessey
General Counsel

COPY

FOR IMMEDIATE RELEASE NOVEMBER 10, 1969

Office of the White House Press Secretary

THE WHITE HOUSE

The President announced today that he has asked the Atomic Energy Commission to operate its uranium enrichment facilities as a separate organizational entity within the AEC, in a manner which approaches more closely a commercial enterprise. The facilities are located at Oak Ridge, Tennessee; Paducah, Kentucky; and Portsmouth, Ohio.

Although these facilities were originally developed for national defense purposes, national needs for enriched uranium are now largely commercial. Future Government requirements are expected to be relatively small. These facilities are currently operating at about 40% capacity. Commercial demand, however, is expected to rise and eventually require additional capacity.

The President's decision is based on his belief that the Federal Government's responsibility for uranium enrichment as the owner-operator of the nation's only enrichment facilities eventually should be ended. He believes that these facilities should be transferred to the private sector, by sale, at such time as various national interests will best be served, including a reasonable return to the Treasury.

Since the optimum time for this transfer will be sometime in the future, the President will not seek legislation at this time to authorize sale of the facilities to private industry. The establishment of a new entity, which will be an AEC Directorate will carry on the businesslike management of plant operations and will establish separate accounts fully reflecting commercial criteria for financial accounting.

So long as the Government is the sole source of enrichment services in this country, the President emphasized that it is essential that we continually assure an adequate supply

of enriched uranium for commercial and governmental users and to meet our foreign commitments.

Operations are to be funded by receipts from commercial sales and, as necessary, by annual appropriations. The Atomic Energy Commission has been directed to develop a detailed plan for implementing this decision.

Depending on the timing, sale of these plants could free Federal resources for more pressing national uses. Revenues from sale at an appropriate time would be considerable. In addition, $2 billion or more is expected to be needed over the next 10-15 years to expand plant capacity to meet increasing commercial demand.

AEC CASE STUDIES PERFORMED IN ARRIVING AT A NEW UNIT CHARGE OF $28.70 ON A COMMERCIAL FINANCIAL STRUCTURE FOR A NEW GASEOUS DIFFUSION PLANT

(Dollars per unit of separative work)

Debt-equity ratio	Debt-equity returns (percent)	Amortization-period (years)			
		15	20	25	30
50-50	8-13	31.90	30.60	30.00	29.80
	7-13	31.50	30.20	29.60	29.30
	6-13	31.10	29.80	29.20	28.90
	3-12	31.10	29.80	29.20	28.90
	7-12	30.80	29.40	28.70	28.40
	6-12	30.40	29.00	28.30	28.00
60-40	8-13	30.60	29.20	28.50	28.20
	7-13	30.10	28.70	28.00	27.70
	6-13	29.70	28.20	27.50	27.20
	8-12	30.00	28.50	27.80	27.50
	7-12	29.50	28.10	27.40	27.00
	6-12	29.10	26.70	26.90	26.50

Assumptions

1. 8,750,000 units of separative work annually in a gaseous diffusion plant at new site.
2. All costs in terms of 1970 dollars.
3. Initial capital investment--$880 million.
4. Power assumed available at 4.5 mills per kilowatt hour.
5. Accelerated depreciation.
6. 25-year capital amortization.
7. 1975 technology base.
8. Includes flywheel inventory equal in value to 2 months' separative work output of plant.

APPENDIX VI

GAO CASE STUDIES PERFORMED BY AEC TO TEST THE SENSITIVITY OF CERTAIN FINANCIAL GROUND RULES ON THE ESTIMATED ENRICHING CHARGE

(Dollars per unit of separative work)

Debt-equity returns	Debt-equity ratio 90-10	70-30	50-50	30-70
6-10	23.70	24.90[a]	26.70	29.10[a]
6-13	24.00	26.00[a]	29.20	32.80[a]
7-10	24.40	25.40	27.10	29.20
7-12	24.60	26.10	28.70	31.60
7-13	24.70	26.50	29.60	32.90
8-12	25.10[a]	26.60[a]	29.20	31.80[a]
8-13	25.50[a]	27.00[a]	30.00	33.00[a]
9-10	26.00	26.40[a]	27.90	29.40[a]
9-13	26.30	27.50	30.40	33.10[a]

Assumptions

1. 8,750,000 units of separative work annually in a gaseous diffusion plant at new site.
2. All costs in terms of 1970 dollars.
3. Initial capital investment--$880 million.
4. Power assumed available at 4.5 mills per kilowatt hour.
5. Accelerated depreciation.
6. 25 year capital amortization.
7. 1975 technology base.
8. Includes flywheel inventory equal in value to 2 months' separative work output of plant.

[a]Due to time limitation case studies were not performed to obtain these figures but rather a formula provided by AEC was used together with interpolation. AEC agreed that the figures were reasonably representative.

THE INDUSTRY MEDIANS RETURN ON INVESTED CAPITAL OF THE 500 LARGEST INDUSTRIAL CORPORATIONS (note a)

	1969	1968
Pharmaceuticals	19.1%	17.9%
Soaps, cosmetics	15.5	16.9
Measuring, scientific, and photographic equipment	13.7	13.0
Tobacco	13.2	14.7
Mining	12.1	16.8
Farm and industrial machinery	11.9	12.2
Apparel	11.9	13.0
Office machinery (includes computers)	11.7	11.3
Appliances, electronics	11.5	11.7
Metal products	11.5	12.4
Publishing and printing	11.4	14.1
Food and beverages	11.2	12.1
Shipbuilding, railroad equipment, mobile homes	11.1	12.0
Motor vehicles and parts	10.6	11.6
Aircraft and parts	10.5	12.2
Petroleum refining	10.5	11.8
Paper and wood products	10.5	10.0
Chemicals	9.9	9.7
Glass, cement, gypsum, concrete	9.4	8.7
Metal manufacturing	9.2	9.9
Rubber	8.9	11.3
Textiles	7.9	8.3
All industries	11.3	11.7

[a]The data was extracted from the May 1970 issue of Fortune Magazine and permission to reproduce the data was obtained.

APPENDIX VIII

THE 10 LARGEST UTILITIES

(RANKED BY ASSETS)

AND A COMPOSITE TOTAL

OF THE REMAINING 40 LARGEST UTILITIES (note a)

Rank 1969	Rank 1968	Company	Assets (note b)	Operating revenues (note c)	Net income (note d)	Invested capital (note e)	Net income as percent of invested capital
			(000 omitted)				
1	1	American Tel. & Tel. (New York)	$ 43,903,121	$15,683,767	$2,198,698	$23,528,832	9.3
2	2	Consolidated Edison (New York)	4,069,553	1,028,254	127,189	1,836,728	6.9
3	3	Pacific Gas & Electric (San Francisco)	4,014,502	1,054,311	169,749	1,688,752	10.1
4	4	Southern California Edison (Los Angeles)	3,002,190	642,124	107,869	1,222,582	8.8
5	5	Commonwealth Edison (Chicago)	2,948,143	801,149	132,345	1,070,000	12.4
6	7	American Electric Power (New York)	2,786,608	612,515	106,329	764,545	13.9
7	6	Southern Company (Atlanta)	2,737,552	666,265	94,018	784,236	12.0
8	8	Public Service Electric & Gas (Newark)	2,331,104	684,026	90,865	887,884	10.2
9	9	El Paso Natural Gas	1,908,466	887,715	48,517	485,687	10.0
10	10	Columbia Gas System (New York)	1,893,964	773,517	81,489	697,039	11.7
		Total for top 10	69,595,203	22,833,643	3,157,068	32,966,285	9.577[f]
		Composite total for remaining 40	47,973,989	14,513,725	1,857,928	16,947,512	10.963[f]
		Total	$117,569,192	$37,347,368	$5,014,996	$49,913,797	10.047[f]

[a] The data was extracted from the May 1970 issue of Fortune Magazine, and permission to reproduce the data was obtained.

[b] Total assets employed in business, net of depreciation, December 31, 1969. Assets of consolidated subsidiaries are included.

[c] Gross receipts--including any nonutility revenues from manufacturing, transportation, etc.--from operations during calendar year 1969.

[d] After taxes and after special items when any are shown on the income statement.

[e] Net worth--sum of capital stock, surplus, and retained earnings--as of December 31, 1969. Common and preferred stocks of subsidiaries have been excluded.

[f] The respective weighted averages of net income as a percent of invested capital.

TREASURY INTEREST RATE--

TOTAL PUBLIC ISSUES--MARKETABLE

Months	FY 1965	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970
July	3.666	3.795	4.145	4.196	4.784	5.336
Aug.	3.662	3.800	4.256	4.253	4.833	5.407
Sept.	3.663	3.807	4.317	4.293	4.822	5.482
Oct.	3.671	3.821	4.387	4.348	4.830	5.715
Nov.	3.675	3.857	4.456	4.457	4.873	5.782
Dec.	3.696	3.890	4.459	4.505	4.923	5.849
Jan.	3.738	3.934	4.442	4.552	4.988	5.905
Feb.	3.769	4.026	4.441	4.609	5.093	6.037
Mar.	3.782	4.059	4.367	4.615	5.120	5.996
Apr.	3.797	4.071	4.299	4.644	5.132	5.897
May	3.803	4.130	4.243	4.756	5.187	6.032
June	3.800	4.134	4.165	4.757	5.232	5.986
FY Av.	3.727	3.944	4.331	4.499	4.985	5.785

Treasury interest rates as published on the final workday of each month in the "Daily Statement of the Treasury" with fiscal year averages computed on an arithmetical average.

URANIUM ENRICHMENT SERVICES CRITERIA

(Reprinted from 31 Federal Register 16479, December 23, 1966)

1. General

(a) The United States Atomic Energy Commission (AEC) hereby gives notice of the establishment of criteria setting forth the terms and conditions under which it offers, subject to available capability, to provide uranium enrichment services in facilities owned by AEC, as authorized by the Atomic Energy Act of 1954, as amended (the Act). Specifically, these criteria are established pursuant to section 161v of the Act, which was added by Public Law 88-489, the "Private Ownership of Special Nuclear Materials Act." As used in this notice, the term "enrichment services" or "enriching services" means the separative work* necessary to enrich or further enrich uranium in the isotope 235. The enrichment services shall be provided pursuant to contracts to be entered into (1) with persons licensed under section 53, 63, 103, or 104 of the Act, and/or (2) in accordance with agreements for cooperation arranged pursuant to section 123 of the Act.

(b) The contracts will provide for the furnishing of depleted, normal or enriched uranium by the customer and the delivery by the AEC of an appropriate quantity of enriched or more highly enriched uranium. The quantity of material to be furnished by the customer in relationship to the quantity of enriched uranium to be delivered by the AEC and the related amount of separative work to be performed by the AEC normally will be determined in accordance with the then-current standard table of enriching services published by the AEC.** In the event, however, that the AEC does not have available capability to undertake to perform requested enriching services on short notice in accordance with such standard table, the AEC may agree to perform such services in accordance with such other table as is within its capability.

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* *The work devoted to separating a quantity of uranium (feed material) into two fractions, one a Product fraction containing a higher concentration of U-235 than the Feed and the other a Tails fraction containing a lower concentration of U-235.*

** *The initial table, as presently contemplated, will not provide to the customer flexibility to select a quantity of feed and an amount of separative work other than those specified in the AEC table. However, the AEC is giving further study to the question of providing, at some date in the future, a form of contract under which flexibility would be available.*

The general features of standard contracts, including the basis for AEC's charges for enriching services, are set forth herein.

(c) Except as specifically provided, nothing in this notice shall be deemed to affect the sale or leasing of special nuclear material by the AEC or the entering into of "barter" arrangements whereby special nuclear material is distributed pursuant to section 54 of the Act and source material is accepted in part payment therefor. Neither the execution of an agreement for the furnishing of uranium enrichment services nor the termination or expiration of such agreement will in itself alter or affect any rights and obligations of any AEC licensee under its license or construction permit other than those regarding any allocation of special nuclear material in connection therewith.*

(d) The criteria contained in this notice are subject to change by the AEC from time to time; however, any such changes shall be submitted to the Joint Committee on Atomic Energy for its review in accordance with the Act.

2. Effective Date. This notice is effective upon publication in the Federal Register.

3. Period of Contract. Contracts with domestic licensees will be for specified periods of time up to 30 years. Contracts entered into in accordance with an international agreement for cooperation must be for a term within the period of such agreement. In either case, contracts may be entered into at any time after the effective date of this notice; however, no such contract shall provide for delivery of special nuclear material by AEC or delivery of uranium feed material to AEC before January 1, 1969.

4. Enrichment of Uranium of Foreign Origin. There is no restriction on the provision of enrichment services to persons furnishing as feed material uranium of foreign origin where the enriched product is not intended to be used in a utilization facility (as defined in the Act) within or under the jurisdiction of the United States. Where the enriched material is intended to be used in a domestic utilization facility, however, the standard contracts will prohibit the furnishing of feed material of foreign origin. This prohibition is established, pursuant to section 161v of the Act, in order to assure the maintenance of a viable domestic uranium industry. From time to time, the AEC will review the condition of the domestic mining and milling industry to determine the need for continuing this restriction, modification or removal of which shall constitute a change in these criteria.

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* *In view of the authority granted to the AEC under the Act to execute long-term fuel supply agreements, the AEC is reviewing its existing regulations and procedures with respect to the need for allocations of special nuclear material in licenses.*

5. General Features of Standard Domestic Contracts. The following types of contracts have been developed in the light of the uncertainties necessarily attendant to contracts which may be for periods as great as 30 years. Accordingly such contracts will provide that, at the request of either the AEC or the customer, the parties will negotiate and, to the extent mutually agreed, amend them, without additional consideration, in a manner consistent with the criteria then established by the Commission in accordance with the requirements of section 161v of the Act to eliminate or reduce restrictive provisions which the parties determine are inequitable, discriminatory or no longer required to protect their interests. The AEC will use two standard types of uranium enrichment contracts to be entered into with domestic licensees. These are entitled (a) Agreement for Furnishing Uranium Enrichment Services (Domestic Customers - Firm Quantities), and (b) Agreement for Furnishing Uranium Enrichment Services (Domestic Customer's Requirements). The AEC may also offer a uranium enrichment contract combining features of the foregoing types of contract. The type of contract first mentioned, at the customer's option, will either (i) define the specific quantities and assays of enriched uranium to be delivered to the customer, the schedule for such deliveries, and the quantity and assay (or a range of quantities and assays within permitted amounts) of feed material other than natural uranium to be delivered by the customer, with the remainder of the required feed material to be delivered as natural uranium, or (ii) define the amount of enriching services to be performed by the AEC in terms of units of separative work as related to the AEC's standard table of enriching services in effect at the time the parties agree to such amounts and provide for the adjustment of such amounts in the event of a revision of the AEC's standard table of enriching services through the application of such revised standard table to the relevant portion of a reference schedule of feed material deliveries by the customer and enriched uranium deliveries by the AEC incorporated into the contract for this purpose. The second type would provide for the furnishing of part or all of the customer's requirements for enriching services for a designated facility or facilities during the term of the contract.

In addition to the items discussed above, the more significant provisions of the standard domestic contracts are summarized below:

(a) Delivery Schedules. Deliveries of specific quantities and U-235 assays of feed material to AEC and enriched uranium to the customer shall be in accordance with the agreement between the parties and (except as provided in 1(b) above) in accordance with the published AEC standard table of enriching services in effect at the time of the delivery of enriched uranium by the AEC. The schedule for delivering enriched uranium to the customer shall reflect an interval after receipt of feed material equivalent to the estimated average time which would be required to receive, handle, and process equivalent feed material to the desired enriched uranium. The AEC will not necessarily use the specific feed material furnished by the customer in producing the enriched uranium delivered to the customer. Unless otherwise agreed, deliveries of feed material to AEC shall precede requested deliveries of the enriched

uranium by at least ninety (90) days. The AEC may agree to perform enriching services in cases where the lead time requirements for furnishing feed material are not satisfied; in such cases, an appropriate surcharge may also be imposed to provide for recovery of additional AEC costs and interest charges.

(b) Chemical Form and Specifications of Material. Both feed material furnished to the AEC and enriched uranium delivered to the customer are required to be in the form of UF_6 and conform to the AEC's established specifications as published in the Federal Register and in effect on the date of delivery.

(c) Charge for Enriching Services.

(1) The charge for enriching services, in accordance with the Act, will be established on a nondiscriminatory basis and provide reasonable compensation to the Government. Applicable charges for enriching services and related services will be those in effect at the time of delivery of enriched uranium to the customer as (i) published in the Federal Register, or (ii) in the absence of such publication, determined in accordance with the Commission's pricing policy. The charge per unit of separative work for enriching services will be the same as that employed in the Commission's published schedule of charges for sale or lease of enriched uranium. The AEC may impose an appropriate surcharge representing additional costs, if any, to the AEC for providing enriching services on short notice.

(2) The Act requires that such charges provide reasonable compensation to the Government. AEC's charge 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 electric power and all other costs, direct and indirect, of operating the gaseous diffusion plants; appropriate depreciation of said plants; and a factor to cover applicable costs of process development, AEC administration and other Government support functions, and imputed interest on investment in plant and working capital. During the early period of growth of nuclear power, there will be only a small civilian demand on the large AEC diffusion plants. These plants were originally constructed for national security purposes, but will be utilized in meeting future civilian requirements. In this interim period of low plant utilization, the Commission has determined that the costs to be charged to the separative work produced for civilian customers will exclude those portions of the costs attributable to depreciation and interest on plant investment which are properly allocable to plant in standby and to excess capacity.

(3) Projections of supply and demand over a reasonable time period will be used in establishing a plan for diffusion plant operations. This plan will be the basis for establishing an average charge for separative work over the period involved, which charge will be kept as stable as possible as operating plans are periodically updated. Under such operating plans, AEC will at times be preproducing enriched uranium. Interest on the separative work costs of any such preproduced inventories will be factored into the average separative work charges.

(d) Ceiling on Charge for Enrichment Services. The contract shall specify for the term of the agreement a guaranteed ceiling charge, subject to upward escalation for the cost of electric power and labor. The ceiling charge as of July 1, 1965, the base date for application of escalation, is $30 per Kg unit of separative work for separation of U-235 from U-238. (In its standard table of enriching services, as well as its schedule of charges for sale or lease of enriched uranium, AEC will take into account any significant effect of the presence of other isotopes of uranium on the number of separative work units required to perform a given U-235 - U-238 separation.)

(e) Customer's Option To Acquire Tails Material. The customer shall be granted an option to acquire tails material (depleted uranium) resulting from the performance of enriching services. The option as to quantity (Kg U) of tails material desired by the customer, within the maximum quantity subject to the option, must be exercised at the time of delivery of the related quantity of feed material. The U-235 assay of the tails material delivered to the customer will be within the sole discretion of the AEC. The maximum quantity of depleted uranium subject to the option will be equal to the difference between the total uranium supplied by the customer as feed material and the total enriched uranium furnished to the customer, less processing losses as established from time to time by the AEC. No charge will be made for tails material delivered to the customer under the agreement other than AEC's withdrawal, handling and packaging charges. Delivery of tails material will normally be at the same time as delivery of enriched uranium.

(f) Responsibility for Material Meeting Specifications. The customer warrants that all feed material meets specifications and, with stated exceptions, agrees to hold the AEC and its representatives harmless from all damages, liabilities, or costs arising out of a breach of the warranty where such damages, liabilities, or costs are incurred prior to final acceptance of the feed material by AEC. However, the customer is not deprived of any rights under indemnification agreements entered into pursuant to section 170 of the Act (Price-Anderson indemnification). The AEC's obligation to furnish specification material to the customer terminates upon final acceptance of such material by the customer.

(g) Termination by AEC.

(1) The contract may be terminated by AEC without cost to AEC upon reasonable notice at such time as commercial enriching services are provided by another domestic source; provided, however, that AEC will upon request by the customer rescind any notice of termination and will continue to furnish the services specified in the contract if the services of the domestic source are not available to the customer: (i) to the extent provided for in the AEC contract during the remainder of its term; (ii) on terms and conditions which are considered by the AEC to be reasonable and nondiscriminatory as between domestic and foreign customers; and (iii) at charges considered by AEC to be reasonable, nondiscriminatory, and no higher than the ceiling charge under the AEC contract, as escalated for the cost of electric power and labor.

(2) The AEC may terminate the contract without cost to the AEC in the event the customer loses its right to possess enriched uranium, defaults on its contractual obligations, or becomes involved in bankruptcy proceedings. In such instances the customer will be required to pay a termination charge determined as if the customer had terminated the contract on the notice, if any, given the customer by the AEC.

(h) Termination by Customer. The customer may terminate the contract in whole or in part. In such instances the customer will be required to pay a termination charge equal to a specified fraction of the charges for those enriching services which would have been furnished but for such termination. Such fraction of such charge shall be a maximum of 0.25 of such charge for those amounts for which minimum advance notice of termination is given and shall be a lesser figure for amounts terminated for which a longer notice period is given. No termination charges shall apply to amounts of separative work which would have been furnished at times three and one-half years or more subsequent to the date of receipt of the notice of termination of such amounts. The amounts of separative work and enriching services charges related thereto (prior to the application of the specified fraction) shall be determined in accordance with the published AEC standard table of enriching services and established charges in effect on the date of the receipt of the notice of termination. The AEC will determine the extent to which, if any, such termination charges exceed the probable costs to the Commission which may arise from such termination and such charges shall be correspondingly reduced. Such determination shall be final. Upon request of the customer prior to its delivery of a notice of termination, the AEC will advise the customer of the approximate amount of termination charges which would be payable.

(i) Delivery - Title. The f.o.b. delivery point for both feed material furnished to AEC and enriched uranium delivered to the customer is the designated AEC facility. The AEC's enriching facilities are situated at Oak Ridge, Tennessee; Paducah, Kentucky; and Portsmouth, Ohio. Title to all material passes upon delivery.

(j) Changes in Charges and Specifications. Any change made after July 1, 1968, in the specification for UF_6, the AEC's standard table of enriching services, or any increase in the charge per unit of separative work for enriching services shall require at least 180 days' notice to the customer by publication in the Federal Register.

(k) Customer's Requirements Contracts. In addition, requirements contracts will provide:

(1) Quantities and Enrichments of Material. The customer will be committed to obtain, and the Commission to provide, part or all of the customer's actual requirements for enriching services for a designated facility or facilities during the term of the agreement. Timely notice of the customer's requirements must be furnished to

AEC. Except as provided in 1(b) above the quantities and enrichments of feed material furnished by the customer will be those required, in accordance with the published AEC standard table of enriching services, to obtain the material of higher enrichment desired by the customer. A maximum net amount of enriching services to be provided will be established.

(2) Utilization of Material. The contract will provide the basis for determining the portion of the customer's requirements for enriching services to be furnished by the AEC by describing the extent to which:

a. enriched uranium furnished by the AEC under the contract will, after being used in or in support of the operation of the designated facilities, be recycled or delivered to the AEC as feed material under the contract;

b. plutonium or U-233 produced in and discharged from the designated facilities will be recycled for use in or in support of the operation of the designated facilities;

c. special nuclear material obtained from sources other than through the contract or the operation of the designated facilities, will be used in or in support of the operation of the designated facilities, including delivery of such material to the AEC as feed material under the contract.

Where the contract does not initially provide for the recycle for use, as in b. above, of the plutonium or U-233 produced, the customer, at any time prior to June 30, 1973, or such later date as the AEC may establish for this purpose, may elect, without incurring termination charges, to so use such plutonium or U-233 thereafter. In such cases, the contract will also provide for use of plutonium or U-233, as the case may be, from another source in lieu of such produced material. The customer may further change such utilization of material by agreement or by terminating the contract in whole or in part.

6. General Features of Contracts Entered into in Accordance with an Agreement for Cooperation. It is expected that the general features of uranium enrichment services contracts entered into pursuant to agreements for cooperation with foreign nations or groups of nations will be generally consistent with those discussed above.

7. Correspondence. Any correspondence involving this notice or request for copies of standard contract forms should be addressed to:

Manager, Oak Ridge Operations Office
United States Atomic Energy Commission, Post Office Box E,
Oak Ridge, Tennessee 37830

U.S. GAO, Wash., D.C.